HISTORY OF BROADCASTING:

RADIO TO TELEVISION

U. S. Federal Communications Commission

Federal Communications Commission

Annual Reports
Volume 1
Numbers 1-5
1934/1935-1939

ARNO PRESS and THE NEW YORK TIMES

New York • 1971

Reprint Edition 1971 by Arno Press Inc.

Reprinted from copies in The State Historical Society of Wisconsin Library,
The U. S. Federal Communications Commission Library

LC# 72-161167
ISBN 0-405-03577-2

HISTORY OF BROADCASTING: RADIO TO TELEVISION
ISBN for complete set: 0-405-03555-1
See last pages of this volume for titles.

Manufactured in the United States of America

HISTORY OF BROADCASTING: RADIO TO TELEVISION

HISTORY OF BROADCASTING: Radio to Television

First Annual Report of the

Federal Communications Commission

To the Congress of the United States

For the Fiscal Year 1935

✦

COMMISSIONERS

Anning S. Prall, Chairman
Irvin Stewart, Vice Chairman
Eugene O. Sykes Thad H. Brown
Paul A. Walker Norman S. Case
George Henry Payne

Herbert L. Pettey, Secretary

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1936

FIRST ANNUAL REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION

FEDERAL COMMUNICATIONS COMMISSION,
Washington, D. C., January 6, 1936.

To the Senate and House of Representatives of the United States of America in Congress assembled:

Herewith is submitted the First Annual Report of the Federal Communications Commission covering the fiscal year ended June 30, 1935.

The Federal Communications Commission was established by an act entitled "Public, No. 416", Seventy-third Congress, approved June 19, 1934, for the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available so far as possible, to all people of the United States, a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, and for the purpose of securing a more effective execution of this policy by centralizing authority heretofore granted by law to several agencies and by granting additional authority with respect to interstate and foreign commerce in wire and radio communication.

This act further provided for the transfer to the Communications Commission of all officers and employees of the Federal Radio Commission (except the members thereof whose offices it abolished) whose services were deemed necessary to the efficient operation of the new Commission. It also provided for the transfer of all records and property formerly under the jurisdiction of the Federal Radio Commission and all records under the jurisdiction of the Interstate Commerce Commission and of the Postmaster General relating to the duties, powers, and functions imposed upon and vested in the Commission by the Communications Act.

On July 11, 1934, the following persons, having been appointed by the President, took the oath of office as Commissioners, thus establishing the Federal Communications Commission:

Eugene O. Sykes, appointed for a term of 7 years.
Thad H. Brown, appointed for a term of 6 years.
Paul A. Walker, appointed for a term of 5 years.
Norman S. Case, appointed for a term of 4 years.
Irvin Stewart, appointed for a term of 3 years.
George Henry Payne, appointed for a term of 2 years.
Hampson Gary, appointed for a term of 1 year.

Commissioner Hampson Gary resigned as a member of the Commission on January 1, 1935. To fill his unexpired term, the Presi-

dent appointed Mr. Anning S. Prall, and Mr. Prall was later reappointed for a term of 7 years beginning July 1, 1935.

On July 11, 1934, there were 121 employees at the seat of government and 112 employees in the field service.

On July 17, 1934, the Federal Communications Commission organized its divisions in keeping with the Communications Act. Three Divisions (i. e. Broadcast, Telegraph, and Telephone), composed of two members each, were created with the Chairman of the Commission serving ex officio as a member of each Division.

At the close of business on June 30, 1935, the Commission's staff was composed of 329 employees at the seat of government and 113 employees in the field service.

ANNING S. PRALL, *Chairman.*

REPORT OF THE SECRETARY

HERBERT L. PETTEY

For the fiscal year ending June 30, 1935, there was appropriated $1,146,885. This sum is accounted for as follows:

SALARIES AND EXPENSES

01	Personal services	$893,571
02	Supplies and materials	34,684
0236	Gasoline and oil	928
04	Storage and care of vehicles	2,005
05	Communication service	9,980
06	Travel expenses	28,928
0610	Car fare	1,621
07	Transportation of things	462
082	Stenographic reporting	2,033
10	Heat, light, power, and water	3,692
11	Rents	5,065
12	Repairs and alterations	10,509
13	Special and miscellaneous	956
30	Equipment	131,165
	Total	1,125,599

PRINTING AND BINDING

02	Printed forms and letterheads	10,676
08	Printing and binding	2,842
	Total	13,518

ANNUAL REPORT

LICENSE AND RECORDS SECTION

WM. P. MASSING, *Chief of Section*

The Federal Communications Commission continued the licensing of radio operators and stations in accordance with applicable provisions of treaty, law, and regulations.

In the reorganization that followed the Communications Act of 1934, this section remained intact and in accordance with the provisions of section 214 of the act the section was charged with the additional duties of examining applications for the construction and the issuance of authorizations of new telegraph, telephone, and cable lines and/or the extension of existing lines.

To comply with the Commission's Order No. 1, six radio services were transferred from the Commercial Unit to the Broadcast Unit.

Collaborating with the Engineering and Law Departments, a complete revision of the Commission's application and authorization forms was effected.

The following is a detailed report, arranged according to service, showing the number of new stations authorized, number of stations deleted and the total number of authorized radio stations as of June 30, 1935:

Nature of service and class of station	New stations authorized	Stations deleted	Total number of stations June 30, 1935
Agriculture: Point-to-point telegraph	0	0	9
Amateur: Amateur	7,416	8,245	45,561
Aviation:			
Aeronautical	62	19	193
Aeronautical point-to-point	43	0	96
Airport	13	12	27
Aircraft	136	219	359
Marker beacon	3	0	3
Broadcast: Broadcast	39	9	623
Emergency:			
Marine fire	0	0	2
Police, municipal	41	0	194
Police, State	32	1	58
Special emergency	7	1	44
Experimental:			
General experimental	516	231	849
Special experimental	61	52	126
Experimental relay broadcasting	0	0	12
Experimental visual broadcasting	1	5	21
Experimental broadcast	0	0	4
Fixed public:			
Point-to-point telegraph	28	38	377
Point-to-point telephone	16	10	111
Fixed public press: Point-to-point telegraph	0	1	77
Geophysical: Geophysical	22	6	131
Marine relay: Marine relay	2	1	42
Mobile press: Mobile press	1	0	5

Nature of service and class of station	New stations authorized	Stations deleted	Total number of stations June 30, 1935
Public coastal:			
Coastal telegraph	4	9	110
Coastal telephone	1	1	2
Coastal harbor	12	8	37
Private coastal:			
Coastal telegraph	0	2	3
Coastal harbor	0	0	2
Ships: Ships	347	404	1,961
Temporary:			
Broadcast pick-up	4	6	34
Motion picture	0	0	1
Total	8,807	9,280	51,074

AMATEUR

In the Amateur Unit is concentrated the work of licensing amateur radio operators and stations, applying the provisions of law and regulations governing such issues. Due to the numbers of applicants, this work involves a great deal of detail in grading examinations for the operator licenses, scrutiny of applications, signature and issuance of license for those approved, assignment of call signals, and maintaining the related records and correspondence.

The work is planned to handle volume. Suitable form letters are frequently prepared; of 16,881 letters emanating from the Unit during the year, 15,248 were form letters and 1,633 drawn specially. The amateur's operator and station licenses are issued on opposite sides of pocket-size form, designed as part of a printed assembly that includes also seven card records of both for the Commission's offices in Washington and the field. Applications are also made on a joint form, usable in applying for both operator and station licenses. Counting as one, each such application whether made for both licenses or for only one of the two, the total handled during the fiscal year is given by the following figures:

AMATEUR RADIO APPLICATIONS

Receipts:	
Pending July 1, 1934	156
Received during the fiscal year	31,275
Total	31,431
Disposals:	
Approved	19,182
Returned to applicants	5,353
Referred to other Federal agencies, etc	385
Failed required examinations	5,032
Total	29,952
Pending close of June 30, 1935	1,479

The return of applications without approval occurred for various reasons precluding license, such as lack of citizenship by the applicant or by the person in control of the station premises, or misconception of the proper use of an amateur station, while many more had only formal defects, curable by amendment of the applications. Thus a substantial number of those returned to applicants were re-

ceived and counted a second time. The same is true of those referred to other offices, commonly due to proposed use of Federal premises. In another sense the foregoing figures include some duplication, in that often an applicant failing an examination, applies again and is reexamined after a lapse of 90 days required by regulation.

The majority of approved applications were for both operator and station licenses, including reissues for the purpose of bringing coterminous on the joint card form the amateur's operator and station licenses formerly issued as separate documents at different times and for different periods. All issues exceeded 100 per day, as follows:

AMATEUR RADIO AUTHORIZATIONS

Station licenses:	
New	7,416
Renewals	2,725
Modifications and reissues	7,597
Total	17,738
Operator licenses	17,532
Operator license endorsements	904
Duplicates of lost or destroyed licenses	351
Total	18,787
Grand total	36,525

During the past fiscal year the licenses of 29 amateur operators were suspended or withheld, in nearly all cases for a period of 6 months, while 94 others who had not qualified were debarred from examination, usually for like period. One license was ordered suspended for 2 years and another obtained by fraud was ordered canceled. Only five amateur station licenses were revoked.

TOTAL NUMBER OF AMATEUR STATION LICENSES

Valid of record July 1, 1934	46,390
Issued during fiscal year, new	7,416
Total	53,806
Less:	
Cancellations	2,551
Other deletions	839
Expirations (renewal yet possible) approximately	4,850
Revocations	5
Total	8,245
Net close of June 30, 1935	45,561

This Unit also maintains the one complete record of licenses of various professional classes required to qualify radio operators for service at any of the numerous kinds of transmitting stations maintained by commercial interests. To permit quick service in connection with sea, air, and land stations, the licensing in such cases is decentralized, with 22 offices of issue. Examinations, failures, license issues, renewals, endorsements, etc., are reported for posting on the Commission's central record. During the fiscal year 7,466 such re-

ports were received for record. A large number of the licenses were of radiotelephone third class, for operation of police transmitters, for which the requirements are relatively simple.

Due to improper acts in connection with the operation of a broadcast station, the Commission suspended the licenses of three operators during the year.

BROADCAST

The consolidation of the old records of the Radio Division of the Department of Commerce with those of the Commission for the purpose of maintaining a complete record of each broadcast station from the beginning of control of broadcast stations by the Federal Government was continued.

The records pertaining to the following classes of radio stations that were transferred from the Commercial Unit were revised:

Experimental relay broadcasting.
Experimental visual broadcasting.
Experimental broadcasting.
Broadcast pick-up.
General experimental.[1]
Special experimental.[1]

A complete set of records was devised and installed to comply with the provisions of the Communications Act of 1934 requiring that applicants procure authority to transfer the control of corporations and obtain permits to locate, maintain, or use studio or apparatus for the production of programs to be transmitted or delivered to foreign radio stations.

The work of the Unit may best be summarized by the following tables:

TABLE I.—*Comparison of applications received and authorizations issued during the fiscal years 1931, 1932, 1933, 1934, and 1935*

	1931	1932	1933	1934	1935
Applications received	3,784	2,519	2,193	2,590	3,652
Authorizations issued	3,233	2,534	2,446	2,503	3,434

Applications received and instruments of authority issued comprised construction permits, licenses, modifications of construction permits and licenses, consent to voluntary or involuntary assignments of construction permits and licenses, extension of licenses, installation of automatic frequency-control equipment, special authorizations, emergency authorizations, consent to transfer control of corporations, and permits to locate, maintain, or use studio or apparatus for production of programs to be transmitted or delivered to foreign radio stations.

In addition to the applications shown in table I, there were received in the Unit 1,487 informal applications, which consisted of requests for (1) extension of equipment and program test periods,

[1] All matters relating to or connected with this class of station concerning the development of apparatus for any service assigned to the Broadcast Division.

(2) to operate for a limited period of time in a manner not set forth in a regular license or authorized by regulations, (3) to depart from hours of operation as authorized, and (4) to partially or wholly suspend operation of a station. There were also issued 442 informal authorizations consisting of letters, telegrams, and deviations from time-sharing agreements.

TABLE II.—*New stations authorized (total 39)*

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KABR	Aberdeen Broadcasting Co., Aberdeen, S. Dak	1,420	100	Daytime.
KADA	C. C. Morris, Ada, Okla	1,200	100	Do.
KALB	Alexandria Broadcasting Co., Inc., Alexandria, La	1,420	100	Do.
KAST	Abraham Shapiro, Astoria, Oreg	1,370	100	Do.
KELD	T. H. Barton, El Dorado, Ark	1,370	100	Unlimited.
KFRO	Voice of Longview, Longview, Tex	1,370	100	Daytime.
KFUH	Richard Field Lewis, Del Monte, Calif	1,210	100	Unlimited.
KHSL	Wm. Schield, Sydney R. Lewis, and Harold Smithson, trustees Golden Empire Broadcasting Co., Ltd., Chico, Calif.	950	250	Daytime.
KINY	Edwin A. Kraft, d/b as Northwest Radio Advertising Co., Juneau, Alaska.	1,310	100	Unlimited.
KIUJ	J. H. Speck, Santa Fe, N. Mex	1,310	100	Do.
KIUL	Garden City Broadcasting Co., Homer A. Ellison and Frank D. Conard, Garden City, Kans.	1,210	100	Do.
KIUN	Jack W. Hawkins and Barney H. Hubbs, Pecos, Tex.	1,420	100	Do.
KIUP	Le Roy Haley, Durango, Colo	1,370	100	Do.
KPLC	T. B. Langford, R. M. Dean, and L. M. Sepaugh, Calcasieu Broadcasting Co., Lake Charles, La.	1,500	100	Do.
KRLC	H. E. Studebaker, Lewiston, Idaho	1,420	100	Do.
KROC	Southern Minnesota Broadcasting Co., Rochester, Minn.	1,310	100	Do.
KVOL	Geo. H. Thomas, Robert M. Dean, L. M. Sepaugh, and T. B. Lanford, d/b as Evangeline Broadcasting Co., Lafayette, La.	1,310	100	Do.
KVSO	The Ardmoreite Publishing Co., Inc., Ardmore, Okla	1,210	100	Daytime.
KWBG	W. B. Greenwald, Hutchison, Kans	1,420	100	Unlimited.
WAIM	Wilton E. Hall, Anderson, S. C	1,200	100	Do.
WCMI	The Ashland Broadcasting Co, Ashland, Ky	1,310	100	Do.
WFMD	The Monocacy Broadcasting Co., Frederick, Md	900	500	Daytime.
WISC	Milwaukee Broadcasting Co., Milwaukee, Wis	1,310	100	Do.
WMFD	Richard Austin Dunlea, Wilmington, N. C	1,370	100	Do.
WMFF	Plattsburg Broadcasting Corporation, Plattsburg, N. Y.	1,310	100	Do.
WMFG	Head of the Lakes Broadcasting Co., Hibbing, Minn	1,210	100	Unlimited.
WMFH	Joseph M. Kirby, Boston, Mass	1,120	500	Daytime.
WMFI	Patrick J. Goode, New Haven, Conn	900	500	Do.
WMFJ	W. Wright Esch, Daytona Beach, Fla	1,420	100	Unlimited.
WMFN	Attala Broadcasting Corporation, Clarksdale, Miss	1,210	100	Do.
WMFO	James R. Doss, Jr., Decatur, Ala	1,370	100	Daytime.
WMFR	Hart & Nelson (J. A. Hart and Wayne M. Nelson), High Point, N. C.	1,200	100	Do.
WNBC	William J. Sanders, New Britain, Conn	1,380	250	Do.
WNRI	S. George Webb, Newport, R. I	1,200	100 250-LS	Unlimited.
WPAR	Ohio Valley Broadcasting Corporation, Parkersburg, W. Va.	1,420	100	Do.
WPRP	Julio M. Conesa, Ponce, Puerto Rico	1,420	100 250-LS	Specified.
WTAL	Florida Capitol Broadcasters, Inc., Tallahassee, Fla	1,310	100	Unlimited.
WTMV	Mississippi Valley Broadcasting Co., Inc., East St. Louis, Ill.	1,500	100	Do.
WWPA	Clarion Broadcasting Co., Inc., Clarion, Pa	850	250	Daytime.

Of the 39 new broadcast stations authorized during the year, 31 were authorized under the provisions of section 307 of the Communications Act and were not charged to quota.

TABLE III.—*Stations consolidated (total 2)*

Call letters	Grantee and location	Date of consolidation	Call letters and location of station with which consolidated
WLIT	WFIL Broadcasting Co., Philadelphia, Pa.	Feb. 12, 1935	WFIL, Philadelphia, Pa.
WDAG	Plains Radio Broadcasting Co., Amarillo, Tex.	June 4, 1935	KGNC, Amarillo, Tex.

TABLE IV.—*Stations deleted (total 7)*

Call letters	Grantee and location	Date of decision
KGIX	J. M. Heaton, Las Vegas, Nev. (C. P. only). Construction permit expired Apr. 26, 1935; construction not completed within required time.	May 14, 1935
KWFV	The Hilo Broadcasting Co., Ltd., Hilo, Hawaii (C. P. only). Construction permit expired Sept. 1, 1934. No application for extension of time filed.	Apr. 16, 1935
WAMC	Raymond C. Hammett, Anniston, Ala. (C. P. only). Construction permit expired Jan. 10, 1935. Application for modification construction permit returned and no further application received.	May 14, 1935
WJEM	Britt A. Rogers, Jr., Tupelo, Miss. (C. P. only). Construction permit expired Aug. 1, 1934. No application for extension of time nor application for license filed.	Oct. 2, 1934
WKFI	J. Pat Scully, Greenville Miss. License expired. No application for renewal of license filed.	Oct. 3, 1934
WNBO	John Brownlee Spriggs, Silver Haven, Pa. Licensee voluntarily surrendered license.	Mar. 15, 1935
WWPA	Clarion Broadcasting Co., Inc., Clarion, Pa. (C. P. only). Construction permit expired Jan. 11, 1935. Commission denied application for modification of construction permit Mar. 26, 1935.	Apr. 15, 1935

Three complete lists of radio broadcast stations authorized by the Federal Communications Commission, arranged (1) alphabetically by call signal, (2) alphabetically by State and city, and (3) numerically by frequency, were compiled and prepared for distribution. Monthly supplements to these lists have been prepared for distribution to the general public.

There was also published a list of the visual broadcast stations and relay broadcast stations.

COMMERCIAL

There were received in the Unit a total of 8,221 applications as compared with 8,139 during the previous fiscal year. There were issued 7,722 instruments of authority as compared with 7,336 for last year.

Of the applications received, 256 were returned because they were improperly executed, contained insufficient information, or were otherwise defective. In each case a letter was written informing the applicant of the defect.

TABLE V.—*Comparison of applications received and authorizations issued during the fiscal years 1931, 1932, 1933, 1934, and 1935*

	1931	1932	1933	1934	1935
Applications received	6,246	5,515	6,837	8,139	8,221
Authorizations issued	5,395	6,053	6,617	7,336	7,722

Applications and authorizations shown in the above table comprised construction permits, modifications of construction permits, licenses, modification of licenses, renewal of licenses, and assignments of construction permits and licenses.

The Commission on January 11, 1935, authorized a new class of station in the aviation service, i. e., airway obstruction marker beacon. Three stations of this type were authorized during the year.

The Commission granted 3 telephone and 3 telegraph applications authorizing additional wire line facilities.

During the fiscal year there were received 2,969 applications for ship radio station licenses including modifications and renewals, and 2,920 authorizations were issued including telegraphic communications authorizing emergency operation.

On June 30, 1935, there were 1,961 ship stations licensed aboard vessels of United States registry, including 195 vessels operating on the Great Lakes. Approximately 275 ships are compulsorily equipped with radio telegraph apparatus and the remainder are voluntarily equipped.

Approximately 1,846 vessels have been authorized for regular maritime service, communicating with other ships and coastal telegraph stations. Twenty-six have been authorized to communicate on a designated frequency with specified coastal harbor telephone stations and 27 have been granted authority to operate on the general frequency 2,738 kilocycles for communication between ship harbor stations, either telephone or telegraph.

There are three municipal fire boats authorized to operate on a specified frequency and 58 vessels operating on specific frequencies allocated for Alaskan waters.

Fifteen vessels, yachts operating outside of general traffic lanes, and vessels on special scientific expeditions, have been granted special permission to communicate with amateurs for periods of from 1 to 12 months.

The system of assigning call signals for all radio stations, excepting amateur, was revised during the past year. This revision required the preparation of some 40,000 call cards with the necessary information for identification for the calls already assigned.

Eleven hundred seventy-eight call signals were assigned during the past fiscal year.

The Radio Service Bulletin containing in tabular form a complete record of all new assignments, changes, and deletions relative to all classes of radio stations, commercial and Government, in the United States and its possessions was issued semimonthly.

REPORT OF THE EXAMINING DEPARTMENT

DAVIS G. ARNOLD, *Chief Examiner*

Upon its organization on July 11, 1935, the Federal Communications Commission continued the employment of the examiners of the Federal Radio Commission, two in number, at first upon a temporary basis and later by permanent appointments. The Examining Section was included in the Law Department for the purpose of organization only. Thereafter, a Chief Examiner was appointed and the administrative duties of the Examining Department were defined by the Commission as follows:

EXAMINING DEPARTMENT

The functions of the Department are to conduct hearings, formal and informal, on applications, petitions, and complaints filed with the Commission, when the Commission so directs; and conduct hearings and investigations instituted by the Commission on its own motion concerning rates, rules, regulations, services, and practices of carriers subject to the Communications Act of 1934, as directed by the Commission.

THE EXAMINERS

The Chief Examiner will administer the work of the Department and will also preside at hearings. Examiners will preside at hearings, propose reports containing findings of fact and law with recommendations based on these findings; conduct investigations and hearings under Commission's orders and report thereon and perform such other duties under the functions of the Department as directed by the Chief Examiner.

Additional appointments of examiners were made from time to time so that at the close of the fiscal year the staff consisted of the Chief Examiner and six examiners.

The following tabulation discloses the volume of work handled by the Department during the fiscal year:

Cases heard and unreported as of July 1, 1934	10	
Cases heard during fiscal year	199	
		209
Cases dismissed without report	13	
		196
Cases reported during fiscal year	129	
Cases unreported as of June 30, 1935	67	

REPORT OF THE LAW DEPARTMENT

PAUL D. P. SPEARMAN, *General Counsel*

The Commission approved the organization of the Law Department into three divisions, each of which was separated into appropriate sections as follows: (1) Research and Advisory Division, with a Research Section and a Liaison Section; (2) Telephone and Telegraph Division, with an Applications and Complaint Section, Operating Control Section, Investigation Section, and Litigation Section; and (3) Radio Division, with an Applications Section, Radio Trial and Hearing Section, and Appeals and Decisions Section.[1]

The activities of each division and section will be reported separately.

I. RESEARCH AND ADVISORY DIVISION

CARL F. ARNOLD, *Assistant General Counsel*

This Division had a vast number of problems of first impression presented because of the new jurisdiction of the Commission. There is outlined below a very brief summary of the nature of the problems with which this Division has been confronted:

(1) RESEARCH SECTION

The Research Section has had primary responsibility for the drafting of proposed bills appended to the Commission's special report of February 1, 1935, construing the legal effects of the various sections of the act, advising the Commission on the legal aspects of administrative problems, preparing extensive summaries of State commission and State and Federal court decisions on accounting, depreciation, valuation, and rate-regulatory problems, and analyses of financial and operating reports made by communications carriers to the Commission pursuant to its orders. The Section has also been primarily responsible for the preparation of a proposed draft of rules of practice for the Commission and the preparation of rules and regulations concerning the filing of tariffs and other administrative practices.

It has also been called upon to analyze the history of congressional legislation over communications carriers from the first regulatory act and the history of American post-office legislation.

(2) LIAISON SECTION

The Liaison Section has been primarily concerned with the activities heretofore vested in various departments of the Government and with relation to the various State regulatory commissions having

[1] Since the period covered in this report the Law Department has been reorganized into sections which conform to the divisions established by the Commission pursuant to the Communications Act of 1934, viz Telephone, Telegraph, and Brdadcast.

comparable jurisdiction. Some of the chief problems have been an analysis of Pacific cable contracts transferred from the Department of State; a digest of N. R. A. hearings on codes of fair practice and competition in the telegraph and telephone communications industries; a study of the early post roads acts; consideration of the legal phases of American participation in international conferences; a digest of the court history and citations of outstanding public utility cases of State commissions and State and Federal courts; digest of decisions of the Interstate Commerce Commission with respect to telephone and telegraph accounting, rate regulation, and valuation; cooperation with the State regulatory commissions in matters of annual and monthly report forms and accounting orders; cooperation with the Securities and Exchange Commission in drafting legislation for proposed regulation of security issues; comment on various bills affecting communications introduced in the Congress and in the various State legislatures; report on the Weather Bureau's relation to the telegraph companies in their extensive wire and radio communication of weather forecasts; opinions rendered to the Secretary of the Treasury, the Attorney General, the Bureau of Internal Revenue, the Post Office Department, the Bureau of Investigation of the Department of Justice, and other Government agencies with respect to communications problems; and opinions rendered to members of Congress requesting information and data concerning the activities of the Commission.

II. TELEPHONE AND TELEGRAPH DIVISION

FRANK ROBERSON, *Assistant general counsel*

This Division had primary responsibility for legal matters arising within these two divisions, respectively, of the Commission. The reports for the four different sections of this division are set forth below:

(1) APPLICATIONS AND COMPLAINT SECTION

This section has made an examination of the returns to 7,000 questionnaires which it addressed to the various communications carriers for the purpose of determining to what extent they are subject to the jurisdiction of the Commission. It has acted on a vast number of these advising the carriers to what extent they are subject to the act, and is holding the remainder in abeyance pending the decision of the Commission on the jurisdictional question. It has conducted extensive correspondence with these carriers regarding the questionnaires and further information necessary to a determination of jurisdiction. It has created card-index records of the various carriers. Other problems include complaints concerning franks and free service, consolidation of telephone companies, employees' pension plan, limitation of liability by telegraph companies for transmittal of messages, wire-tapping cases and patent-infringement cases. It has also received and considered 332 applications for interlocking directorates. These applications seek authority to hold from 2 to 50 interlocking directorates. The section has also prepared a 953-page digest of the 9,000-page record in the telegraph rate hearing and a 28-page index of the same.

(2) OPERATING CONTROL SECTION

This section has considered application for certificates of public convenience and necessity for the extension of lines, applications for consolidation and merger of telephone companies, applications for physical connection with telephone companies, proposed rules governing franks and services at reduced charges, exclusive contracts between railroads and telegraph companies, order fixing rates of pay for Government communication by telegraph, and has prepared various memoranda on law and policy with respect to the Commission's regulation of the operations of communications carriers.

(3) INVESTIGATION SECTION

This section has made investigations of various complaints, such as one filed by the American Association for the Protection of the Motion Picture Theatre regarding the operations of the American Telephone & Telegraph Co. and the effect of such operations on telephone rates; the jurisdiction of the Commission to require information from telephone companies regarding bucket-shop operations; jurisdiction of the Commission over the destruction of telephone and telegraph records; the jurisdiction of the Commission over wire tapping; the jurisdiction of the Commission over mergers of telephone companies under State laws without the approval of this Commission; an investigation of Pacific Telephone & Telegraph Co.'s evening toll-rate charges; complaints against employee insurance assessments; new point-to-point telegraph service; the transmittal and handling of messages addressed to Members of Congress with respect to pending legislation; the investigation of various miscellaneous complaints against communications carriers; and personnel matters within the Commission.

(4) LITIGATION SECTION

The Litigation Section has represented the Commission in the conduct of cases involving telegraph rates, regulations, and practices. Complaints against the communications companies, applications for certificates of public convenience and necessity to install a new experimental coaxial cable, hearing on proposed revised uniform system of accounts for telephone companies, hearings on jurisdiction of the Commission over connecting carriers, private wire contracts, questions on radiotelephone circuits between the United States and France, and on rates of pay for telegraph communications.

III. RADIO DIVISION

GEORGE B. PORTER, *Assistant General Counsel*

Section 307 (b) of the Communications Act of 1934, which provides for the grant by the Commission of applications for license for stations not exceeding 100 watts power without regard to quota, if the Commission finds that such operation will not interfere with the fair and efficient radio service of existing stations, and that the granting will serve public interest, convenience, and necessity, has resulted in a large increase in the number of applications received by the Broad-

cast Division of the Commission, and has also proportionately increased the work of this Division and particularly the Applications Section of this Division. There has also been a substantial increase generally in applications filed during the period covered in this report over the number filed during the previous fiscal year. During the period covered by this report this Division had primary responsibility for legal matters arising in the Broadcast Division. A concise report of its sections is set forth below.

(1) APPLICATIONS SECTION

This section is charged with the duty of preparation of the legal forms covering all types of radio cases; collaboration with technicians in drafting of regulations governing radio; the handling of legal questions involved in formal and informal radio cases prior to submission to the Commission; the preparation of bills of particulars in cases recommended for hearing; the conduct of such investigations concerning the regulation of radio stations as are ordered by the Commission from time to time, and particularly investigations and inquiries into the violation of the Communications Act of 1934, international conventions, Commission regulations, or the operation of licensed stations contrary to the public interest. This section also passes upon the legality of contracts and other legal instruments, prepares opinions upon legal problems such as may be referred by the Commission or the General Counsel under title III of the Communications Act of 1934.

The number of formal and informal applications handled by this section during the past year, including legal review, examination of the facts and the law, preparation of opinions, and, in some cases (594), the preparation of bills of particulars, aggregated 7,500. In connection with many of these applications it was necessary to consider upon and recommend disposition of petitions, motions, and other pleadings filed by applicants or other parties in interest. The number of applications for permits for new stations as well as applications for permits and modification of permits for existing stations increased to 988 in comparison with 374 of such cases handled the year prior. Likewise, applications for licenses and modification of licenses increased to 578 from 258 in the fiscal year preceding. The applications for special authorizations of an emergency or experimental character, including those of an informal nature, rose to 815, while applications for renewal of existing licenses during the year totaled approximately 1,300, leaving 3,854 miscellaneous applications covering various services not specifically enumerated above.

In the past fiscal year there has been a notable increase in complaints to the Commission of stations broadcasting objectionable programs, and the Commission has made an extensive inquiry into these complaints under the provisions of the Communications Act of 1934 and its rules and regulations promulgated pursuant thereto. Formal action was taken with regard to 226 separate objectionable programs broadcast over 152 stations. Some action was taken with regard to a much larger additional number of complaints involving several more stations, but these were adjusted informally. The broadcasting of false, fraudulent, and misleading advertising in various guises

has been the chief source of complaint. In many instances the Federal Trade Commission, the Post Office Department, and the Food and Drug Administration had taken action to curtail the objectionable activities of medical advertisers in printed form, the result being that these advertisers resorted to broadcasting in order to disseminate their misleading and often fraudulent sales propaganda. This section handles all matters of inquiry and enforcement from their initial stages to final Commission action.

(2) RADIO HEARING AND TRIAL SECTION

This section is responsible for the preparation and trial of radio cases and formal radio licensing hearings before the Commission and its examiners. It prepares all necessary orders and pleadings incident to such hearings on behalf of the Commission, and passes upon and advises the Commission as to the legal sufficiency thereof with recommendations and rulings on all pleadings filed in hearings by counsel.

It passes on petitions for reconsideration, petitions for rehearing and review of Commission action, consolidations, continuances, orders for taking depositions, and submits recommendations to the Commission as to what action should be taken thereon.

It also reviews examiners' reports and exceptions filed thereto, passes upon questions of law and evidence presented in the hearings and prepares legal opinions for the Commission on such matters. It also prepares correspondence and conducts interviews involving all matters relating to hearings.

This section also passes upon petitions involving legal questions for grant of licenses without a hearing.

It handles matters pertaining to the unlawful operation of unlicensed amateur radio stations, or the operation of amateur stations by unlicensed operators, and all correspondence relative to such matters. It is responsible for the drafting of orders of the Commission for the revocation of amateur station licenses, the suspension of operators' licenses, the drawing of orders for disbarment of persons from taking examinations for operators' licenses because of misconduct, and conducts the hearings on all matters involving the revocation of licenses by the Commission. It cooperates with other Governmental agencies, particularly the Department of Justice, in connection with the prosecution of parties for the operation of stations without station licenses or persons operating stations without operators' licenses. During the past fiscal year there have been 10 persons indicted and convicted in United States courts for violations of the Radio Act of 1927 and the Communications Act of 1934 There was one person arrested and released upon his promise not to engage further in unlicensed activity. There have been 20 unlicensed stations reported and closed without prosecution with the promise of the operators not to engage further in unlicensed activities. There is now one case pending awaiting the meeting of the grand jury before which it will be presented and indictment requested. There are now six investigations being carried on, but in these cases there is not sufficient evidence yet in hand to warrant prosecution.

During the instant fiscal year this section participated in 261 hearings before the Commission and its examiners; 23 oral arguments

before the Commission; wrote 535 memoranda concerning pleadings in cases pending before the Commission; wrote 113 legal opinions upon examiners' reports; prepared 117 orders and/or memoranda concerning the taking of depositions; and wrote interoffice legal opinions and correspondence, 519 in number.

In connection with the operation of unlicensed amateur radio stations, the Commission's agents have apprehended numerous cases in the past year, and operators of these stations have been barred from examination for radio operators' privileges. For violations of the radio laws and rules of the Commission, the Commission has suspended or withheld 29 amateur operators' licenses and has revoked 5 station licenses.

It cooperates with the Research and Advisory Division in the preparation of legal opinions for the Commission and the Radio Division on matters arising under the Communications Act of 1934 and the rules and regulations of the Commission.

Pursuant to section 307 (c) of the Communications Act of 1934 the Broadcast Division held a public hearing October 1 to 20, inclusive, and November 7 to 12, inclusive, 1934, which was the basis for the Commission's subsequent recommendations to Congress with respect to the allocation of fixed percentages of radio broadcasting facilities to particular types or kinds of nonprofit radio programs, or to persons identified with particular types or kinds of nonprofit activities. The hearings covered more than 13,000 pages of typewritten transcript, and more than 100 witnesses appeared and testified. The Law Department made the arrangements for this hearing, sent out proper notices to interested parties, and otherwise assisted in its conduct.

(3) APPEALS AND DECISIONS SECTION

During the period covered by this report, this section of the Law Department has assumed primary responsibility for the preparation for the Commission of its statements of facts, grounds for decisions and orders in 56 cases heard by the examiners of the Commission and the Commission; for all litigation in broadcast cases (other than criminal) in which the Commission was interested or a party, compiling records, preparing pleadings or briefs, and actual presentation of cases before the various courts; examination of the minutes of all divisions of the Commission; and has cooperated with the Research and Advisory Section in the preparation of memoranda and opinions upon legal questions, interpretations of laws and treaties and drafting proposed legislation and rules and regulations pertaining to radio matters, reviewing and answering correspondence involving questions of law in radio cases.

On July 11, 1934, there were four cases pending in the United States Court of Appeals for the District of Columbia which were transferred from the Federal Radio Commission to the Federal Communications Commission under section 604 (d) of the Communications Act of 1934. All were disposed of during the current year as follows: Of those pending in the United States Court of Appeals for the District of Columbia, 1 was dismissed at the request of appellant and 3 were decided by that court, in which the decision of the Commission was affirmed. During the fiscal year 8 new cases

were filed in the United States Court of Appeals for the District of Columbia, of which 4 were dismissed by the appellants, 1 was decided by that court affirming the decision of the Commission, and 3 are still pending; 3 new cases were filed in the Supreme Court of the District of Columbia and 1 in the United States District Court for the Northern District of Illinois. These are still pending.

The cases decided by the United States Court of Appeals for the District of Columbia are, for the most part, of such importance as to warrant special consideration. Accordingly, a brief report of each case is given below:

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

THE DON LEE CASE

(*Don Lee Broadcasting System* v. *F. C. C.*, 76 F. (2d) 998)

This was an appeal from a decision of the Federal Radio Commission denying an application filed by Don Lee Broadcasting System for construction permit to erect a new station at Redlands, Calif., for the use of the frequency 780 kc with 500 watts power, unlimited time. Filed concurrently with this application were several others, including an application of the Pickwick Broadcasting Corporation (station KTM) for renewal of license upon the assignment of 780 kc, sharing time with station KELW, and also for permission to make a voluntary assignment of license to the Evening Herald Publishing Co. of Los Angeles, and an application by Magnolia Park, Ltd. (station KELW), Burbank, Calif., for renewal of license on the assignment of 780 kc, sharing time with Station KTM and permission for voluntary assignment of license to the Evening Herald Publishing Co.

The application of Don Lee Broadcasting System contemplated and requested permission to construct an entirely new station at Redlands, Calif., and the granting of this application would necessitate the deletion of stations KTM and KELW because their facilities were requested by the applicant. The Commission found that the Don Lee Broadcasting System had not shown a substantial need for additional service in the city of Redlands, and that particularly was this true when, in order to establish such service, existing stations would be deleted.

The court held that the decision of the Commission, in granting the applications of KTM and KELW for renewal and assignment of license and denying the application of Don Lee Broadcasting System for construction permit to erect a new station at Redlands, Calif., was based on substantial evidence and was not arbitrary or capricious.

THE RADIO SERVICE CORPORATION CASE

(*Radio Service Corporation* (*station KSEI*) v. *F. C. C.* Decided May 6, 1935. Not yet reported)

This was an appeal by Radio Service Corporation (station KSEI), Pocatello, Idaho, from a decision of the Commission denying its application to change frequency from 900 to 890 kc and granting the application of Symons Broadcasting Co. (station KFPY), Spokane, Wash., to change frequency from 1,340 to 890 kc. Hearings upon these competing applications were conducted by an examiner

appointed by the Commission because it was not feasible for both stations to operate on the frequency in question. The Commission decided that public interest, convenience, and necessity would best be served by granting the application of station KFPY and denying that of station KSEI. Appellant claimed that the grant of the frequency 890 kc to station KFPY would be a violation of the Davis amendment (45 Stat. c. 263, sec. 5), section 307 (b) Communications Act of 1934 (48 Stat. 1084), the ground for this contention being that the coverage of station KFPY would be increased by this change of frequency, and that the State of Washington in which KFPY was located was already over quota. The court held that such a change does not bring the case within the purview of the Davis amendment. It also affirmed the Commission's decision on the ground that there was substantial evidence to support the decision and that the same was not arbitrary or capricious.

THE MAGNOLIA PETROLEUM CASE

(*Magnolia Petroleum Co. and Sabine Broadcasting Co.* v. *F. C. C.*, 76 F. (2d) 439)

This appeal arose as a result of certain concurrent orders made by the Commission affecting stations KRGV, Harlingen, Tex., and KWWG, Brownsville, Tex. Station KWWG had filed applications for renewal of its license and to assign the license to Port Arthur College. There was also an application for construction permit to move from Brownsville to Port Arthur. Station KRGV made application for a modification of its license for unlimited time, without change of frequency or power and without sharing time with KWWG as theretofore. The Commission granted these applications over the protest of Magnolia Petroleum Co. and Sabine Broadcasting Co., licensee of station KFDM, located at Beaumont, whose protest was based upon the theory that the Commission's decision violated the Davis amendment in that some additional units were granted to a State already over quota, and also that the grant subjected them to an economic injury. The court sustained the Commission and held that, in view of the size of the communities and their respective demands for broadcasting service, it was reasonable to believe that there would be sufficient commercial support to maintain a station in each community, and that the college should not be denied the privilege of maintaining a broadcasting station at Port Arthur because it would have to compete with appellant's station at Beaumont. The court further said that the Commission's increase of facilities was not obnoxious to the Davis amendment because the change left the State of Texas "as near to its precise quota as is practically possible."

THE JENNY WREN CASE

(*Jenny Wren Co., a corporation*, v. *F. C. C.* Decided May 27, 1935. Not yet reported)

This was an appeal from an order of the Supreme Court of the District of Columbia denying a motion made by the Commission to dismiss a bill of complaint for injunction filed by the Jenny Wren Co. against the Commission.

Radio station WHB had filed with the Commission an application requesting leave to increase its hours of operation from daytime to unlimited hours at Kansas City, Mo. The Commission, being unable to determine from an examination of that application that the granting thereof would serve the public interest, convenience, and necessity, designated the same for public hearing. The Jenny Wren Co., licensee and operator of station WREN at Kansas City, then filed a petition to intervene in that hearing on the ground that the granting of that application would affect it adversely in that station WHB is in active competition for material, talent, and commercial revenues, and a modification of its existing license so as to permit it to operate evening hours would seriously affect its operation. The Commission declined to permit WREN to intervene, whereupon it filed a bill of complaint for injunction in the Supreme Court of the District of Columbia praying that the Commission be enjoined from holding any hearing on that application unless and until it was permitted to intervene. The Commission's motion to dismiss was predicated upon two propositions: (1) That an economic interest was not such an interest as entitled the applicant to intervene, and (2) even if it had such an interest as would entitle it to intervene, then it had a plain, speedy, and adequate remedy at law under section 402 (d) of the Communications Act of 1934 and, therefore, should not be permitted to employ an extraordinary remedy. The court decided that the remedy provided for appeal under section 402 (d) of the Communications Act of 1934 was the proper remedy for the Jenny Wren Co. to pursue and that was exclusive. It, therefore, directed that the decision of the lower court denying the motion of the Commission to dismiss the plaintiff's bill of complaint be reversed and the cause remanded with instructions to sustain the motion and dismiss the bill.

REPORT OF THE ENGINEERING DEPARTMENT

DR. C. B. JOLLIFFE, *Chief Engineer*

ORGANIZATION

The Engineering Department was organized into three sections, Broadcast, Telegraph, and Telephone, to correspond to the organization of the Commission. In addition an International Section and a Field Section were set up to coordinate special matters which come under the jurisdiction of all three divisions. The duties of each section of the Engineering Department are as follows:

Broadcast Section.—Technical examination of all matters relating to radio broadcasting; preparation and presentation of expert testimony at hearings; preparation of technical regulations; research on use of the facilities, installation, technical operation, maintenance, and development of the monitoring apparatus and other radio equipment.

Telegraph Section.—Technical examination of all matters relating to record communication by wire or radio; fixed and mobile radio services as assigned; preparation and presentation of expert testimony at hearings; preparation of technical regulations; research on use of facilities; prescribe qualifications and classify radio station operators.

Telephone Section.—Technical examination of all matters relating to telephone communication (other than broadcasting) by wire or radio, including fixed and mobile radiotelephone services as assigned; preparation and presentation of expert testimony at formal hearings; preparation of technical regulations; collaboration with the Telegraph Section in matters relating to teletype, telephoto, and facsimile systems.

International Section.—Coordinate international and interdepartmental relations in connection with wire or radio services; make plans for participation in international conferences and technical meetings; advise concerning technical engineering phases of international treaties, agreements, etc.

Field Section.—Administer the work performed by the Commission's field force in twenty-one districts throughout the United States and Hawaii, including holding of operators' examinations, travel by inspectors, inspections, investigations, and special duties as assigned.

BROADCAST SECTION

I. GENERAL

The broadcast Section examines all matters pertaining to broadcast engineering. The services that are included are: regular broadcast, experimental high-fidelity broadcast, experimental relay broadcast,

broadcast pick-up, experimental visual (facsimile and television) broadcast, and very high frequency experimental broadcast (above 30,000 kilocycles).

II. REGULAR BROADCAST

The basic plan of allocation of regular broadcast facilities placed into effect by the Federal Radio Commission has been continued unchanged insofar as concerns the general plan of allocation of stations by frequencies, power, and hours of operation. However, the provisions of section 307 (b) of the Communications Act of 1934 replaced section 9 of the Radio Act of 1927, as amended (known as the "Davis amendment"), which required that the Commission allocate broadcast facilities, as nearly as possible, equally between the zones and fair and equitably between the States in the zones according to population. Section 307 (b) of the Communications Act of 1934 exempted stations of 100 watts power or less under certain conditions from any restrictions insofar as imposed by the quota. This permitted the licensing of many additional stations of 100 watts power in underserved areas where such stations would not interfere with the fair and efficient service of existing stations.

A comparison of the number of broadcast stations licensed or under construction for the fiscal years 1927 to 1935 is given in table VI.

TABLE VI

	1927	1928	1929	1930	1931	1932	1933	1934	1935
Total number of stations	681	677	606	618	612	604	598	593	623
Total simultaneous operations at night	565	514	400	416	420	397	376	397	421

1. MODIFICATION OF RULES

The Commission revised the rules concerning the determination of quota charges (rules 109–111) so that the quota due each zone and State within each zone was divided into night and day sections. The night quota due and day quota due are considered entirely separate and wholly independent of each other. Day and night interference characteristics of broadcast stations are quite different. The quota due is based on the maximum number of assignments that can be made in the smallest zone in order to saturate the zone with regards to mutual interference. The interference characteristics were determined after several years of continued investigation of the night and day propagation characteristics of regular broadcast stations. The day interference range of stations is appreciably less than at night and therefore more day assignments of power and stations can be made than at night.

Applications for new facilities are considered in two parts if both night and day operation is requested and the proper quota due is considered in connection with each part. Prior to the adoption of this revision, each zone was designated as having a total quota due of 80.00 units. Under the new plan each zone was designated as having due a total of 36.00 units at night and 65.00 units daytime. Accordingly, this made possible the granting of many daytime power

increases to stations. The night quota due and assigned as a result of this change did not differ materially from the night portion of the former system since the smaller zones were already saturated with respect to interference.

A summary of quota units due and assigned for day and night operation by zones, as of June 30, 1935, are given in table VII.

TABLE VII

	Units due		Units assigned		Net amount over or under quota			
					Units		Percent	
	Day	Night	Day	Night	Day	Night	Day	Night
Zone 1	65.00	36.00	44.995	34.455	−20.003	−1.545	−31	−4
Zone 2	65.00	36.00	47.61	38.09	−17.39	+2.09	−27	+6
Zone 3	65.00	36.00	62.045	46.115	−2.955	+10.115	−5	+28
Zone 4	65.00	36.00	65.12	39.43	+0.12	+3.43	+0	+10
Zone 5	65.00	36.00	57.74	45.90	−7.26	+9.90	−11	+27
Total	325.00	180.00	277.51	203.99	−47.488	+23.990	−15	+13

The Commission also changed the limitation of maximum daytime power permitted for regional stations from 2,500 to 5,000 watts in order to improve the daytime service to the public in areas where increases could be made without objectionable interference being caused to other existing stations. This change was made simultaneously with the quota revision. The licensees of a number of stations have taken advantage of this change and have applied to the Commission and have been granted increases in day power. There are a number of other similar applications still pending.

2. NEW STATIONS WITHOUT REGARD TO QUOTA

On October 10, 1934, the Commission issued a statement relating to the licensing of additional 100-watt broadcast stations as provided for in section 307 (b) of the Communications Act of 1934. It was stated that these stations would be allocated only to frequencies designated as local channels, namely, 1,200, 1,210, 1,310, 1,370, 1,420, and 1,500 kilocycles, which are allocated for stations of 100 watts. A need for the station must be shown and it must not cause radio interference with the fair and efficient service of existing stations. In determining the interference that may be caused, the existing power-frequency mileage separation tables of the Engineering Department are followed unless a complete engineering survey shows unusual conditions exist, as a result of which no interference would be caused. The technical requirements for the equipment and operation are the same as for other broadcast stations. These stations established in accordance with the last clause of section 307 (b) of the Communications Act of 1934 are not charged to quota.

A total of 31 construction permits have been issued up to June 30, 1935, authorizing the erection of stations in accordance therewith. In addition, construction permits for eight other stations, which were charged to quota, were issued.

3. OPERATION AT 500 KILOWATTS

On April 17, 1934, the Federal Radio Commission granted station WLW, Cincinnati, Ohio, which operates on the clear channel frequency of 700 kilocycles, special temporary experimental authority to increase power from 50 to 500 kilowatts during the regular broadcast hours of operation. Prior to this time the station had been operated with 500 kilowatts power on 700 kilocycles from 1 to 6 a. m., as an experimental station, using call letters W8XO. This additional authority to WLW was granted in the interest of developing the operation of broadcast stations with higher power in order to determine the interference and the benefits to the public which might result because of better reception generally.

This station was operated with power of 500 kilowatts, using a conventional antenna, until February 11, 1935. The Canadian Radio Broadcasting Commission informed this Commission of interference caused to station CFRB, Toronto, Ontario, which operates on the adjacent channel of 690 kilocycles with a power of 10 kilowatts. On December 21, 1934, the Commission adopted a minute specifying that upon expiration of the outstanding authority it would not be renewed except that the application for extension must be based upon 500 kilowatts operation during daytime and 50 kilowatts operation during nighttime or 500 kilowatts at night using a directional antenna such that the signal in the Niagara Falls-New York area (nearest area to Toronto over which this Commission has jurisdiction) would not be greater than delivered by 50-kilowatt conventional antenna. On January 25, 1935, the Commission denied application for operation with 500 kilowatts at night but granted it for 500 kilowatts during daytime. Subsequently, the licensee applied to the Commission and was granted special temporary experimental authority to install a directional antenna so designed that the effective signals toward station CFRB would be controlled and restricted as required. After erecting the new antenna, surveys to determine its effectiveness were made by the licensee, Canadian authorities, this Commission, and other interested parties. These surveys indicated that the directional antenna was suppressing the signal as required and that the interference to station CFRB was no greater than when station WLW operated with 50 kilowatts conventional antenna. On this basis the Canadian Radio Broadcasting Commission stated it had no objection to the continued operation of WLW with 500 kilowatts at night on an experimental basis.

The effects of the operation with this amount of power have not been fully determined in all respects although sufficient data are available to indicate that the service of the station is greatly improved. Also, the experimental operation being conducted offers a means of further studying the effects and the obtaining of additional data on which to base development of future policy on the operation of clear channel stations with a power in excess of 50 kilowatts.

III. EXPERIMENTAL HIGH FIDELITY BROADCAST

Three frequencies in the band from 1,500 to 1,600 kilocycles have been continued for a special class of broadcast stations. These stations are designated as "experimental high-fidelity broadcast sta-

tions." The frequencies allocated are 1,530, 1,550, and 1,570 kilocycles. On June 30, 1935, there were four such stations in operation.

These stations are licensed for the purpose of carrying on research and development in the radio art and are equipped to transmit high fidelity programs. It is the obligation of the licensees of these stations to carry on research and development in the broadcast technical art which is in advance of the work done by the licensees of regular broadcast stations. The transmission of sponsored programs is permitted on the condition that sponsorship will not interfere with the program of research and that the conduct of experiments will not depend solely upon the sponsorship as a means of defraying the cost of experimentation.

Complete reports of the research and development are required each 6 months with the applications for renewal of licenses. The 4 licensed stations have made 1 report with the renewal application for their first 6 months or less of operation.

IV. EXPERIMENTAL RELAY BROADCAST (INTERNATIONAL BROADCAST)

No additional experiment relay broadcast stations were licensed during the fiscal year, however, the general interest of the public increased considerably in this type of broadcast service due to the greatly increased number of so-called " all-wave " broadcast receivers that permit reception of this class of stations along with the regular broadcast stations. Practically all of the better grade of 1934 model receivers include this all-wave feature.

Many of the European and South American stations, as well as those of other nations were received with regularity both day and night subject to wide variations in fading and interference.

Experience has shown that channel widths of at least 20 kilocycles are required for reasonably good reception and reproduction to be obtained on these frequencies. This is because of the extreme and rapid fading, average weakness of received signals, carrier frequency tolerance required, average receiver characteristics, etc. Even with the directive antenna systems and diversity reception, a carrier frequency separation of 10 to 20 kilocycles is necessary for high-grade reception in the present state of the art.

Assignments are now being made, however, by some nations with separations of only 5 kilocycles and other nations are assigning odd channels with separations even less than this. As a result, this international broadcast service is being greatly impaired by reason of mutual interference. It is very important, therefore, that agreements be made between the various participating nations of the world for the shared use of these frequencies during periods of time when interference may be caused. There are times of the day and seasons when relay stations on certain of the frequencies can transmit and be received in one section of the world but during which time it is impracticable or impossible for other sections of the world to employ satisfactorily the same frequencies because the listening public is not available due to the early morning hours, or because of geographical separations, daylight and darkness distributions, and the seasonal and diurnal changes in propagation characteristics.

The relay broadcast frequencies have been selected as those most suitable for transmission to great distances or international services, but due to these great distances the average signals are always weak and therefore it is quite important that the power assignments be not less than 5 or 10 kilowatts. This is considered the minimum power with which it is possible to make efficient usage of an assignment.

A sound engineering and economic allocation of the experimental relay or international broadcast frequencies requires close cooperation, mutual agreements, and treaties between the nations of the world engaging in this service.

V. BROADCAST PICK-UP

Broadcast pick-up stations in both the temporary and experimental services have increased from 85 on July 1, 1934, to 102 on June 30, 1935. This increase in the number of stations licensed reflects very accurately the increase in interest in picking up of programs where wire line facilities are not available. There were many events of national and local interest picked up by means of these stations and broadcast over regular broadcast stations.

VI. EXPERIMENTAL VISUAL BROADCAST

Although the Commission licensed no new visual broadcast (facsimile or television) stations during the past year, the general interest of the public in television has increased substantially. Interest in television has been stimulated greatly by the activities in certain European countries. Great Britain and Germany have given considerable publicity to their activities in this field. Technically, television has been as highly developed in the laboratories of the private companies of the United States as has been accomplished in Europe.

The several companies carrying on television experiments in the United States have not standardized the several essential elements of transmission. Due to the wide band width necessary (approximately 3,000 to 4,000 kilocycles) and other requirements, frequencies above 40,000 kilocycles are the only ones available for high quality television transmission. In order to transmit a picture of approximately 350 lines and 60 frames per second accompanied by voice, the wide band width is required. If this band is reduced, the detail or clearness of the pictures is reduced accordingly. No commercial receivers are at present available to receive such programs. In order to give television service it is necessary for the different manufacturing companies to standardize their transmissions and produce receivers which can receive all programs transmitted. In short, from a laboratory standpoint television programs can be satisfactorily transmitted and received locally at the present development of the art but before it is finally useful to the public there are many commercial problems to be solved.

VII. VERY HIGH FREQUENCY EXPERIMENTAL BROADCAST

Interest in very high frequency experimental broadcasting has continued to develop; however, the full possibilities of the frequencies

for local broadcasting are developing slowly due to the very limited number of broadcast receivers that will tune to this band of frequencies. The very high frequencies above 30 megacycles have such characteristics that they serve a small area and then beyond this range no interference will be caused to other stations. This is different from the propagation characteristics of the stations on the regular broadcast frequencies (550 to 1,500 kilocycles) which have a moderate primary service area but the signals continue for hundreds of miles so that their interference range is enormous compared with the primary service area. Due to this characteristic of the very high frequencies, it has been considered that they offer a means of supplying strictly local service to any number of centers of population with frequency assignments duplicated at relatively low mileage separations. The individual stations would serve only a few miles, probably in the order of 2 to 10 miles depending upon the power, location of the transmitter, its efficiency, and the radio propagation characteristics of the surrounding terrain.

VIII. TECHNICAL DEVELOPMENTS IN REGULAR BROADCASTING

1. ANTENNA REQUIREMENTS

The service of broadcast stations is determined by two main factors: First, the signal or field intensity, and second, the percentage of modulation. The field intensity is determined by the power, efficiency of the radiating system, the frequency, location of station and radio propagation characteristics of the surrounding terrain. The characteristics of the surrounding terrain cannot be controlled, however, the Engineering Department has promulgated a very complete set of empirical standards for the location of transmitters such as to require locations that give the maximum service. The Commission controls directly the assigned power but heretofore little regulation has been applied to the efficiency of the radiating systems.

A study of the radiating systems of many broadcast stations revealed that in many cases the antennas were inefficient and that improvements could be made such that the coverage of the stations would be increased equivalent to a substantial increase in power. The Commission receives many applications for increase in power for the purpose of improving the service whereas an improvement in the antenna system would effect a greater improvement in coverage than the requested increase of power.

It is considered the obligation of every licensee to make full usage of the assignment already authorized before further facilities are granted. Applicants for new stations must show that efficient use will be made of the requested assignment. So as to have a uniform standard for antennas, the Engineering Department set up minimum standards in regard to antenna dimensions or efficiency that must be complied with before favorable reports will be made to the Commission on requests for increase in facilities. Figure 1 gives the minimum heights of antennas for stations of different powers and classes that must be complied with before it may be considered that the radiating system complies with the requirements of good engineering practice. The heights given are the minimum physical vertical height above the station ground system or counterpoise. It is

generally accepted that a vertical antenna of optimum height is the nearest ideal for general broadcast service. In cases where the licensees claim that the required efficiency may be obtained without the height as specified, then the option is given of determining the

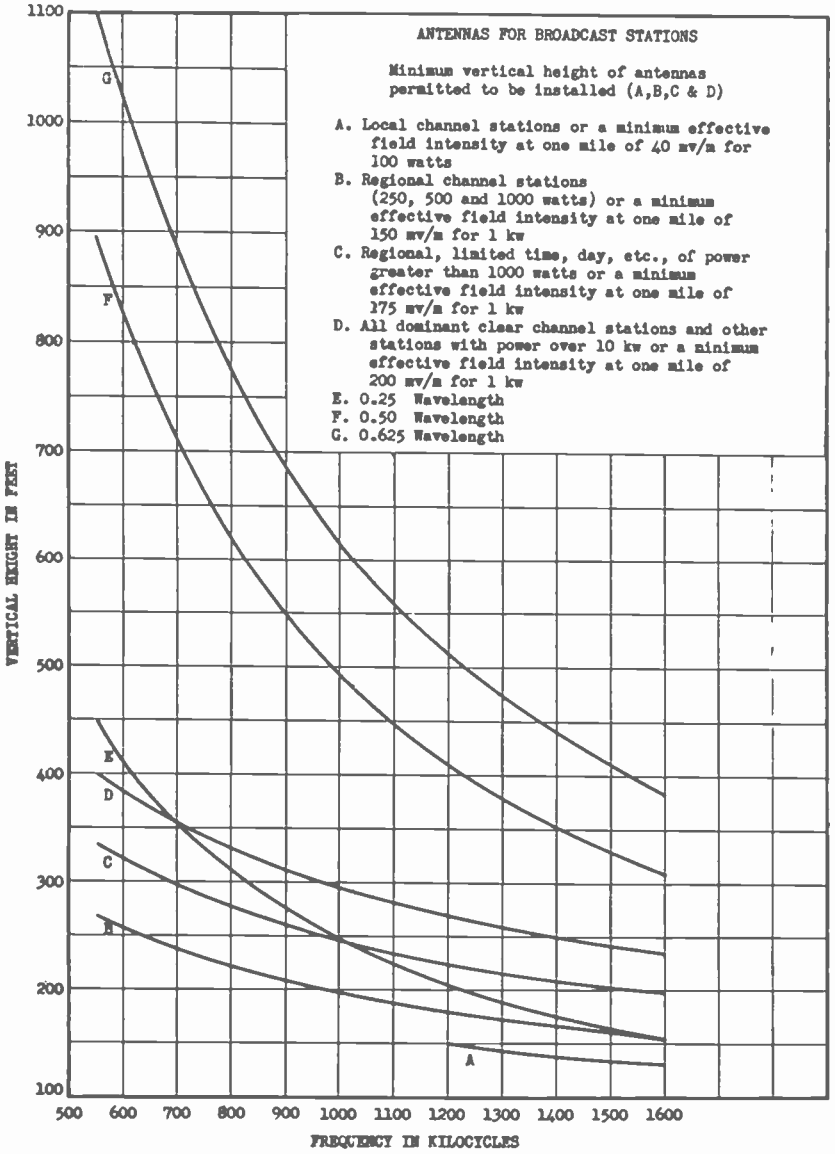


FIGURE 1.—Antenna heights.

field intensity of the station and if this meets the requirements as set out, then it is not necessary to install the height as given. However, it is the obligation of the licensee to prove to the Commission the required efficiency is obtained. The figures on the required field intensity in lieu of height are given on the graph.

2. MODULATION METER

The other essential component of coverage of stations is percentage of modulation of the carrier. Observations were made of the percentage of modulation of many broadcast stations by means of remotely operated cathode ray oscillographs. These observations reveal that the percentage of modulation of different stations varies widely. Some few stations were over-modulating, causing distortion of the program and interference, but a greater number were modulating a low percentage thus appreciably limiting the service rendered by the station.

There has never been developed an entirely satisfactory commercial modulation meter, though it appeared quite possible. With this in mind, the Engineering Department held an informal conference of representatives of all the manufacturers of radio transmitting apparatus, radio operating companies, etc., who might be interested in the design and operation of such a device. The conference was well attended and the subject was thoroughly discussed and it was decided to test and demonstrate several different instruments at the Bell Laboratories in New York City. This demonstration was held on April 29–30, 1935. Various types of instruments made by the different companies were tested before a large group of engineers and expert audio observers. At the close of the fiscal year another meeting was scheduled in Washington, at which time final specifications for the modulation meter were to be written.

3. ALLOCATION SURVEY

Since the allocation of 1928 no specific or basic changes have been made in regulation of the Commission governing the allocation of regular broadcast frequencies. There has been much public and engineering sentiment toward making certain basic changes rather than continuing granting of various applications that did not comply with this basic plan as originally adopted. While much engineering data have been taken by the Field Section of the Commission and at the numerous hearings held before the Commission, and the leading radio engineers throughout the United States have introduced large amounts of data, the Engineering Department was not convinced that it had sufficient information available on which to base a recommendation to the Commission to change the present allocation or to fully substantiate it.

The licensees of 13 clear-channel stations petitioned the Commission that it carry forward a survey in cooperation with them for the purpose of gaining further information. While the petition exactly as made was not accepted, the Commission did decide to carry forward the survey in cooperation with all broadcast licensees. Several informal conferences with all interested parties invited to be present were held when the extent and plan of survey, the prorating of the work, and the setting up of an organization to purchase equipment and management of the survey were decided. During January the survey actually began and the taking of data was closed on May 30, 1935.

The survey was divided into four principal parts, namely:

1. One hundred and sixteen thousand questionnaires were sent to the fourth-class postmasters and to a list of representative rural listeners furnished by the Agricultural Adjustment Administration requesting their preferences in radio stations with respect to satisfaction of reception.

2. The field personnel of the Commission made extended trips and interviewed radio listeners throughout various sections of the United States to obtain their opinions.

3. Continuous recordings were made of the signal received from broadcast stations in 10 different locations of the United States. The number of continuous recorders located at each of these points was from 4 to 8. This is the greatest number of field-intensity recordings heretofore taken and should give reliable information on the signal to be expected at distances from stations of various powers.

4. The radiating efficiency and primary service areas of several representative stations were determined by means of field-intensity equipment located in the Commission's test cars.

The data were all accumulated during the fiscal year 1934–35; however, the analysis, summary, conclusions, and recommendations to the Commision based on the survey were just begun at the close of the fiscal year.

4. DIRECTIONAL ANTENNAS

During the past year a number of licensees and applicants for new stations have installed, or requested the Commission for authority to install, directional antenna systems. These radiating systems are designed to reduce the radiation in one or more desired directions for reduction of interference with other stations which are located in such directions or to increase the field intensity in some other direction so as to give a maximum service over the desired center of population. Where such installations are designed and constructed in accordance with good engineering practice the operation has been satisfactory and the desired results accomplished. In order to obtain maximum utilization of the available facilities and to provide additional service in underserved areas which otherwise would be deprived of adequate service it appears desirable to authorize directional antennas on regional channels after proper showing is made.

Concerning directional antennas on local channels, the Engineering Department recommends that directional antennas not be authorized on local channels for either increasing or decreasing the signal in any direction unless it can be shown definitely that the interests of no other station will be adversely affected and that the general plan for future allocations on local channels will not be impaired. The power of local stations is limited to such that, irrespective of the mileage separation over a certain minimum value, no interference will be caused within the 2 millivolt field intensity contour of stations. If directional antennas are used, power in excess of 100 watts will be radiated in certain directions, which will destroy this fundamental of allocation on such facilities.

On June 30, 1935, 20 stations were operating with directional antennas.

5. EMPIRICAL STANDARDS PREVIOUSLY PUBLISHED

There has been no major change made in the empirical standards previously published (Seventh Annual Report of the Federal Radio Commission). The tables of average daytime and nighttime recommended separations, pages 21 and 23, are still used in determination of interference between stations and presentation of engineering testimony in hearings. No substantial departure therefrom appears to be warranted at this time.

6. LOCATION OF TRANSMITTERS

The Engineering Department has continued the policy previously adopted in regard to the location of broadcast station transmitters in accordance with recommendations set forth in table I on page 32 of the Sixth Annual Report of the Federal Radio Commission, except for one important change. In the case of stations of 50 or 100 watts power, these stations are now permitted to locate in the center of the business section of any city regardless of the population of the city or metropolitan area, provided that it appears that excessive blanketing interference will not be caused and that reasonable efficiency will be obtained. In lieu of the location of the transmitter in the center of the business section, a site outside of the city will be approved, provided it is within ½ to 2 miles from the business or geographical center of the city and the maximum percentage of total population in the blanket area does not exceed one-half of 1 per cent.

TELEGRAPH SECTION

The rules, regulations, and policy established by the Federal Radio Commission relating to radio stations operating in services other than broadcast were accepted by this Commission upon its organization without any immediate changes. The only changes that have been made are those that are required due to the development of the industry and due to changes in policy necessitated by improvements in the art of radio communication. The existing policy in effect with regard to the various services will be discussed under the appropriate heading.

RADIO

FIXED SERVICE

On July 1, 1935, there were 296 point-to-point telegraph stations licensed for fixed public service and 73 point-to-point telegraph stations licensed for fixed public press service in the United States, its territories,[1] and possessions subject to the jurisdiction of the Commission. Although the larger proportion of these stations are licensed primarily for international and overseas communication there are approximately 120 stations within the continental United States which are licensed to communicate with other stations similarly located, on condition that the use of frequencies above 6,000 kilocycles for domestic service shall not interfere with international service.

The Commission defines one station as all of the radio transmitting apparatus used at a particular location for one class of service and operated under a single instrument of authorization. In the international and overseas service a separate license and call-letter group is issued for each frequency employed at a given location pursuant to requirements of the General Radio Regulations annexed to the Telecommunications Convention of Madrid.

The majority of point-to-point telegraph stations in the United States engaged in international or overseas communication are located near the Atlantic, Pacific, and Gulf coasts. All of these stations were authorized, as of July 1, 1935, to transmit public message traffic to approximately 86 foreign and overseas points. In addition, a large number of these stations are licensed to send addressed program material to many foreign points, to the Territory of Hawaii, and to Puerto Rico for rebroadcast by regular broadcast stations at those points. Several of the stations, in accordance with the terms of their licenses, transmit press traffic to ship subscribers at sea. On low frequencies below 100 kilocycles, this transmission at times is addressed exclusively to ships; however, on high frequencies above 3,000 kilocycles the transmission primarily is addressed to and received at

[1] Excluding Alaska.

fixed points and is overheard and copied by authorized ship stations during the point-to-point transmission. This additional service rendered by fixed stations is in accordance with the General Radio Regulations of Madrid.

The outstanding developments in the fixed public radiotelegraph service during the year ending July 1, 1935, were the increase in the number of licensed stations for domestic communication and the installation of improved and higher power transmitting facilities at the larger stations operated chiefly for international service.

New radiotelegraph stations, to provide circuits for the present entirely within the continental United States, were licensed or authorized for the first time at or near the following points:

Washington, D. C.	Seattle, Wash.
Boston, Mass.	Los Angeles, Calif.
Chicago, Ill.	New Orleans, La.
Detroit, Mich.	Fort Morgan, Ala.
St. Louis, Mo.	Mobile, Ala.
Oklahoma City, Okla.	

New stations for foreign and domestic service were licensed for the first time at Brentwood, Long Island, N. Y. These stations will supplement existing facilities, for point-to-point service, in the New York City area. Additional and replacement transmitting facilities were authorized to be installed in existing stations at the following points:

Garden City, N. Y.	Palo Alto, Calif.
New Orleans, La.	Rocky Point, N. Y.
Clearwater, Calif.	Bolinas, Calif.
Hillsboro, Oreg.	Kailua, Territory of Hawaii

Licenses authorizing certain stations at Bolinas, Calif., to communicate with Mukden, Manchuria, were modified on December 12, 1934, in accordance with changed conditions in that country to designate instead Hsinching, which is the new capital, formerly known as "Changchun."

To illustrate the situation relative to potential interference which exists in the field of international high-frequency communication, several radiotelegraph stations on the Pacific coast and in Hawaii which have operated in the overseas service for the past 6 years on certain frequencies originally allocated by the Federal Radio Commission in 1929, recently experienced serious interference caused by a public-service radiotelephone station in Java inaugurating service to the United States, on adjacent frequencies. The Java station had been transmitting in a westerly direction to other points for a considerable period of time and no interference resulted, but when transmission commenced eastward to this country trouble arose. The situation has been temporarily alleviated by the assignment of alternate frequencies to the involved radiotelegraph stations under jurisdiction of the Commission. For other and similar reasons, several changes in high-frequency assignments have been necessitated for a number of United States stations in the fixed public service.

In the fixed public-press service, the principal development appears to be the expansion of multiple-address transmission of press traffic from fixed radiotelegraph stations to subscribers, including many broadcast stations, located throughout the continental United States and Canada, and to ship subscribers on the high seas. Although

these fixed stations are licensed primarily for transmitting press material to fixed international and domestic stations, transmission on the multiple-address principle to a number of fixed receiving stations is recognized as a secondary service.

Many applications requesting construction permits for the establishment of fixed stations to render private service on behalf of private business organizations and inquiries concerning this subject have been received by the Commission. However, in view of the statutory requirement of public interest and because of the definitely limited number of available frequencies for radio communication, such applications are usually designated for hearing. In no case has fixed private service been authorized except where the safety of life and property is involved and the required service cannot be supplied by wire lines or by public service radio-communication companies. All applicants or prospective applicants interested in fixed private service are advised accordingly in order to avoid a formal hearing, which in all probability and in the light of past experience, would not result in a showing of public interest necessary to the granting of the requested authority.

MARITIME

There are 58 coastal telegraph stations in the public coastal service licensed by the Commission for operation in the United States, Territories, and possessions, exclusive of Alaska.

Three coastal telegraph stations and one coastal harbor station are licensed for private service, some of which are operated by the Inland Waterways Corporation relative to communication with their vessels on the Ohio, Missouri, and Mississippi Rivers.

The total number of licensed ship stations on July 1, 1935, was 1,961. Fifty-eight ship stations are licensed to operate on frequencies allocated for use exclusively in Alaskan waters. The number of vessels authorized for intership communication on the medium high frequency 2,738 kilocycles is 25.

Ship stations licensed according to the class of stations were, on July 1, 1935, as follows:

First class[2]	275
Second class	0
Third class	1,686

The number of ship stations licensed for operation on the Great Lakes is approximately:

First class	12
Second class	0
Third class	183
Total	195

There are three fireboats which have licensed radio stations. These are designated as fireboat stations in the emergency service.

The coastal telegraph station formerly located near Cincinnati, Ohio, has been moved to St. Louis, Mo., in order to serve more efficiently ships navigating the Mississippi, Missouri, and Ohio Rivers.

[2] Includes those having a combined first- and third-class license.

The Commission now requires all ship stations aboard vessels of the United States licensed to carry, or carrying, 50 or more persons, including passengers or crew, or both, to maintain continuous hours of service at all times while the vessel is being navigated between ports or places more than 200 miles apart. Action was taken during the year to prevent interruption of the international distress watch aboard ships, reported to have been caused by use of the direction-finder affecting the ships regular receiving antenna. The Commission also adopted a regulation for the purpose of allowing the operation of very low power transmitters aboard cable buoys under the supervision of cable-repair ships carrying licensed operators to assist these vessels in locating the cable buoy by means of their direction-finder, particularly during conditions of low visibility.

The regulations of foreign countries concerning the use of radio in their territorial waters and harbors were studied in reference to the requirements of the Commission concerning its regulations covering such operation for the United States. At present, transmission by ship stations when within the territorial and inland waters of the United States is limited to messages originating on ships with passengers or members of the crew, and on condition that no interference is caused to the normal communication of other radio services. Except for the handling of emergency communications relating to the safe navigation of the vessel or relating to ships in distress, the privileges granted by this regulation are extended only to those foreign ships which belong to countries granting similar privileges to American vessels in their territorial and inland waters.

AVIATION SERVICE

The past year has been particularly marked by a pronounced growth in the use of air transport by the traveling public as well as by those availing themselves of air-express facilities. This growth in the use of air transport has resulted in the addition of many aircraft schedules. In order that this increased use of aircraft might be given proper protection, additional frequencies were allocated to the aviation service by this Commission. There are at present 7 major chains using 56 frequencies for communication with aircraft and 34 frequencies for point-to-point communication for the transmission of messages incident to the business of operation of air transports.

Due to demands on the Commission for frequencies for radio communication for aviation and many other services, it does not appear probable that frequencies could be provided in sufficient quantity to permit the establishment of parallel radio-communication systems. Under the rules and regulations of the Commission, all aircraft desiring to use radio in flying over routes equipped for radio communication are required to use the frequencies and facilities existing on that route. Although the frequencies are limited, it is expected that frequencies can be made available in sufficient number to accommodate, under this policy, the needs of this important service.

One class of station established during the past year of particular interest is that known as the " radio obstruction marker beacon sta-

tion." This type of station is used as a miniature radio beacon to mark the location of the major obstructions to the airways served by the radio range stations established and operated by the Department of Commerce. Installations have been made up to the present time in connection with broadcast station WOR, Newark; WJR, Detroit; WBNS, Columbus; and WLW, Cincinnati.

POLICE

At the time of the last annual report made by the Federal Radio Commission, 11 frequencies were allocated for the use of States and municipalities for police radio purposes under that Commission's rules and regulations. As this number was obviously insufficient to care for the needs of this important service, the question of assigning frequencies to police stations was placed upon the agenda of the conference at Mexico City in 1933 by the American delegation. As a result of this conference, two bands of frequencies were set aside for the use of police departments of North America, namely, 1,650–1,715 kilocycle and 2,300–2,500 kilocycles. Previous to this conference, no international recognition had ever been given to police radio service as operated by this country. In the International Radiotelegraph Convention of Washington, 1927, and also in the International Telecommunication Convention of Madrid, 1932, a frequency between 37.5 and 100 kilocycles was to be set aside to facilitate rapid transmission and distribution of information of value in the detection of crime and pursuit of criminals, the specific frequency to be selected by regional agreement. On a continent such as Europe, in which there are a large number of separate nations, the use of a single radio frequency for the exchange of information is very valuable. However, in North America, due to the extensive wire system and the large territory embraced within the boundaries of the various nations, such a system has never been established. It is, therefore, felt that the international recognition of a police radio system in which orders and information are transmitted from headquarters to mobile police units is a distinct advance in crime control.

Subsequent to the Mexico City conference, an informal conference was held by the representatives of Canada and the United States, as a result of which a number of frequencies in this band were reserved for the primary use of stations other than those of the United States and others for the primary use of stations within the United States. In addition to the bands specifically reserved by the Mexican conference for police purposes, four frequencies were allocated from other bands which may be used by State police stations without the probability of interference to the service for which the frequency was primarily allocated. There are at the present time 34 frequencies allocated by this Government for the use of States and municipalities.

In order to determine whether or not the zone system established under the Radio Commission's policy of administration for municipal police radio was satisfactory and whether or not the zone separation was adequate, a questionnaire was sent to 117 municipalities. Replies were received from 82, of which only 9 expressed themselves as being not satisfied with the existing zone boundaries. There were no mu-

nicipalities objecting to the zone method of frequency assignment or suggesting any other changes in the Commission's policies.

A very thorough study has been made of the police radio situation and an operating plan is provided which permits the assignment of facilities to every State if and when it is desired to establish police radio, as well as permit the operation of police radio stations by all cities in the United States. Under this plan of operation a specific frequency is allocated to each State. Unfortunately there are insufficient frequencies available to permit the assignment of exclusive frequencies. Further, it was not possible to provide a greater separation between State police frequency assignments than 8 kilocycles, which in many cases is leading to interference for which there is no immediate solution.

The frequencies allocated to municipalities are still assigned on a zone basis. All cities within a zone are required to share and cooperate in the use of a single frequency. As a result of the analysis of the questionnaire referred to above, zone boundaries were changed and additional zones established. The new system has apparently eliminated the conditions of which the nine municipalities complained in answer to the questionnaire and the Commission has found no necessity for changing the system as established by the Federal Radio Commission.

The following table shows the growth in the number of State and municipal police stations regularly licensed to use the conventional frequencies between 1,500 and 2,500 kilocycles:

Year	Number of municipal police radio stations	Number of State police radio stations	Year	Number of municipal police radio stations	Number of State police radio stations
1930	34	9	1933	111	12
1931	52	10	1934	153	27
1932	78	13	1935	194	58

Mention should be made at this point of the fact that a large number of cities have been operating general experimental stations on frequencies above 30,000 kilocycles on an experimental basis and in much the same manner as stations operated under the rules governing municipal police stations. Certain specific frequencies have been made available for this purpose and any or all of these frequencies are available to any municipality. In view of the limited range of the very high frequencies it has not as yet been necessary to adopt a zone system of assignment or to make any particular provision for interference suppression. The following table shows the growth of stations of this class:

Year	Number of licensees	Number of stations licensed	Year	Number of licensees	Number of stations licensed
1932	1	2	1934	124	369
1933	32	87	1935	138	393

Under the Communications Commission the number of stations licensed for police activities have largely increased. A questionnaire was submitted in May 1935, to all municipalities and States using radio in connection with their activities, requesting information embodied in the following table:

(1) CITIES AND COUNTIES

Number of municipalities reporting which answered questionnaire	202
Number of municipal police stations operated	133
Number of fixed general experimental (police) stations operated	82
Number of portable mobile general experimental (police) stations operated	[2] 201
Number of cars equipped with receivers only	[2] 5,260
Number of fixed locations equipped with receivers only	[3] 877
Total population served	48,291,780
Total area in square miles	121,816

(2) STATES

Number of States reporting	7
Number of State police stations operated	24
Number of cars equipped with receivers only	759
Number of fixed locations equipped with receivers only	431
Population served	26,809,731
Area in square miles	231,029

Although information was requested as to the number of arrests and value of property recovered as the result of radio, too few cities maintained data on these items to make the report of any value, other than indicating that a large number of arrests had been made and a great amount of property had been so recovered. Municipalities are almost unanimous in reporting that there has been an improvement in the criminal situation since the installation of radio.

In addition to the stations now licensed a number of States and cities are considering the installation of radio systems, but have been unable to do so due to limitations on funds.

It is evident from the results of the questionnaire and also from information received from other sources that radio is becoming as standard in police administration as is the fire alarm system or police wire telegraph system.

Under the provisions of the rules and regulations of the Commission municipal police radio stations are permitted to exchange messages on a point-to-point basis provided those messages are of primary importance to mobile police units. A great deal of this communication has been carried on and many municipalities have been reported for exceeding this authority.

An organization known as the Associated Police Communication Officers has been organized. That organization believes that the close coordination desirable between law enforcement agencies may be strengthened by exchanging all classes of police information on a Nation-wide basis. In order to make this possible a proposed plan is being prepared for an intercity police point-to-point telegraph communication system which is expected to be presented to the Commission for consideration through the International Association of Chiefs of Police. The Associated Police Communication Officers

[2] Means cars, motorcycles, police boats, etc.
[3] Precinct stations, fire and police headquarters, sheriffs' offices, etc.

recognizes the fact that the band of frequencies assigned to the police departments for mobile communication does not offer wide enough scope to permit the necessary growth which is certain to take place in the field of point-to point police communication.

MARINE FIRE STATIONS

The number of marine fire stations has been reduced to two, operated by the cities of Detroit and Boston. Other cities formerly licensed for this class of station have established municipal police radio stations and have found that orders could be transmitted to their fire boats through police facilities with sufficient dispatch to make it uneconomic to operate a station specifically for communication with fire boats. It is believed that in the future when more funds are available, many of these stations will be reestablished and others will be installed. It is not believed that they will be constructed in sufficient number to make necessary the assignment of additional frequencies for communication purposes.

SPECIAL EMERGENCY STATIONS

Special emergency stations were originally established for telegraphic communication throughout a power-distribution system in the case of disruption of regular communication facilities by storms or other emergencies. As a result of the experience of power companies, this service has grown to embrace many other types of public utilities such as water-distribution systems and forest-protection agencies.

As a result of experience in the use of radio during floods the rules governing this service now permit the use of radiotelephony as well as radiotelegraphy, with a separate frequency for each type of emission.

MOTION-PICTURE STATIONS

This class of station was established by the Federal Radio Commission to meet a need for communication in the production of motion pictures. In the making of films for scenes involving a large body of men, groups of aircraft, radiocommunication is necessary to coordinate the movements of the individuals comprising the groups. Previous to the establishment of radiocommunication this was done by means of hand signals and flags with little success. On other occasions it is necessary for motion-picture companies to go " on location " in remote spots not served by the usual communication facilities. Radiocommunication in these circumstances is also invaluable.

Although this service has been established for some years there is only one station at present licensed and very little use has been made of this facility.

GEOPHYSICAL SERVICE

There have been no changes in the rules, regulations, or frequency assignments to the geophysical stations as established by the Federal Radio Commission, nor has there been any marked change in the activity of these stations.

As previously reported by the Federal Radio Commission this class of station is of low power and is for use in connection with the determination of the characteristics of the strata underneath the surface of the earth. Radio is used for the transmission of timing signals between various points strategically located in relation to the area under investigation.

ALASKA

The plan now in force for licensing radio stations in Alaska was formulated by the Federal Radio Commission in cooperation with the United States Signal Corps in 1929. Since the Army is intrusted with the task of assuring reliable communication between the United States and Alaska, and since at the present time it is impracticable for the Commission to establish offices in Alaska, no application is granted until recommendation has been received from the Office of the Chief Signal Officer with respect to the facilities requested.

The main purpose of commercial radio systems in Alaska is to provide adequate facilities to important business interests, such as the mining and packing interests, in places where land line facilities are not available. As the Signal Corps operates the only means of communication between Alaska and the United States the various messages handled from the radio stations operated by these interests are consolidated at strategic points and are routed through appropriate Army key stations. In addition to being responsible for communication with the United States, the Army also operates a communication system within Alaska which is not permitted to be paralleled by commercial radio circuits.

Although as stated above the main purpose of these various radio stations is to handle private communications, all licenses issued provide that those stations must be opened to the general public on a general public service basis.

The period since the establishment of this Commission has been marked by the growth in the number of point-to-point telephone stations established for short distance communication. There have also been established two aviation chains serving Alaskan communities, the largest of which is from Ketchikan to Fairbanks, Fairbanks to Bethel, and Bethel to Nome. The other route reaches from Anchorage through Iliamna down the Aleutian chain.

AMATEUR

There were on June 30, 1935, approximately 45,561 amateur stations licensed by the Commission. Many of these stations are affiliated with the Naval Communications Reserves and the Army Amateur Reserve Corps and regularly engage in practice drills requiring the use of established naval and military operating procedure. A large number of these stations as well as others not affiliated with the Army and Navy continue to cooperate with the American Red Cross in providing temporary emergency radio communication between headquarters and isolated locations or stricken areas in times of disaster or other emergencies occasioned by floods, storms, earthquakes, etc.

There are organized communication networks of amateur stations offering communication facilities to practically all parts of the United States. These stations have been of inestimable value to the public in furnishing, in many cases, the sole means of communication during the existence of emergencies. A number of stations have associated themselves with scientific expeditions and furnish the means of communication between the expeditions and their sponsors in the United States.

On Navy Day, October 27, 1934, the Secretary of the Navy transmitted from the Naval Station at Arlington, Va., and San Francisco, Calif., messages addressed to amateurs, and on Armistice Day, November 11, 1934, the Chief Signal Office, United States Army, transmitted from Washington a message to members of the Army Amateur Reserve Corps. Participation in copying these messages engaged many hundreds of amateur station operators who entered the contest to test their skill and receiving ability.

Partly as a result of the congestion on medium high amateur frequencies and partly because of their eagerness to develop new territory, amateurs have invaded the ultra-high frequency field in great numbers. The result has been the development of new and improved equipment and a better understanding of the characteristics and possibilities respecting the use of these frequencies. Technical progress in the lower frequency assignments has continued and several notable contributions have been developed.

REPORTS OF DISCREPANCY IN OPERATION

All cases of irregular or illegal operation of radio stations other than broadcast, reported by the Field Section, are referred to this section of the Engineering Department for corrective action. During the past year approximately 17 hundred cases were handled. In no case has it been necessary to take drastic steps in order to obtain corrective action, and it is believed that operating conditions in the radio industry have been much improved, particularly the conditions in maritime service.

WIRE TELEGRAPH AND SUBMARINE CABLE

In the United States there are two wire telegraph carriers which offer a Nation-wide domestic public-message telegraph service. These are the Western Union Telegraph Co. and the Postal Telegraph-Cable Corporation. In addition to these 2 major telegraph carriers there are 8 interstate telegraph carriers which serve local areas, as shown below:

Canadian National Telegraphs, Minnesota.
Canadian Pacific Railroad Co., Maine and Vermont.
Central Idaho Telegraph and Telephone Co., Idaho.
Colorado-Wyoming Telegraph Co., Colorado and Wyoming.
Continental Telegraph Co., Idaho, Montana, North Dakota, South Dakota, and Washington.
Interstate Telegraph Co., California and Nevada.
Mountain Telegraph Co., Colorado.
Northern Telegraph Co., Maine.

In addition to the above telegraph carriers, several telephone carriers offer interstate telegraph service. This service is primarily private line (leased wires) and Teletypewriter exchange service.

The Pacific Telephone & Telegraph Co. and its associates and the West Coast Telephone Co. offer a public-message telegraph service in California, Nevada, Oregon, and Washington. The carriers providing this service are:

Bell System companies:
- American Telephone & Telegraph Co., long lines department.
- Bell Telephone Co. of Pennsylvania.
- Chesapeake & Potomac Telephone Co.
- Chesapeake & Potomac Telephone Co. of Baltimore City.
- Chesapeake & Potomac Telephone Co. of Virginia.
- Chesapeake & Potomac Telephone Co. of West Virginia.
- Cincinnati and Suburban Bell Telephone Co. (including the Citizens Telephone Co.).
- Diamond State Telephone Co.
- Illinois Bell Telephone Co.
- Indiana Bell Telephone Co.
- Michigan Bell Telephone Co.
- Mountain States Telephone & Telegraph Co.
- New England Telephone & Telegraph Co.
- New Jersey Bell Telephone Co.
- New York Telephone Co.
- Northwestern Bell Telephone Co.
- Ohio Bell Telephone Co.
- Pacific Telephone & Telegraph Co. (including the Home Telephone & Telegraph Co. of Spokane, Bell Telephone Co. of Nevada, and Southern California Telephone Co.).
- Southern Bell Telephone & Telegraph Co.
- Southern New England Telephone Co.
- Southwestern Bell Telephone Co.
- Wisconsin Telephone Co.

Carolina Telephone & Telegraph Co., North Carolina.
Intermountain Telephone Co., Virginia, Tennessee, North Carolina.
Petersburg Telephone Co., Virginia.
Rio Grande Valley Telephone Co., Texas.
United Telephone Co., Kansas.
West Coast Telephone Co., California and Nevada.

The route miles, wire miles, and telegraph-channel miles as of October 1, 1934, operated by the telegraph carriers and the telephone carriers which offer telegraph service, as reported to the Commission under Telegraph Division Order No. 9, are shown below.

Carrier	Route miles	Wire miles	Telegraph channel miles [1]
Bell System	206,332	15,240,759	1,910,725
Canadian National [2]	45	610	44
Canadian Pacific [2]	223	446	446
Carolina Telegraph	1,367	14,545	670
Central Idaho		(3)	
Colorado-Wyoming	651	651	651
Continental	2,726	14,674	13,292
Intermountain	222	1,771	104
Interstate			817
Mountain	17	273	
Northern	640	2,985	2,958
Petersburg	62	794	10
Rio Grande	130	736	107
United	3,077	20,081	3,135
West Coast	211	258	223
Postal	54,339	358,305	678,255
Western Union	212,290	1,611,878	2,159,286

[1] A telegraph channel is a path which is suitable for transmission of telegraph signals between 2 telegraph stations. A telegraph channel mile is 1 mile of any telegraph channel which provides transmission in one direction at a time.
[2] Lines in the United States.
[3] Not reported.

During the fiscal year ending June 30, 1935, the Western Union Telegraph Co. applied to the Commission and was granted permission to intall the following lines to supplement their existing facilities:

From—	To—	Number of conductors	Wire miles	Cost
Glasgow, Mont.	Fort Peck, Mont.	1	20	$950
San Antonio, Tex.	Randolph Field, Tex.	1	14	972
Bristol, Va.	Appalachia, Va.	2	139	7,509
Yukon, Okla.	Oklahoma City, Okla.	1	13	884
Total		5	186	10,315

The ocean cable carriers subject to the jurisdiction of the Commission are as follows:

The Western Union Telegraph Co.
All America Cables, Inc., International Telephone & Telegraph System.
The Commercial Cable Co., International Telephone & Telegraph System.
The Commercial Pacific Cable Co., International Telephone & Telegraph System.
The French Telegraph Cable Co.
The Mexican Telegraph Co.:
    40 percent International Telephone & Telegraph System.
    60 percent Western Union Telegraph Co.
The Cuban American Telephone & Telegraph Co.:
    50 percent American Telephone & Telegraph Co.
    50 percent International Telephone & Telegraph System.

The Western Union Telegraph Co. operates 10 trans-Atlantic cable circuits between the United States and Europe and gives direct service between New York, Boston, Washington, and Montreal in North America, to the Azores Islands, Ireland, London, Paris, Emden, and Amsterdam in Europe, and intermediate stations en route. Three of these cables are inductively loaded and are operated by multiplex printer systems similar to the methods used extensively in the Western Union domestic service. One of the loaded cables is operated in one direction only, at a time, by means of eight channel multiplex equipment at a speed of 50 words per minute per channel for a total of 400 words per minute. Equipment has been developed by the Western Union engineers for extending any channel of the cable from any city in the United States to any city in Europe in which the Western Union maintains an office. For economic reasons, however, the extension of channels to inland cities is limited because these points have not sufficient trans-Atlantic traffic to utilize a channel to full capacity. Channels of this cable are normally assigned between Montreal and Amsterdam, between Washington and London, and between New York and Shorter's Court, London.

In addition to the trans-Atlantic circuits, the Western Union operates two circuits from the United States to Cuba, connecting at Habana with the West India & Panama Co. to serve the West Indies; one circuit from the United States to Barbados, British West Indies, connecting at Barbados to serve South American points; one land-line circuit from New York to Galveston, connecting with the Mexican Telegraph Co. to provide direct service between New York and Mexico City.

The capacity of the Western Union trans-Atlantic cable system is 325 words per minute from New York to Europe and 440 words per minute from Europe to New York. In addition to this capacity, the eight channel permalloy cable circuit provides 400 words per minute for use in either direction.

All America Cables, Inc., operates five cable circuits between New York, Cuba, the West Indies, Central and South America, and one cable circuit between Florida and Habana, Cuba. These cables are nonloaded and are operated with three element recorder code in both directions at the same time. The fastest of these circuits operates at a speed of 52 words per minute in each direction. By means of automatic relays and selectors, direct service is provided between New York and all major cities of Central and South America.

The capacity of the All America cable circuits between New York and Central and South America is 175 words per minute in each direction.

The Commercial Cable Co. operates six nonloaded trans-Atlantic cable circuits by means of which direct service is provided from New York to the Azores Islands, Liverpool, London, Shorter's Court (London), Paris, Rotterdam, and intermediate stations en route. The Commercial Cable Co. also operates two multiplex printer channels between New York and Emden on one of the Western Union loaded cables. The fastest of the nonloaded cable circuits is operated at the rate of 87 words per minute recorder code in each direction. As this speed is too great for one operator, this capacity is divided into two equal channels in each direction at 43 words per minute per channel.

The capacity of the Commercial Cable trans-Atlantic cable circuits is 320 words per minute from New York to Europe and 310 words per minute from Europe to New York.

The Commercial Pacific Cable Co. operates one trans-Pacific nonloaded cable circuit to provide service between San Francisco, Honolulu, Midway, Guam, Tokio (via Bonin), Manila, and Shanghai. This cable circuit is divided into three sections: (1) San Francisco-Honolulu-Midway-Guam at 23 words per minute, recorder code, in each direction; (2) Guam-Tokio (via Bonin—the cable from Bonin to Tokio is owned by the Japanese Government) at 23 words per minute, recorder code, in each direction; (3) Guam-Manila-Shanghai, at 25 words per minute, recorder code, in each direction.

The French Cable Co. operates two nonloaded trans-Atlantic cable circuits and provides direct service between New York, London, and Paris. Both cables are operated with recorder code, the fastest of which is at a speed of 30 words per minute in each direction. The capacity of the French Cable Co. trans-Atlantic cable circuits is 50 words per minute in each direction.

The Mexican Telegraph Co. operates two nonloaded cable circuits between Galveston, Tex., and Mexico. One cable circuit is operated in conjunction with the Western Union to provide direct service between New York and Mexico City. The other circuit is used for service between Galveston, Tampico, Vera Cruz, Puerto Mexico, Salina Cruz, and Mexico City. Both circuits are operated with recorder code at 40 words per minute in each direction.

The Cuban American Telephone & Telegraph Co. operates four cables between Miami and Habana, Cuba. The company is interested, primarily, in telephone service, but operates telegraph channels on two of the cables to furnish private line service (leased wires) direct from cities in the United States to Habana. On October 16, 1934, four Manual Morse telegraph channels were in actual use on these cables.

The cable plants and land-line plants used exclusively for ocean cable operation are as follows:

	Cable nautical miles	Land line statute miles		Cable nautical miles	Land line statute miles
Western Union	31,578	26,432	French	7,495	1,032
All America	29,235	8,005	Mexican	1,559	1,385
Commercial Cables	23,558	8,782	Cuban American	205	7,187
Commercial Pacific	10,067	168			

The number of messages from telegraph transmission of the principal carriers for the year ending December 31, 1934, as obtained from their responses to Telegraph Division Order No. 12, are shown below:

	Messages
Western Union	4,047,012
All America	1,896,966
Commercial Cables	2,722,647
Commercial Pacific	328,759

RESEARCH

In order to keep the Commission informed on technical developments and improvements in wire and radio communication, considerable technical research of communication literature is necessary. This is particularly true of those developments which are of fundamental significance and importance to wire and radio service. The department studies all new uses of radio and wire communication in order to insure that the benefits of new inventions and developments in wire and radio communication may be made available to the people of the United States, and further that general encouragement may be given to the most effective use of radio as required by the Communications Act of 1934.

There are no fields of engineering in which new devices and inventions are being disclosed at a more rapid pace than in wire and radio communications. The arts, both in theory and practice, are extremely complex and cover a vast field. New devices and improvements, no matter in what radio or wire services developed, are as a general rule immediately reflected in potentialities for improvement and actual application in all other services.

Reports are received of new developments from wire and radio companies which form the basis for many special studies.

A technical library is maintained which contains some 4,500 books and publications, including research papers and scientific journals.

The subjects range through the general principles, equipment, and operating practices of radio, telephonic and telegraphic communica-

tion systems, mathematics, physics, acoustics, experimental technique in research work, evaluation engineering, public-utility regulation, historical data, and other subjects of like nature. Additions are constantly being made to the library as new books and research papers are published.

The number of current scientific journals subscribed to, both domestic and foreign, now numbers over 40. These are routed regularly to the engineers of the department.

During the year a number of reports have been prepared on the history of inventions and developments in telegraphy, telephony, and radio, and the most important improvements in electrical communication during recent years.

Considerable progress has been made in the collection of data on high-frequency wave propagation. High-frequency waves, such as are required in long-distance circuits, within the bands from approximately 2,500 to 20,000 kilocycles, are subject during their travel from transmitter to receiver to certain losses and effects detrimental to satisfactory communication. The losses are due to their natural spreading in their spherical mode of propagation, to repeated refractions or reflections between the ground and the ionized regions of the upper atmosphere, and to absorption during their passage through these ionized regions. The detrimental effects are fading, caused by variation in ionization of the ionosphere and changes in phase or polarization, due to reception via two or more paths between transmitter and receiver, magnetic storms, which often disrupt communication, echoes, and skip-distance phenomena or zones of silence. All but the first of these are functions of the frequency employed. In addition, the ionization of the upper atmosphere is believed due primarily to the photoelectric effect of the sun's rays, and there is variation in transmission with day and night conditions, with the seasons, and with the years.

Notwithstanding the complexity and variability of the above factors, as a result of the work of mathematical physicists, given a specific path over which transmission is desired, it is possible, with certain simplifying assumptions as to the conditions in the medium of transmission, to make predictions, based on theoretical computations and the results of experience, with a fair degree of accuracy as to the most suitable frequencies to use for the given path and the operating power required for satisfactory service.

There is much need of experimental data with which to verify and check the results of theory and the accuracy of formulae advanced. Commercial operating companies are, of course, intensely interested in this work and are providing a large amount of the data required. Many of them have published comprehensive reports on the transmission characteristics of the frequencies used over their circuits. The Commission is in a position to assist materially in this work by obtaining from all of its licensees and coordinating certain technical data on the actual use being made of the frequencies under discussion. This data, after analysis over the seasons and years, will also assist the Commission greatly in making equitable distribution of the frequencies to the various services and in obtaining maximum use of the spectrum, as congestion increases.

The allocation of the ultra-high frequencies to commercial services remains the foremost allocation problem before the Department at the present time. The Commission has been desirous of proceeding with this work as rapidly as possible in order to provide many new radio services by reason of which both the public and the radio industry would undoubtedly receive many benefits. On the other hand, it has been aware of the dangers and disadvantages to both the public and the industry of an allocation prematurely made, and its policy has been to proceed with caution until assured that the allocation may be based on a firm foundation of engineering facts. Every effort has, therefore, been made, not only during the past year, but throughout the past 4 years, to obtain the requisite technical and nontechnical data. Not only must reliable information on the transmission characteristics of the frequencies be obtained, but the many services seeking frequency assignments must be evaluated from the viewpoint of the public's interest. Also complete information on the apparatus available for, and the conditions obtaining within, each service must be at hand. There are a great many factors which must be carefully studied.

Although many valuable contributions of data, both theoretical and experimental, have recently been published, or reported to the Commission, it has not felt that the available material was sufficient to warrant attempting a commercial allocation at this time. Accordingly, the licenses of experimental stations operating on the ultra-high frequencies were renewed in June for the next license period, with the hope that within it sufficient data would be obtained to allocate at least a portion, if not all of the frequency bands, for which apparatus is available.

During the past year the number of radio stations in the experimental service has increased 26 percent. There are now 991 licensed general and special experimental stations of which 845 are under the jurisdiction of the Telegraph Division, 18 under the jurisdiction of the Telephone Division, and 128 under the jurisdiction of the Broadcast Division.

Of these licensees many are verifying and checking the results of theoretical work or engaged in problems of pure research. Others are interested primarily in the improvement of equipment and methods of operation in the various services. A large proportion, particularly those operating on the ultrahigh frequencies, are endeavoring to determine the usefulness of these frequencies for radio communication in services already authorized on the lower frequencies or in new services at the present time unauthorized. The services in which licensees have shown the greatest interest in this respect are aviation, municipal police, State police, broadcast pick-up, broadcast, visual broadcast, special emergency, geophysical, a proposed service for railroads, a proposed service for forestry, fixed public and public coastal, fixed public press and coastal, and ship harbor.

TELEPHONE SECTION

1. ROUTINE

WIRE

An extensive study was made of the Long Lines Department of the American Telephone & Telegraph Co. In connection with this study detailed maps of the Long Lines Department's telephone and telegraph trunk routes were prepared giving the following data:

a. The cable routes and portions of routes of circuits owned by the Long Lines Department.

b. The open wire routes or portion of routes owned by Long Lines Department.

c. The aerial, underground, and submarine cable extensions of or portions of the Long Lines Department where circuits are owned by the Associated Bell Cos. and leased by the Long Lines Department.

d. The open wire extensions of or portions of the Long Lines Department routes, where circuits are leased from the Associated Bell Cos.

e. Bell System routes extending outside the United States.

f. Route lines extending to connecting companies within or outside of the United States.

g. Radiotelephone transmitting and receiving stations owned by the American Telephone & Telegraph Co.

h. Location of repeater stations, toll test stations, and central office equipment owned and leased by the American Telephone & Telegraph Co.

In connection with this study a detailed study and inspection was made of the telephone, telegraph, and radio equipment located in the New York Long Lines Building located at 32 Sixth Avenue, New York. Also, in this connection a detailed study and inspection was made of the cables, loading coils, duct, manholes, and repeater equipment located at the terminal points and repeater stations between New York and Washington on the American Telephone & Telegraph Co.'s New York-Washington toll route. A study was made of the route, make-up, ownership, classification of telephone and telegraph circuits, toll telephone trunks and maintenance personnel of the American Telephone & Telegraph Co.'s New York-Washington and Pittsburgh-Cleveland cables with diagrams of same indicating the size of cables and wire contained therein.

Study of Extent and Employment of the Bell System Assets

A study was made and a chart was prepared of the assets, percentage of common stock owned by the American Telephone & Telegraph Co., along with the percentage owned by others; and the assets

of the following companies comprising the Bell System along with the companies which aid the American Telephone & Telegraph Co. in serving these companies:

The American Telephone & Telegraph Co.
The Long Lines Department of the American Telephone & Telegraph Co.
The Eastern Telephone & Telegraph Co., (Canada).
The Transpacific Communication Co., Ltd.
The Cuban American Telephone & Telegraph Co.
The 195 Broadway Corporation.
The Bell Telephone Securities Co.
The Bell Telephone Laboratories, Inc.
The Western Electric Co.
The Teletype Corporation.
The Electrical Research Products, Inc.
Associated operating companies of the Bell System:

1. The New England Telephone & Telegraph Co.
2. The Southern New England Telephone Co.
3. The Southern Bell Telephone & Telegraph Co.
4. The Chesapeake & Potomac Telephone Co.
5. The Chesapeake & Potomac Telephone Co. of Baltimore City.
6. The Chesapeake & Potomac Telephone Co. of Virginia.
7. The Chesapeake & Potomac Telephone Co. of West Virginia.
8. The Southwestern Bell Telephone Co.
9. The Illinois Bell Telephone Co.
10. The Indiana Bell Telephone Co.
11. The Cincinnati & Suburban Bell Telephone Co.
12. The Ohio Bell Telephone Co.
13. The Wisconsin Telephone Co.
14. The Michigan Bell Telephone Co.
15. The Bell Telephone Co. of Canada.
16. The New Jersey Bell Telephone Co.
17. The Diamond State Telephone Co.
18. The Bell Telephone Co. of Pennsylvania.
19. The New York Telephone Co.
20. The Pacific Telephone & Telegraph Co.
21. The Northwestern Bell Telephone Co.
22. The Mountain States Telephone & Telegraph Co.

The Bell System Toll Routes

A study was made of the extent of the major physical telephone plant of the Long Lines Department of the American Telephone & Telegraph Co. and its 24 associated telephone companies, comprising the Bell System. In this connection a map was prepared on which was indicated the routes taken between the telephone systems of the United States and the telephone systems of Canada and Mexico; the routes taken by transoceanic telephone connections, ship-to-shore telephone service, and the extent of the network of the associated companies' toll routes.

General Long Distance Toll Service

In connection with study of "long distance toll service" a study of the "general toll switching plan" was made along with the transmission features employed on long distance toll circuits.

Special Studies

The following special studies were made by this department:

1. Frequency band width for certain Bell System services.
2. "Board to board" and "station to station" bases for exchange and "toll-rate treatment."
3. Bell System work estimate accounting.
4. Study of data to be covered by the telephone and telegraph carriers in connection with "Applications for certificates of convenience and necessity."
5. Possibility of employing carrier telephony in cable.
6. Utilization of blight-killed chestnut poles.

Certificates of Convenience and Necessity

Applications were made for the following certificates of convenience.

American Telephone & Telegraph Co., and Diamond State Telephone Co. Application for construction of aerial cable line from Dover, Del., to Delmar, Md.

American Telephone & Telegraph Co., and C. & P. Telephone Co., of Baltimore City. Application for construction of aerial cable line from Delmar, Md., to Salisbury, Md.

C. & P. Telephone Co. of Baltimore City, and American Telephone & Telegraph Co. Application for construction of aerial cable line, Queenstown to Princess Anne, Md.

American Telephone & Telegraph Co., and New York Telephone Co. Application for constructing coaxial cable, New York, N. Y., to Philadelphia, Pa.

In each case, field surveys were made of the engineering and construction methods employed by the various companies.

Uniform System of Accounts for Telephone Companies

This department prepared data for use in revising the uniform system of accounts for telephone companies, including attendance in conferences with Accounting Department of this Commission, representatives of State commissions, and representatives of various telephone companies.

Tariff Circular No. 1

Assistance was given in the preparation of data for use in Tariff Circular No. 1, Interstate and Foreign Wire Radio Communications and attended conferences relating thereto with the Accounting Department of this Commission, representatives of State commissions, and representatives of various telephone, telegraph, and radio companies.

RADIO

Point-to-Point Radio Telephone Stations

On June 30, 1935, there were 36 point-to-point radiotelephone stations licensed for international and/or overseas fixed public service. These stations are located at the following points:

Location	Number of stations	For service to—
Rocky Point, N. Y.	[1] 1	Europe.
Lawrenceville, N. J.	12	Do.
Do.	3	South America.
Do.	2	Bermuda.
Hialeah, Fla.	1	Bahamas.
Do.	1	Central and South America, and the West Indies.
Dixon, Calif.	6	Hawaii, Asia, and Australia.
Kahuku, T. H.	2	United States and Philippines.
Hawaiian Islands	8	Inter-island.

[1] Denotes long-wave station. Others are short-wave (high frequency).

In addition to these stations, an additional long-wave (low frequency) station for service to Europe is under construction near Bradley, Maine, and is expected to be completed by February 1937. At the end of 1934 it was reported that three-quarter million dollars had been expended on this project, which from an engineering standpoint, is one of considerable magnitude.

The trans-Atlantic circuits to Europe which are the most important of all the overseas radio circuits, are subject to the greatest natural difficulty in maintaining high-grade reliable service by short waves (high frequencies), particularly during years of maximum sunspot disturbances. In general when the short-wave circuits are commercially inoperative because of this phenomena, service to Europe is continued by use of the long-wave station at Rocky Point, Long Island. The additional long-wave station now under construction in Maine will supplement the service of the Long Island station and will be particularly valuable during these periods.

During the year the Commission authorized additional direct point-to-point radiotelephone circuits for public service from Hialeah, Fla., to Tegucigalpa, Honduras; Kingston, Jamaica, and Santo Domingo, Dominican Republic. In addition, service was inaugurated during the year via existing radio circuits and foreign land wire telephone systems from the United States to the following new points:

Beirut, Syria, August 27, 1934.
Palestine (principal cities), October 15, 1934.
Rabat, Morocco, December 1, 1934.
Algeria (principal cities), December 1, 1934.
Tunisia (principal cities), December 1, 1934.
French Indo China (three cities), December 1, 1934.
Japan (principal cities), December 8, 1934.
Philippines (Laguna and Tayabas), February 3, 1935.
Barranquilla, Colombia. November 8, 1934.
Brazil (seven new points), September 1934 to May 1935.

A total of more than 60 countries may be reached by this public telephone service which utilizes radio for intercontinental connections and for overseas circuits to the principal islands. On June 1, 1935, evening rates for trans-Atlantic calls were made effective at 5 p. m. local time at points of origin in the United States and from 10 p. m. to 10 a. m. at points of origin in Europe.

There are no point-to-point radiotelephone stations licensed by the Commission for fixed private service at any location or for either private or public service entirely within the continental United States. Point-to-point radiotelephone stations in Alaska are mentioned elsewhere in this report.

Telephony in the Maritime Mobile Service

There are 6 coastal harbor radiotelephone stations and 2 coastal radiotelephone stations in the public coastal service licensed by the Commission for operation in the United States, Territories, and possessions, exclusive of Alaska. In addition, six fixed public radiotelephone stations at Dixon, Calif., are licensed secondarily for communication with ship radiotelephone stations.

Two coastal harbor telephone stations are licensed for private service, one of which is operated by the Inland Waterways Corporation relative to communication with their vessel in the harbor of New Orleans. The other station is operated by the city of New York for communication with the municipal vessel *Macon* used in New York Harbor in officially welcoming distinguished visitors to that city. Twenty-six ship stations were licensed to use radiotelephony for connecting with the land-wire telephone system via public coastal harbor stations, not including stations aboard vessels in Alaskan waters.

Public telephone service from points in the United States to ships at sea is available through the medium of regular coastal radiotelephone stations at Ocean Gate and Lawrenceville, N. J., and through the auxiliary use of a point-to-point radiotelephone station at Dixon, Calif. The following-named vessels, all of foreign nationality, which carry American citizens among their passengers, are equipped to render this service:

German ships:
- *Albert Ballin*
- *Bremen*
- *Columbus*
- *Deutschland*
- *Europa*
- *Hamburg*
- *Homeric*
- *New York*
- *Resolute*

Italian ships:
- *Conte Di Savoia*
- *Rex*

British ships:
- *Aquitania*
- *Berengaria*
- *Caledonia*
- *Empress of Britain*
- *Majestic*
- *Monarch of Bermuda*
- *Olympic*
- *Queen of Bermuda*

French ships:
- *Ile de France*
- *Normandie*

Public coastal harbor radiotelephone stations near Seattle, Wash.; San Francisco, Calif.; San Pedro, Calif.; Lorain, Ohio; New York, N. Y.; and Boston, Mass., are licensed for communication primarily with low-power ship telephone stations aboard vessels in and near harbors and on the Great Lakes. These shore radio stations have facilities for direct connection with the public land-wire telephone system and may be used also for telephone service to ocean-going vessels nearing or leaving principal ports. Substantial development of this service appears to depend upon improved business conditions in the maritime and fishing trade. At present, several fishing trawlers are the principal subscribers to the service of the Boston station; in addition two of the largest passenger steamers on Lake Erie recently obtained Commission authority to operate their shipboard radio stations for public telephone communication with the coastal radiotelephone station near Lorain, Ohio, for connection with telephones ashore.

2. PUBLIC RESOLUTION NO. 8

The investigative work called for by the Communications Act of 1934 and Public Resolution No. 8, Seventy-fourth Congress, has been separately organized in the Engineering Department as follows:

I. Patents, Research, Development, and Servicing

(*a*) Patent structure.

(*b*) Cost of developments and method of paying such costs.

(*c*) Methods of operation of Bell Telephone Laboratories and relationship to all subsidiaries.

(*d*) Electric Research Products, Inc., and methods of handling development of byproducts.

II. Manufacturing

(*a*) Cost of manufacturing of equipment and relationship of sales price, including complete study of loading costs.

(*b*) Relationship of manufacturing and sales costs of Western Electric to those of independents.

(*c*) Manufacture of byproducts and the apportionment of costs between byproducts and telephone equipment.

III. Operations (Long Lines)

(*a*) Separation of toll from exchange, including methods of separating property expense and revenue.

(*b*) Separation of technical jurisdiction as between the Federal Communications Commission and State commissions.

(*c*) Relation of operating companies and effect of service contracts.

(*d*) Effect of consolidations on operations.

IV. Valuation and Depreciation

(*a*) Study of all methods of determining depreciation and their application to telephone.

(*b*) Mergers and consolidations.

(*c*) Methods of determining valuation of telephone plant.

I. PATENTS, RESEARCH, DEVELOPMENT, AND SERVICING

Exhibits have been secured from the American Telephone & Telegraph Co. and associated companies in the form of reports upon the patent structure and developments, and upon agreements between the American Telephone & Telegraph Co. and the associated companies, independent domestic companies, and foreign companies. As an aid to this study and in the determination of the extent of the patent structure of the American Telephone & Telegraph Co. and associated companies, independent manufacturers of telephone equipment have furnished material concerning their patent structures and developments.

Studies based upon these reports have been prepared and a comparison made of the data received in those reports. Special studies are under way on the operations of Bell Telephone Laboratories and their relation to all Bell subsidiaries; the cost of development work and the methods of paying such costs and Electrical Research Products, Inc., and methods of handling the development of byproducts.

Examination has been made of the agreements between the American Telephone & Telegraph Co. and associated domestic and for-

eign companies to determine the extent to which such agreements affect communications and the charges therefor.

Data has been secured upon the policies and management of the Electrical Research Products, Inc., and the preparation of studies relative thereto. This material is being correlated in order to give a comprehensive picture of this phase of the telephone industry.

II. MANUFACTURING

In the preparation of detailed definition of the functions, scope, purposes, and objectives of the unit, plans have been developed to disclose a comprehensive picture of the principles involved in arriving at the cost of telephone-apparatus manufacture.

Exhibits have been secured from Western Electric Co. and several "independent" manufacturers concerning their financial statements, charters, bylaws, manufacturing organization, prices, discount sheets, catalogs, and comparative net prices; forms of annual supply contracts, manufacturing and accounting costing practices, etc. Preliminary visits to, surveys of, and reports upon all American manufacturing establishments engaged in general telephone apparatus and equipment supply have been made.

Studies have been started at the plants of all five manufacturers of hand telephone sets of the detailed break-down of labor, material, and overhead costs on each and every manufacturing operation entering into each piece part and assembly, ultimately constituting the completed set in each case. A similar cost break-down has been started of certain cable manufactured at the Point Breeze works of the Western Electric Co. for an interstate toll line between Dover and Salisbury, Md.

III. OPERATIONS

The chief problem of this unit is to lay the groundwork for the determination of the property properly assignable to the furnishing of interstate and international telephone toll service and the expenses and revenues applicable thereto.

This problem is greatly complicated by the use in common of telephone plant for combinations of local exchange and toll service and the use in common of toll plant for rendering both intrastate and interstate toll service. The joint use of plant for nontelephone service must also be taken into account.

Such use of plant in common makes it necessary to allocate the plant as a whole and even with respect to its component parts according to its actual use in practice. Obviously corresponding allocations of expenses and revenues must also be made.

Two principal methods of allocating plant, revenues, and expenses of telephone carriers have been and are now being employed, notably the so-called "board-to-board" and the "station-to-station" bases. A study is under way to analyze both of these methods. In this connection a classification is being made of all plant elements according to use. This classification includes studies of:

Use for exchange service only;
Use for toll service only—intrastate, interstate, or both;
Use for both exchange and toll service;

Use for both exchange and toll service, but primarily provided for local exchange service;
Use for nontelephone service.

With the object of presenting to the Commission the comparative results of allocation of plant elements on the different bases under consideration, it was early planned to make such allocations of part of the plant of one of the associated Bell companies, selecting for the purpose representative cities in its territory embodying plant features found with minor variations throughout the Bell System. Maryland was selected as representative territory of an operating company. The particular representative towns selected for the preliminary survey are: Baltimore, Hagerstown, Frederick, Cambridge, Towson, Arbutus, Indianhead, Reisterstown.

In addition, the Wisconsin-Bradley exchanges adjacent to the District of Columbia have been selected and the outside toll plant of the Chesapeake & Potomac Telephone Co. of Baltimore City.

All three bases of allocation described above are to be used. The particular allocations will be carried out in considerably greater detail than will probably be required in actual allocations to be made later, the purpose being to present to the Commission data which will enable it to determine the particular broad basis it will eventually prescribe for making allocations and the degree of detail required to reach sufficiently accurate results with a maximum saving in effort and expense.

IV. VALUATION AND DEPRECIATION

The work of this unit has been concentrated on codifying the underlying principles and practices to be followed in determining the various factors pertinent to the valuation of public utilities and which are not directly available for its books of account, as well as the processes and procedures necessary for the interpretation and reconciliation of such various factors.

INTERNATIONAL SECTION

GENERAL

The Section, in addition to the special work mentioned below, has carried on its regular work of coordination of international and interdepartment relations in connection with wire, radio, and cable services.

The personnel of the Section is equipped to make translations from foreign languages, and generally to be of assistance to the other departments and sections of the Commission in the carrying out of the various phases of Commission activity.

Particular attention has been given to the question of reducing interference among the various services using the radio spectrum, notably in the broadcasting band involving stations in North America and in the medium high and high bands involving stations throughout the world. A number of interference cases involving interference between the United States and stations in other countries have been studied and the solution has been found by mutual adjustments, requiring in some cases change of frequencies.

INTERNATIONAL CONSULTING COMMITTEE ON RADIO COMMUNICATIONS

The third meeting of the International Consulting Committee on Radio (C. C. I. R.) met at Lisbon, Portugal, from September 22 to October 10, 1934. The United States Government was represented by a delegation of five members, headed by Dr. J. H. Dellinger, National Bureau of Standards, and including Capt. S. C. Hooper, Director of Naval Communications, Navy Department; Maj. Roger B. Colton, Signal Corps, United States Army; Mr. W. V. Whittington, Department of State; and Mr. Gerald C. Gross, Chief, International Section, Federal Communications Commission. The preparatory work of the United States was done under the active direction of the Commission for a period of approximately 1 year prior to the meeting, during which time representatives of all Government departments and commercial organizations interested in radio met from time to time to prepare the proposals of the United States for the conference and to consider the proposals of other nations. The following countries participated in the conference:

Germany, Argentina, Belgium, Vatican City State, Swiss Confederation, Denmark, Spain, United States of America, France, Great Britain, Hungary, British India, Dutch East Indies, Italy, Japan, Lithuania, Morocco, Norway, Netherlands, Poland, Portugal, Rumania, Sweden, Czechoslovakia.

In addition to these governments, a number of private companies and international organizations participated.

This meeting of the C. C. I. R. was noteworthy for the spirit of good will which characterized its work. There was a somewhat greater output of opinions and new questions than at the other two meetings.

This meeting was the first conference held under the new arrangement for official languages set up by the Madrid Convention (art. 21). The International Bureau provided excellent official interpreters and all proceedings were faithfully conducted on a strictly bilingual basis. This was a vast improvement over the situation in previous conferences; in fact, the insurance that all delegates understood what was being said, and the lack of argument over the language problem, contributed in no small degree to the noteworthy spirit of harmony at this conference.

The results of the conference appear in the formal Opinions Nos. 52 to 77, inclusive, which were adopted unanimously by the conference and which include, for the most part, statements of the technical status of the radio art at the time the opinions were expressed of the various questions considered. These questions had a wide range and covered such matters as selectivity and frequency stability of receiving sets; propagation characteristics of various radio frequencies throughout the radio spectrum; the reduction of interference in the shared bands, and related matters.

The next meeting of the C. C. I. R. will be held in Bucharest, Rumania, in the spring of 1937.

INTERDEPARTMENTAL

A considerable amount of work was done by this Section in correlating the radio activities of the Commission with the activities of other Government departments interested in radio.

The Chief of the Section served as secretary of the Interdepartment Radio Advisory Committee and as a member of the technical subcommittee of that committee. In that capacity he aided in the preparation of a revision of previous Executive orders assigning frequencies to Government departments in accordance with the provisions of the Communications Act of 1934. This work resulted in the effective coordination by the Government radio stations and commercial radio stations, providing for the more efficient and economical use of the radio spectrum.

ENGINEERING CONFERENCES ON AUTO-ALARM EQUIPMENT

Several conferences were held by the representatives of the Commission and other Government departments and manufacturers of radio equipment with a view to adopting specifications for auto-alarm equipment which would meet the requirements of the separate international conventions governing the use of radio on shipboard, including the General Radio Regulations annexed to the International Telecommunication Convention of Madrid, 1932. Tentative specifications and approval tests leading to the issuance of approved type certificates for auto-alarm equipment, if the equipment can meet the tests laid down, were adopted.

FIELD SECTION

On August 13, 1934, the Division of Field Operations was transferred to the Engineering Department of the Commission with the designation of Field Section.

The Field Section has jurisdiction over the activities of the 21 field districts and 2 independent monitoring stations; 1 at Grand Island, Nebr., and 1 at Great Lakes, Ill. Five other monitoring stations are operated in conjunction with headquarters offices, at Boston, Baltimore, Atlanta, Los Angeles, and Portland.

DISTRICTS

The headquarters of the 21 field districts are situated as follows:

District	Headquarters	Inspector in charge
First	Boston, Mass	Charles C. Kolster.
Second	New York, N. Y	Arthur Batcheller.
Third	Philadelphia, Pa	Louis E. Kearney.
Fourth	Baltimore, Md	George E. Sterling.
Fifth	Norfolk, Va	Edward Bennett.
Sixth	Atlanta, Ga	George S. Turner.
Seventh	Miami, Fla	Joe H. McKinney.
Eighth	New Orleans, La	Theodore G. Deiler.
Ninth	Galveston, Tex	Louis L. McCabe.
Tenth	Dallas, Tex	Frank M. Kratokvil.
Eleventh	Los Angeles, Calif	Bernard H. Linden.
Twelfth	San Francisco, Calif	V. Ford Greaves.
Thirteenth	Portland, Oreg	Kenneth G. Clark.
Fourteenth	Seattle, Wash	Landon C. Herndon.
Fifteenth	Denver, Colo	Edwin H. Heiser.
Sixteenth	St. Paul, Minn	John M. Sherman.
Seventeenth	Kansas City, Mo	William J. McDonell.
Eighteenth	Chicago, Ill	Harold D. Hayes.
Nineteenth	Detroit, Mich	Emery H. Lee.
Twentieth	Buffalo, N. Y	Milton W. Grinnell.
Twenty-first	Honolulu, Hawaii	James M. Chapple.

The Honolulu office was opened on February 15, 1935. There are employed in the field 67 inspectors, 39 clerks, 1 Diesel engineman, 1 janitor; Washington office, 2 engineers, 2 clerks. Total number of employees, 112.

ADDITIONAL LAND AT GRAND ISLAND, NEBR.

Under authority granted in the First Deficiency Appropriation Act, fiscal year 1935, approved March 21, 1935, funds were made available for the purchase of an additional tract of land containing approximately 10 acres adjacent to that now owned at Grand Island, Nebr. The purchase of this land permitted an extension of the antenna system for monitoring purposes thus increasing the efficiency of this station. Authority was also given to enclose the property, which is being done.

RENTED QUARTERS

Because of there not being Government office space available it is necessary to rent space as follows: Atlanta, Ga., monitoring station; Los Angeles, Calif., office space; Los Angeles, Calif., monitoring station; Chicago, Ill., office space. At Galveston, Tex., the Commission occupies space obtained for it by the local chamber of commerce without the usual rental charge.

SHIP INSPECTIONS FOR SAFETY

The importance of frequent inspections at all ports of ship radio installations as contemplated under the act of June 24, 1910, amended July 23, 1912, the purpose of which is to promote safety of life at sea, is best demonstrated by the fact that during the year all of the vessels so inspected which met with disaster were able to use their radio stations to summon assistance. Among the outstanding cases were the American steamship *Morro Castle*, American steamship *Havanna*, and the American steamship *Mohawk*.

During the year there were 13,384 clearances from our ports of American and foreign ships subject to the above act. During the same period 6,376 inspections were made. On voluntarily equipped ships 3,233 inspections were made.

CAPACITY TEST OF EMERGENCY STORAGE BATTERIES

During this year a standard method of determining the available capacity of storage batteries used as an emergency source of power on compulsorily equipped vessels was inaugurated. These tests developed the inefficiency of the batteries in a number of cases, some of which involved the entire installation, while in others a few defective cells were detected. In each case new installations were made or the defective cells were repaired or removed and new cells added.

INSPECTION OF STATIONS ON LAND

Under existing instructions, inspections of broadcast stations are made semiannually, and annual inspections are made of aeronautical, aircraft, aeronautical point-to-point, airport, coastal stations in the public coastal service, marine relay, municipal and State police, special emergency, and marine fire stations. Special inspections are made of the following: Point-to-point telegraph and telephone stations in the fixed public and fixed public press services, geophysical, experimental, broadcast pick-up, and motion-picture stations and amateur.

During the year 1,205 broadcast station inspections were made.

There were 1,027 inspections made of fixed and land stations other than broadcast.

In addition to the above, 134 inspections were made of the 359 licensed aircraft stations.

BROADCAST ALLOCATION SURVEY

The seven test cars participated in the allocation survey for the purpose of determining the radiation characteristics of clear-channel

stations and the night service area of regional and local broadcasting stations in cities in the areas covered by each car.

The Baltimore test car was used in connection with determining the effective height of the antennae employed at points where receivers and automatic recorders were installed. This trip included the following cities: Lexington, Mass.; Morristown, N. J.; Atlanta, Ga.; Dallas, Tex.; Los Angeles, Calif.; San Francisco, Calif.; Portland, Oreg.; Seattle, Wash.; Salt Lake City, Utah; Denver, Colo.; Grand Island, Nebr.; and Chicago, Ill. The total distance covered on the above trip was 10,484 miles.

UNLICENSED STATIONS

During the year reports were received of operation of 441 unlicensed radio stations. In each case an investigation was made which resulted in discontinued operation of 371, leaving 70 pending cases at the close of the year. These are being investigated.

INTERFERENCE COMPLAINTS

There were received during the year 3,754 complaints of interference with radio reception. As a result of investigations, remedial action was taken resulting in the closing of 3,407 of these cases. The remaining 347 open cases are being investigated. In each case every effort is made to insure relief to the complainant before the case is closed.

FREQUENCY MEASUREMENTS

During the year there were made 13,668 measurements of the frequencies of United States broadcast stations. There were 355 deviations beyond the permitted tolerance of 50 cycles (plus or minus). Of stations other than broadcast, there were 27,877 measurements made and 2,766 deviations reported. Foreign-station measurements numbered 720, with 207 deviations. As a result of monitoring the above United States stations, 2,528 discrepancy notices were served for violations of the international treaty, national laws, and regulations of the Commission. There were reported by the monitoring stations, 86 cases of excessive harmonic emissions.

INSPECTIONS OF STATIONS

There were 6,376 inspections made of the radio installations on American and foreign ships required by law to be equipped with radio apparatus. These inspections developed 191 cases where the sailing of the vessel would have been in violation of the law had not corrective action been taken. In 184 cases the masters were served with official notices. Inspections of voluntarily equipped ships numbered 3,233. These inspections developed 618 cases necessitating notification being made to the master of defects found in the radio installation. In addition 1,595 ship stations were inspected for license; semiannual and special inspections of broadcast stations,

1,205; land stations other than broadcasting, 833; amateur stations, 194; aircraft stations, 134. As a result of inspections of stations other than ships, there were served 747 discrepancy notices.

MISCELLANEOUS ITEMS

Mail handled, incoming, 157,497; outgoing, 140,612. Trips made, 277; miles traveled, 200,989.

FIELD ACTIVITIES

Following is a statement, by districts, of the work performed during the past fiscal year:

District no. and location	Stations inspected							Frequency measurements					
								United States broadcast		United States other than broadcast		Foreign	
	Ship, under act	Ship, voluntary equipment	Ship for license	Land	Broadcast	Amateur	Aircraft	Measurements	Deviations	Measurements	Deviations	Measurements	Deviations
1. Boston, Mass.	375	274	146	42	85	5	0	1,722	18	887	107	65	15
2. New York, N. Y.	2,999	311	253	33	76	10	0	0	0	0	0	0	0
3. Philadelphia, Pa.	142	348	137	14	48	20	0	0	0	0	0	0	0
4. Baltimore, Md.	322	343	166	9	19	21	0	2,488	31	895	111	14	5
5. Norfolk, Va.	144	293	112	9	38	3	0	0	0	0	0	0	0
6. Atlanta, Ga.	0	0	0	76	77	3	5	1,202	22	606	40	6	3
7. Miami, Fla.	106	38	5	33	19	12	1	0	0	0	0	0	0
8. New Orleans, La.	342	165	107	24	60	21	0	0	0	0	0	0	0
9. Galveston, Tex.	25	187	92	20	16	1	6	0	0	0	0	0	0
10. Dallas, Tex.	0	0	0	40	82	2	8	0	0	0	0	0	0
11. Los Angeles, Calif.	692	483	184	57	79	34	14	1,411	31	1,169	308	134	122
12. San Francisco, Calif.	519	427	217	77	41	6	5	0	0	0	0	0	0
13. Portland, Oreg.	106	179	44	21	40	15	7	1,027	30	3,275	215	25	14
14. Seattle, Wash.	402	116	107	60	56	2	8	0	0	0	0	0	0
15. Denver, Colo.	0	0	0	10	40	0	7	0	0	0	0	0	0
16. St. Paul, Minn.	0	0	0	29	62	0	6	0	0	0	0	0	0
17. Kansas City, Mo.	0	8	0	41	94	4	26	0	0	0	0	0	0
18. Chicago, Ill.	16	1	1	33	87	3	18	0	0	0	0	0	0
19. Detroit, Mich.	64	35	12	128	103	31	19	0	0	0	0	0	0
20. Buffalo, N. Y.	22	12	8	36	81	1	0	0	0	0	0	0	0
21. Honolulu, Hawaii [1]	100	13	4	41	2	0	4	0	0	0	0	0	0
Grand Island, Nebr.	0	0	0	0	0	0	0	3,378	180	16,937	1,790	427	23
Great Lakes, Ill.	0	0	0	0	0	0	0	2,440	43	4,108	195	55	25
Total	6,376	3,233	1,595	833	1,205	194	134	13,668	355	27,877	2,766	720	207

[1] Office opened Feb. 15, 1935.

OPERATORS EXAMINED

District no. and location	Commercial								Amateur	
	Extra first	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass.	0	10	70	7	158	8	534	85	241	819
2. New York, N. Y.	1	33	110	22	132	31	401	50	451	1,712
3. Philadelphia, Pa.	0	4	26	6	33	2	201	12	152	568
4. Baltimore, Md.	0	10	19	17	37	5	66	32	53	135
5. Norfolk, Va.	0	3	4	2	30	10	89	11	59	159
6. Atlanta, Ga.	0	3	8	7	49	8	141	1	55	130
7. Miami, Fla.	0	18	38	4	30	11	59	11	55	28
8. New Orleans, La.	0	21	56	4	69	0	42	47	55	0
9. Galveston, Tex.	0	5	16	11	29	3	33	18	22	108
10. Dallas, Tex.	0	3	45	11	95	17	96	8	93	398
11. Los Angeles, Calif.	0	18	81	12	135	26	299	24	283	619
12. San Francisco, Calif.	1	23	88	9	53	39	117	29	125	454
13. Portland, Oreg.	0	14	36	3	55	4	32	154	76	141
14. Seattle, Wash.	0	24	74	20	55	10	229	16	148	193
15. Denver, Colo.	0	0	23	1	67	21	15	0	85	119
16. St. Paul, Minn.	0	0	6	1	36	10	57	3	113	221
17. Kansas City, Mo.	0	0	26	3	148	19	184	157	247	562
18. Chicago, Ill.	0	14	111	16	228	30	402	6	328	1,061
19. Detroit, Mich.	0	1	68	12	128	36	247	13	356	1,340
20. Buffalo, N. Y.	0	1	92	11	108	18	84	7	158	873
21. Honolulu, Hawaii	0	1	3	1	1	0	1	1	14	22
Total	2	206	1,000	180	1,676	308	3,329	685	3,169	9,662

OPERATORS LICENSED

District no. and location	Commercial														
	Extra first	First telegraph	First with first telephone endorsement	First with second telephone endorsement	First with third telephone endorsement	Second telegraph	Second with first telephone endorsement	Second with second telephone endorsement	Second with third telephone endorsement	Third telegraph	Third with first telephone endorsement	Third with second telephone endorsement	Third with third telephone endorsement	Telephone first	Telephone second	Telephone third
1. Boston, Mass.	0	33	13	1	0	46	13	1	0	4	0	1	0	101	4	485
2. New York, N. Y.	1	49	28	2	0	62	15	2	0	10	4	1	2	97	24	385
3. Philadelphia, Pa.	0	10	5	0	0	12	0	0	2	1	0	0	1	24	2	136
4. Baltimore, Md.	1	14	15	2	1	11	5	1	0	7	0	0	3	24	6	24
5. Norfolk, Va.	0	9	4	1	0	2	3	0	0	0	1	0	1	15	6	78
6. Atlanta, Ga.	0	1	2	0	0	3	3	0	0	4	0	0	0	36	2	117
7. Miami, Fla.	1	15	1	0	0	12	4	0	11	1	0	0	0	20	6	46
8. New Orleans, La.	0	24	9	1	1	41	16	1	0	5	0	0	7	48	0	31
9. Galveston, Tex.	0	5	3	0	0	11	3	0	0	5	0	1	2	22	3	30
10. Dallas, Tex.	0	4	0	0	0	28	4	2	1	3	0	1	0	64	20	86
11. Los Angeles, Calif.	0	27	13	0	0	47	35	1	0	3	1	0	1	102	21	293
12. San Francisco, Calif.	1	31	18	0	0	54	6	0	0	6	0	0	1	36	45	111
13. Portland, Oreg.	0	9	3	0	1	15	9	0	1	8	0	0	0	35	9	29
14. Seattle, Wash.	0	12	9	1	0	62	5	2	0	8	3	2	1	35	7	220
15. Denver, Colo.	0	0	0	0	0	5	8	1	0	1	0	0	0	38	19	18
16. St. Paul, Minn.	0	2	1	0	0	5	1	0	0	1	0	0	0	27	8	45
17. Kansas City, Mo.	0	0	0	1	0	7	3	0	0	1	1	0	1	75	12	186
18. Chicago, Ill.	0	6	9	0	0	62	26	1	0	7	4	0	0	101	16	334
19. Detroit, Mich.	0	4	6	0	0	31	9	3	0	5	0	1	1	86	16	209
20. Buffalo, N. Y.	0	1	5	0	0	25	15	1	0	4	1	1	0	55	16	75
21. Honolulu, Hawaii	0	4	0	0	0	3	1	0	0	1	0	0	0	0	0	1
Total	4	260	144	9	3	544	184	16	15	77	15	8	20	1,041	242	2,939

COMPLAINTS AND INVESTIGATIONS

Complaints	Amateur	Unlicensed broadcast	Unlicensed other	Miscellaneous	Total
Carried over from previous year	199	3	8	40	250
Received this year	2,730	66	375	1,024	4,195
Closed this year	2,470	56	315	1,200	4,041
Number of those cases closed requiring personal investigation	301	27	109	300	737
On hand at close of this fiscal year	260	10	60	87	417

REPORT OF ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT

WILLIAM J. NORFLEET, *Chief Accountant*

The Accounting, Statistical, and Tariff Department was established in October 1934 but did not have an appreciable number of employees until March 1935. At the end of the fiscal year the department was still in need of a considerable number of additional employees.

FUNCTIONS

The functions of the department have to do with three related fields of activity—namely (1) accounts, (2) statistics, and (3) tariffs. In general, the department assists the Commission in the administration of sections 203, 213, 215, 219, and 220 and, to a lesser extent, sections 204, 211, 214, and 221, of the Communications Act of 1934, hereinafter called the act, and in the administration of various other sections as directed by the Commission.

ORGANIZATION

The department is divided into five sections, 1 relating to statistical activities, 1 relating to tariff and rate activities, and 3 relating directly to accounting activities. These five sections are designated as follows:

Classification Section.
Depreciation and Cost Analysis Section.
Investigation and Field Examination Section.
Statistical Section.
Tariff Section.

There follows a brief description of the functions of each of the five sections of the department and a résumé of their accomplishments during the fiscal year ending June 30, 1935. In reviewing the activities of each of these sections, however, it should be kept in mind that they were sparsely supplied with personnel prior to the close of the fiscal year as hereinbefore indicated. Notwithstanding this fact, much important work was accomplished during the few closing months of the year.

CLASSIFICATION SECTION

FUNCTIONS

The department, through this section, formulates and recommends, for prescription by the Commission, uniform accounting systems for various classes of communication companies, and revisions and

modifications of such systems from time to time; maintains, through correspondence, an information service for the purpose of interpreting accounting regulations and directing the manner of recording unusual transactions and passing upon the accounting for certain other transactions or adjustments required to be submitted by the carriers to the Commission; formulates and recommends, for prescription by the Commission, rules governing the destruction of carriers' records, forms of and accounting for franks, work-order systems, records of property changes, and related matters; considers the propriety of all exceptions taken by field investigators to accounting performed by carriers; and performs other duties as assigned.

RÉSUMÉ OF ACTIVITIES

While there was a recognized need for a thorough revision of uniform accounting systems for (1) telephone companies and (2) telegraph and cable companies, transmitting by wire; and for the formulation and promulgation, for the first time, of an appropriate uniform system of accounts for radiotelegraph communication service, it became necessary, during the fiscal year ending June 30, 1935, to confine the activities of the Classification Section principally to a revision of the uniform system of accounts for telephone companies. This revision was confined to Interstate Commerce Commission Docket No. 25705, Accounting Rules of Telephone Companies, which was continued as Federal Communications Commission Docket No. 2551. This proceeding involved consideration of numerous recommendations made by State commissions and other interested parties.

As a result of deliberations in the above proceeding, the Telephone Division, on June 19, 1935, issued a revised uniform system of accounts for telephone companies which was ordered to become effective on January 1, 1936.

The Classification Section, during the fiscal year, also engaged in various other activities, including the following:

1. Abstracting of pertinent data relating to communication companies from the topical indices of accounting interpretations maintained by the Interstate Commerce Commission.

2. Drafting (in conjunction with the Engineering Department) of proposed rules governing work-order systems and perpetual records of property changes.

3. Study of proposed changes in the classification of telephone companies for the purpose of accounting regulations.

4. Study of most desirable accounting for telegraph services performed by telephone companies.

5. Study of the regulations, promulgated forms, procedures, etc., of the Securities and Exchange Commission as auxiliary guides to the advisability of changing the regulations and terminology relating to the accounting for financial transactions of communication companies.

6. Handling of notifications relative to the accidental destruction of records of communication companies and consideration of changes in existing regulations governing the destruction of records (which regulations became effective on Jan. 1, 1920) to meet present-day conditions in the industry and to promote cooperation between the

regulatory activities of this Commission and the activities of certain other governmental agencies.

7. Consideration and recommendations relative to certain applications by communication companies for permission to construct new lines or to supplement existing facilities; and the formulation of recommendations to the Telegraph and Telephone Divisions with reference to suitable requirements to be laid down in the case of such applications.

DEPRECIATION AND COST ANALYSIS SECTION

FUNCTIONS

Depreciation

The Department, through the Depreciation and Cost Analysis Section, advises the Commission with reference to the prescription of classes of depreciable property, the methods of determining depreciation bases, and the rates applicable thereto; conducts necessary field examinations in connection with depreciation studies; prepares statistical tables in such form as to make depreciation accounting of the various communication companies readily comparable; and makes recommendations, from time to time, with reference to proper depreciation accounting.

Cost Analysis

The Department, through this section, also makes cost analyses relating to various communication services and operations and with reference to plant properties; makes investigations relative to the feasibility of cost-accounting systems for communication companies and makes recommendations with reference thereto; and performs various other duties as assigned.

RÉSUMÉ OF ACTIVITIES

Since depreciation studies in most instances have not been exhaustively pursued by governmental bodies, and since the communication industries have never been called upon to justify their determinations of depreciation, it was considered necessary to first assemble factual information relative to depreciation experiences and practices of communication companies. The early work of this section, therefore, was and is a survey of the practices of various classes of communication companies in regard to depreciation and the problems involved in the regulation of these practices.

A brief mention of some of the subjects of this investigation in its initial stage and of certain related activities follows:

1. Study of the relationship of depreciation reserves of many large telephone and telegraph companies to plant, capital, and other accounts, and the relationship of annual depreciation charges to revenue and related accounts.

2. Field examinations at the offices of two large telephone companies for the purpose of determining the retirement history of those carriers, the sufficiency of reserves created through annual deprecia-

tion charges, and the experience of those companies in toll service as compared with their experience in exchange service.

3. Examination of the records of a large company engaged in radiotelegraph service in order to determine the experience of this carrier as distinguished from wire-communication companies.

This examination, which is not yet completed, is important because this company represents a comparatively new industry which has received only limited study with reference to depreciation practices.

4. Geographical analysis of exchange rates of telephone companies and study of possible relationships to depreciation practices of companies involved.

Various other activities were engaged in by this section, such, for instance, as traffic-density studies at certain offices of Western Union Telegraph Co. and Postal Telegraph-Cable Co., which were performed at the request of the Telegraph Division.

INVESTIGATION AND FIELD EXAMINATION SECTION

FUNCTIONS

The Department, through this section, conducts regular and special field examinations of the accounts, records, and memoranda of communication companies subject to the act; considers, investigates, and makes recommendations (in conjunction with the classification section and the engineering department) relative to applications of communication companies for permission to make extensions of lines or to supplement existing facilities; classifies telephone properties as between intrastate and interstate service; and performs various other functions as assigned. The usual objects of the regular field examinations are to see that accounting regulations are being complied with and that records are being preserved as required, to detect deficiencies in existing regulations, to check additions to plant-investment accounts for overstatement of amounts, to pass upon distributions of large repair items to investment and expense accounts, and to secure other necessary information needed regularly in administration of the act. Special field examinations and investigations may be made from time to time, as required by the Commission, to secure other information deemed necessary by the Commission in the regulation of communication companies.

RÉSUMÉ OF ACTIVITIES

Several important field examinations were being conducted by this Section at the close of the fiscal year. These examinations included a cost audit of a large manufacturing plant to determine the actual costs of certain telephone-plant units involved in new construction of telephone toll-exchange cable. Two other important field examinations which were in process at the end of the fiscal year involved analyses of the accounts of (1) an important radiotelegraph company, and (2) a large telegraph company engaged in wire-communication service. These examinations were for the purpose (among other things) of securing information deemed necessary (1) in the formulation, for the first time, of a uniform system of accounts for radiotelegraph carriers; and (2) in a necessary revision of the exist-

ing uniform system of accounts for telegraph companies which was prescribed for companies engaged in wire communication and which become effective on January 1, 1914.

STATISTICAL SECTION

FUNCTIONS

The Department, through this Section, conducts special studies into economic problems affecting communication companies; formulates and recommends, for prescription by the Commission, appropriate forms and schedules for annual, monthly, and special reports of communication companies; examines the general balance sheets and income and surplus statements contained in the annual reports of these carriers to the Commission; prepares monthly summaries of the operating returns of communication companies, which reports are distributed generally throughout the country to interested parties; compiles, and prepares for publication, various statistical data relative to communication companies, including a comprehensive annual compilation of financial and operating data relating to companies subject to the act; prepares and recommends, for prescription by the Commission, special report forms for holding companies which control communication companies subject to the act; compiles statistical information with reference to such holding companies; develops, through economic and statistical research, information for the use of the Commission in rate and other proceedings; and performs various other duties as assigned.

RÉSUMÉ OF ACTIVITIES

All communication companies subject to the act, except telephone companies whose operating revenues are $50,000 per year or less, are required to file annual reports on prescribed forms. Pursuant to this requirement, 286 telephone companies filed annual reports for the calendar year 1933, of which 187 were class A companies and 99 were class B companies. For the calendar year 1934, 217 telephone companies filed annual reports, of which 145 were class A companies and 72 were class B companies. Annual reports of 15 telegraph and cable companies and 22 radiotelegraph companies were also filed during the fiscal year.

Telephone companies whose operating revenues exceed $250,000 per year are also required to file monthly reports of their operating results, in addition to the annual reports above mentioned. Heretofore 103 such companies filed monthly reports with the Interstate Commerce Commission. During the fiscal year ending June 30, 1935, only 60 such companies filed monthly reports with this Commission, and 43 claimed exemption under section 2 (b) (2) of the act. The companies that are now filing monthly reports, however, represent the bulk of the telephone business of the country.

The Statistical Section also conducted studies and made recommendations relative to appropriate forms of annual reports of holding companies to be prescribed by the Commission.

Studies were also in progress at the end of the fiscal year looking toward the adoption of a plan to secure, on a monthly basis, statistics

concerning employees of carriers engaged in communications. This plan was being developed in collaboration with other departments of the Government interested in employment statistics.

Compilations of statistical data were furnished, upon request, during the fiscal year, to other agencies of the Federal Government, universities, banking institutions, insurance companies, State commissions, labor organizations, and other groups engaged in economic research.

There are submitted herewith, as appendix A, certain tables numbered I to XII, inclusive, and certain charts numbered 1 to 6, inclusive, pertaining to communication companies.

TARIFF SECTION

FUNCTIONS

The Department, through the Tariff Section, receives and examines all tariffs and tariff supplements filed with the Commission; formulates and recommends, for prescription by the Commission, regulations governing the form and manner of filing tariffs and traffic contracts; examines the provisions of traffic contracts in their relation to tariff provisions; conducts broad general surveys of rate structures, paying particular attention to classes of service and relationships between the various rates, in order to detect discriminations and to make recommendations for rate adjustments deemed to be in the public interest and to be productive of wider utilization of communication services; prepares press releases with reference to rate changes or changes in rules, regulations, classes of service, or conditions under which services are rendered; makes recommendations to the Commission with reference to rate changes proposed by communication companies, particularly on the question as to whether such proposed rate changes should be suspended by the Commission for inquiry as to their lawfulness; passes upon and makes recommendations relative to applications by communication companies for special authority to make rate changes effective on less than the usual notice to the public; in the event of rate hearings or suspension proceedings, prepares exhibits and other data for use by the Commission; prepares rate and traffic information for the Commission and other employees and departments of the Commission, and, under proper circumstances, for other departments and officials of the Government; and maintains a public reference room where all tariffs are made conveniently available to members of the public who seek rate or traffic information.

RÉSUMÉ OF ACTIVITIES

Tariff schedules were filed by 105 communication companies during the fiscal year. These schedules comprised 4,829 separate tariff publications. Of these publications, 3,558 were filed by telephone companies and 1,271 by telegraph companies. Carriers made 150 applications for special authority to effect changes in their rates, regulations, classifications, or practices on less than 30 days' notice. Authority to make such changes was granted in 134 instances and was denied in 15 instances. In one instance the application for such authority was withdrawn.

In 10 instances tariff schedules tendered for filing by communication companies were rejected because of failure to give lawful notice of their effective date.

A reduction in telephone rates between the hours of 7 and 8:30 p. m., in a section of the country comprising several States, was brought about through the Commission suspending certain schedules containing proposed rate changes. The suspension proceeding did not result in a hearing because voluntary revisions of the tariff schedules were made by the communication companies involved, following the suspension order by the Commission.

Numerous exhibits and rate memoranda were prepared at the request of the Telephone and Telegraph Divisions of the Commission, including rate and traffic exhibits which were introduced in evidence in the formal hearing on telegraph services held pursuant to Telegraph Division Order No. 12 and similar data which were used in drafting Telegraph Division Order No. 15.

Considerable attention was given to the task of formulating, for the first time by a Federal agency, suitable rules and regulations governing the construction, filing, and posting of tariffs by communication companies. A tariff circular containing such rules and regulations was being put in final form at the close of the fiscal year.

Rate information was supplied on a number of occasions to other departments or employees of the Commission, to other governmental departments, including State commissions, and, to a limited extent, to members of the public. The public reference room was visited frequently by members of the public for the purpose of inspecting or examining the tariffs on file.

APPENDIX A

STATISTICAL DATA CONCERNING CARRIERS ENGAGED IN WIRE OR RADIO COMMUNICATIONS

The following tables and charts are assembled into two major groups. The first group relates to annual reports for the calendar year 1934, and the second group refers to monthly reports received by the Federal Communications Commission.

ANNUAL REPORTS

The data included in table 1 cover reports received from 145 class A telephone carriers (including 2 period reports filed by a reorganized company) and 72 reports from class B telephone carriers. Selected financial and operating data for 15 telegraph and cable carriers are shown in table 2 and for 17 radiotelegraph carriers in table 3. In addition, five reports were filed by radio carriers, but as the returns were incomplete they could not be used for tabulation purposes. These five reports were received from the Aeronautical Radio, Inc.; City of Seattle, Harbor Department; Gulf Radio Service (George Collins Warner, Jr.); Mayor and City Council of Baltimore, Md.; and Pacific Communication Co.

TABLE I.—*Telephone carriers reporting to the Federal Communications Commission*

[Selected financial and operating data for the calendar year 1934]

Item	Class A carriers	Class B carriers	Total
Investment in telephone plant	$4,551,139,433	$22,187,678	$4,573,327,111
Other investments	2,648,721,769	22,405,645	2,671,127,414
Cash	52,344,184	846,269	53,190,453
Material and supplies	55,454,210	897,508	56,351,718
Total current assets	427,344,831	3,778,494	431,123,325
Capital stock	4,331,325,300	17,872,784	4,349,198,084
Funded debt	1,036,343,761	11,195,216	1,047,538,977
Total current liabilities	92,206,656	1,579,723	93,786,379
Depreciation reserve	1,023,420,212	5,419,304	1,028,839,516
Total surplus	460,289,770	2,685,720	462,975,490
Operating revenues	960,376,209	4,135,808	964,512,017
Operating expenses	676,489,875	3,204,935	679,694,810
Operating taxes:			
Other than U. S. Government taxes	70,671,781	254,379	70,926,160
U. S. Government taxes	23,161,621	94,639	23,256,260
Total	93,833,402	349,018	94,182,420
Net operating income	189,945,221	574,313	190,519,534
Net income	259,215,188	323,463	259,539,651
Dividends declared	310,026,822	390,758	310,417,580
Plant mileage in service:			
Miles of pole line	606,768	30,092	636,860
Miles of wire in cable	78,327,402	129,228	78,456,630
Miles of aerial wire	4,843,736	119,246	4,962,982
Total miles of wire	83,171,138	248,474	83,419,612
Underground conduit-miles of single duct	127,248	184	127,432
Central offices—Type of switchboard:			
Magneto-manual	5,802	395	6,197
Common battery-manual	2,926	84	3,010
Auto-manual	39	6	45
Dial (automatic) system	1,162	21	1,183
Total	9,929	506	10,435
Total company telephones	14,718,484	135,014	14,853,498
Service telephones	332,782	12,135	344,917
Private-line telephones and other stations	97,410	27	97,437
Total telephones	15,148,676	147,176	15,295,852
Average number of local calls originated per month	2,117,680,750	17,010,444	2,134,691,194
Average number of toll calls originated per month	64,518,004	567,308	65,085,312
Average number of telephones	14,820,924	141,304	14,962,228
Total number of employees in service at close of year	275,620	2,301	277,921
Total compensation	$391,847,760	$1,870,017	$393,717,777

TABLE II.—*Telegraph and cable carriers reporting to the Federal Communications Commission*

[Selected financial and operating data for the calendar year 1934]

Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock
Total	$501,753,560	$55,057,183	$17,312,000	$9,843,498	$64,020,428	$166,398,823
All America Cables, Inc.[1]	32,572,731	3,230,824	2,668,478	324,477	5,151,166	27,037,100
Canadian Pacific Ry. Co. (lines in United States)	(2)	(2)	(2)	(2)	(2)	(2)
Central Idaho Telegraph & Telephone Co	104,517				9,199	100,000
Colorado & Wyoming Telegraph Co	38,710		33,617	284	35,378	56,300
Commercial Cable Co	31,422,138	30,043,654	585,092	458,161	16,514,716	25,000,000
Commercial Pacific Cable Co	22,971,723		1,792,741	175,078	7,000,815	6,000,000
Continental Telegraph Co	299				1,773	5,000
French Telegraph Cable Co.[3]	233,381	1,606,993	38,327	246,167	865,560	709,430
Great North Western Telegraph Co. of Canada [4]	(2)	(2)	(2)	(2)	(2)	(2)
Interstate Telephone & Telegraph Co.[4]	25,702				1,909	[5] 1
Mackay Companies (The) (Postal Telegraph-Cable Co.)	82,247,420	942,651	1,772,838	967,850	5,563,268	
Mexican Telegraph Co	3,127,585	3,832	206,140	12,015	693,083	2,685,500
Mountain Telegraph Co	9,378		574		9,667	15,000
Northern Telegraph Co	336,315		45,813	5,277	83,203	262,600
Western Union Telegraph Co	328,663,661	19,229,229	10,168,380	7,654,189	28,090,691	104,527,892

Name of carrier	Unmatured funded debt	Total working liabilities	Accrued depreciation	Total corporate surplus	Operating revenues	Operating expenses	Tax accruals
Total	$126,564,000	$35,174,102	$106,036,082	$107,178,422	$119,053,078	$102,802,369	$4,354,451
All America Cables, Inc.[1]		474,937	10,421,748	2,188,338	4,409,109	3,473,310	274,168
Canadian Pacific Ry. Co. (lines in United States)	(2)	(2)	(2)	(2)	3,364	16,528	(2)
Central Idaho Telegraph & Telephone Co				13,716	983	523	110
Colorado & Wyoming Telegraph Co		2,662	10,501	4,625	14,528	8,760	1,229
Commercial Cable Co	20,000,000	2,376,811	22,607,349	6,212,444	4,424,021	3,502,066	68,041
Commercial Pacific Cable Co		256,277	19,949,060	865,465	1,255,908	747,743	93,135
Continental Telegraph Co		1,773			14,616	34,389	1,760
French Telegraph Cable Co.[3]		1,552,269		[7] 444,235	[8] 319,840	[8] 307,875	[8] 17,583
Great North Western Telegraph Co. of Canada [4]	(2)	(2)	(2)	(2)			324
Interstate Telephone & Telegraph Co. [4]	50,000	25,009	6,345	[9] *49,969*		1,644	500
Mackay Companies (The) (Postal Telegraph-Cable Co.)		19,173,943	20,628,747	[9] *6,462,506*	21,016,334	20,227,601	490,000
Mexican Telegraph Co		50,943	716,910	308,307	302,113	249,545	3,300
Mountain Telegraph Co		527	9,378	[9] *5,860*	3,528	3,324	240
Northern Telegraph Co		6,383	29,527	123,329	58,506	43,596	2,561
Western Union Telegraph Co	106,514,000	11,252,568	31,656,517	103,536,098	87,230,228	74,185,465	3,401,500

Name of carrier	Operating income	Net income	Dividends declared		Revenue messages transmitted	Employees	
			Amount	Rate percent		Number on June 30	Total compensation for year
Total	$11,024,120	$1,057,874	$1,796,498		160,700,029	68,621	$73,129,228
All America Cables, Inc.[1]	601,631	707,028	540,742	2.00	1,896,966	1,664	1,813,352
Canadian Pacific Ry. Co. (lines in United States)	(2)	(2)			15,115	8	7,908
Central Idaho Telegraph & Telephone Co	350	350			[10] 1,380	10	(11)
Colorado & Wyoming Telegraph Co	4,539	1,608			[10] 14,832	[12] 23	7,242
Commercial Cable Co	829,914	[9] *67,553*	500,000	2.00	2,722,647	1,595	2,156,300
Commercial Pacific Cable Co	415,030	653,924	740,000	(13)	338,156	291	401,450
Continental Telegraph Co	[9] *21,548*				[10] 155,532	[14] 37	7,472
French Telegraph Cable Co	[3] [9] *5,618*	[3] [9] *9,088*			[9] 207,936	[9] 98	159,379
Great North Western Telegraph Co. of Canada [4]	[9] *324*	17,546					
Interstate Telephone & Telegraph Co [4]	[9] *2,144*	[9] *4,278*					
Mackay Companies (The) (Postal Telegraph-Cable Co.)	108,733	[5] *2,521,381*			[10] 32,812,704	15,276	13,418,141
Mexican Telegraph Co	48,868	22,597			[10] 284,100	[15] 102	140,108
Mountain Telegraph Co	[9] *37*	[9] *779*			6,253	[16] 9	3,000
Northern Telegraph Co	12,076	14,816	15,756	6.00	[10] 146,808	51	33,000
Western Union Telegraph Co	9,032,650	2,243,084			[10] 122,097,600	49,457	54,981,876

[1] Figures include data for the Cuban All America Cables, Inc.
[2] No data reported as these lines are an integral part of the Canadian Pacific Railway System, and separate capital accounts are not kept.
[3] The comparative general balance sheet of this carrier has been rearranged to conform with the Uniform System of Accounts, and the data reported in francs have been converted into dollars at the average exchange rate for the year 1934 of $0.065688.
[4] Lessor company.
[5] No data reported as these lines are an integral part of the Canadian National Telegraph Co., and separate capital accounts are not kept.
[6] Represents book liability for 1,000 shares of common stock without par value.
[7] Represents $54,993 reported as "Reserve for contingencies fund, interest on bonds, and bonds payable", and $389,242 reported as "Reserve required by law."
[8] Figures cover operations of New York City office.
[9] Deficit or other reverse item.
[10] Estimated on basis of the number of messages transmitted during the month of January.
[11] No compensation reported; employees are carried on the pay roll of the Pacific & Idaho Northern Ry. Co.
[12] Includes 14 employees who receive no compensation from respondent.
[13] Represents 9 percent on $6,000,000 of capital stock outstanding, and 5 percent on $4,000,000 of capital stock retired during the year.
[14] Includes 10 employees who receive no compensation from respondent.
[15] Includes 6 employees who receive no compensation from respondent.
[16] Includes 5 employees who receive no compensation from respondent.

TABLE III.—*Radiotelegraph carriers reporting to the Federal Communications Commission*

[Selected financial and operating data for the calendar year 1934]

Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock	Unmatured funded debt
Total	$30,425,724	$11,781,898	$1,356,994	$697,735	$4,962,577	$7,318,857	$3,789,000
Central Radio Telegraph Co	12,181		1,467		1,846	12,000	
Globe Wireless, Ltd.[1]	933,662		658	4,681	203,601	[2] 683,700	
Hearst Radio, Inc	197,820	331,373	8,383	6,193	73,986	1,000	125,000
Mackay Radio & Telegraph Co., Inc. (California)	3,252,824		45,884	24,548	122,843	1,000,500	
Mackay Radio & Telegraph Co., Inc. (Delaware)	2,926,756	1,740,105	15,169	251,321	708,381	[3] 4,000	
Magnolia Radio Corporation	12,475				1,547	5,000	
Michigan Wireless Telegraph Co	5,865		2,525	55	2,850	7,000	
Olympic Radio Co	3,482		367		367	25,000	
Pere Marquette Radio Corporation	6,756		903		1,532	5,000	
R. C. A. Communications, Inc	19,547,835	9,697,860	1,166,040	110,963	2,654,797	[4] 5,000,000	3,664,000
Radiomarine Corporation of America	1,745,907		104,944	282,438	634,074	500,000	
South Porto Rico Sugar Co. (of Puerto Rico)	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Tidewater Wireless Telegraph Co	10,000		869		869	10,000	
Tropical Radio Telegraph Co	1,695,258	12,560	5,921	17,536	539,902	10,000	
United States-Liberia Radio Corporation	22,165		2,792		13,045	[6] 5,000	
Wabash Radio Corporation	25,000				1,865	[7] 25,000	
Western Radio Telegraph Co	27,738		1,072		1,072	[8] 25,657	

Name of carrier	Total working liabilities	Accrued depreciation	Total corporate surplus	Operating revenues	Operating expenses	Tax accruals	Operating income
Total	$14,018,840	$14,615,555	$4,391,865	$7,023,868	$6,626,287	$251,359	$185,599
Central Radio Telegraph Co	3,901	8,549	[9] *8,548*	7,597	6,588	294	[9] *2,551*
Globe Wireless, Ltd.[1]	18,217	45,196	391,004	136,188	137,781	1,499	[9] *3,197*
Hearst Radio, Inc	863,243	183,549	[9] *585,054*	950	46,652	3,734	[9] *67,871*
Mackay Radio & Telegraph Co., Inc. (California)	2,853,519	378,138	[9] *918,150*	871,024	896,276	20,000	[9] *45,226*
Mackay Radio & Telegraph Co., Inc. (Delaware)	6,672,834	119,312	[9] *1,478,502*	756,687	939,503	5,000	[9] *189,374*
Magnolia Radio Corporation	3,231	10,071	[9] *4,281*	2,481	3,753	118	[9] *1,390*
Michigan Wireless Telegraph Co	3,991	2,116	[9] *4,392*	5,491	4,001	249	1,240
Olympic Radio Co	1,800		[9] *126*	2,143	2,271		[9] *128*
Pere Marquette Radio Corporation	564	634	567	8,626	8,533	93	
R. C. A. Communications, Inc	1,487,485	11,919,999	6,851,484	4,194,374	3,557,051	183,631	426,355
Radiomarine Corporation of America	108,954	1,137,646	944,527	421,034	382,403	25,045	105,813
South Porto Rico Sugar Co. (of Puerto Rico)	(5)	(5)	(5)	8,407	9,452	158	[9] *1,203*
Tidewater Wireless Telegraph Co		10,000	[9] *10,251*	4,935	5,555	105	[9] *725*
Tropical Radio Telegraph Co	1,996,474	795,212	[9] *814,081*	534,136	551,245	8,452	[9] *27,754*
United States-Liberia Radio Corporation	66		30,144	56,598	58,393	2,595	[9] *4,391*
Wabash Radio Corporation	65		1,800	10,924	10,448	70	406
Western Radio Telegraph Co	4,496	5,133	[9] *6,476*	2,273	6,382	316	[9] *4,425*

Name of carrier	Net income	Dividends declared		Revenue messages transmitted	Employees	
		Amount	Rate percent		Number on June 30	Total compensation for year
Total	[1] *$185,607*	$300,000		5,063,259	2,298	$3,930,350
Central Radio Telegraph Co.	[2] *681*			[10]	4	5,261
Globe Wireless, Ltd.[3]	[2] *3,595*			[11] 29,640	60	94,943
Hearst Radio, Inc.	[2] *67,911*			3,021	[10]	330,553
Mackay Radio & Telegraph Co., Inc. (California)	[2] *192,506*			[12] 820,644	291	446,583
Mackay Radio & Telegraph Co., Inc. (Delaware)	[2] *510,276*			[12] 458,508	245	420,320
Magnolia Radio Corporation	[2] *1,385*			[12] 1,476	1	2,547
Michigan Wireless Telegraph Co.	1,240			4,992	5	3,367
Olympic Radio Co.	[2] *128*			[10]	1	1,620
Pere Marquette Radio Corporation				3,851	10	8,201
R. C. A. Communications, Inc.	546,783			3,117,459	1,243	1,994,290
Radiomarine Corporation of America	111,445	300,000	60.00	[12] 323,772	151	316,188
South Porto Rico Sugar Co. (of Puerto Rico)	[2] *1,203*			8,337	6	6,155
Tidewater Wireless Telegraph Co.	[2] *725*			4,238	[10]	[10]
Tropical Radio Telegraph Co.	1,538			232,994	[12] 253	283,834
United States-Liberia Radio Corporation	[2] *4,385*			[12] 3,756	[14] 9	4,941
Wabash Radio Corporation	407			[13] 39,204	[15] 12	9,174
Western Radio Telegraph Co.	[2] *4,425*			11,367	[16] 8	2,373

[1] Report for period Apr. 20 to Dec. 31, 1934.
[2] Represents book liability for 6,837 shares of common stock without par value.
[3] Represents book liability for 12,000 shares of common stock without par value.
[4] Represents book liability for 50,000 shares of common stock without par value.
[5] No data reported as radio operations are an integral part of the South Porto Rico Sugar Co., and separate capital accounts are not kept.
[6] Represents book liability for 50 shares of common stock without par value.
[7] Represents book liability for 40,000 shares of common stock without par value.
[8] Represents book liability for 5,000 shares of common stock without par value.
[9] Deficit or other reverse item.
[10] Data not reported.
[11] Estimated on basis of the number of messages transmitted during the month of May.
[12] Estimated on basis of the number of messages transmitted during the month of January.
[13] Estimated on basis of the number of messages transmitted during the month of March.
[14] Includes 81 employees who receive no compensation from respondent.
[15] Includes 5 employees who receive no compensation from respondent.
[16] Includes 6 employees who receive no compensation from respondent.
[17] Includes 4 employees who receive no compensation from respondent.

In table IV tax accruals, by States, are shown for telephone carriers reporting to the Commission for 1934. A list of telephone carriers in the hands of receivers, or trustees, showing the dates of appointment of the fiduciaries, is given in table V, together with the amounts of investment and capitalization involved. There were no telegraph, cable, or radio carriers reporting to the Commission for the year 1934, which were in the hands of receivers or trustees.

TABLE IV.—*Telephone carriers reporting to the Federal Communications Commission*

[Summary of taxes by States for the calendar year 1934]

State	Class A carriers	Class B carriers	Total	State	Class A carriers	Class B carriers	Total
Total, United States	$93,833,402	$349,018	$94,182,420	Nebraska	$682,123	$2,730	$684,853
Alabama	495,591	1,747	497,338	Nevada	164,086		164,086
Arizona	347,705		347,705	New Hampshire	330,006		330,006
Arkansas	346,079	6,981	353,060	New Jersey	3,773,442		3,773,442
California	5,054,271	29,930	5,084,201	New Mexico	101,102		101,102
Colorado	638,868		638,868	New York	14,770,596	9,653	14,780,249
Connecticut	729,357		729,357	North Carolina	836,578	4,899	841,477
Delaware	87,693	145	87,838	North Dakota	167,235	1,587	168,822
Florida	618,888		618,888	Ohio	4,323,591	27,904	4,351,495
Georgia	644,380	10,544	654,924	Oklahoma	1,054,811	1,067	1,055,878
Idaho	248,206		248,206	Oregon	951,161		951,161
Illinois	7,590,399	10,148	7,600,547	Pennsylvania	1,437,450	10,331	1,447,781
Indiana	1,782,671	44,400	1,827,071	Rhode Island	208,292		208,292
Iowa	710,709	12,012	722,721	South Carolina	431,081	874	431,955
Kansas	908,159	9,949	918,108	South Dakota	272,310		272,310
Kentucky	713,846		713,846	Tennessee	687,759		687,759
Louisiana	978,668	4,850	983,518	Texas	2,380,760	16,328	2,397,088
Maine	322,286		322,286	Utah	285,062		285,062
Maryland	1,198,401		1,198,401	Vermont	107,886	1,627	109,513
Massachusetts	3,103,920	4,883	3,108,803	Virginia	655,229	7,988	663,217
Michigan	2,516,457		2,516,457	Washington	2,218,769	5,437	2,224,206
Minnesota	795,771	12,445	808,216	West Virginia	471,588		471,588
Mississippi	567,070		567,070	Wisconsin	1,201,480	8,918	1,210,398
Missouri	1,861,627		1,861,627	Wyoming	141,536		141,536
Montana	296,994	7,002	303,996	District of Columbia	459,832		459,832
				U. S. Government	23,161,621	94,639	23,256,260

TABLE V.—*Telephone carriers in the hands of receivers and trustees*

[Year ended Dec. 31, 1934]

Name of carrier	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
CLASS A							
Central West Public Service Co.[1]	Arthur B. Darling and Ennalls Berl.	Trustees	June 8, 1934	[2] $7,690,529	[3] $8,852,757	$10,001,500	$2,802,500
Kansas Telephone Co	M. B. Gourley and M. F. Cosgrove.	Receivers	Feb. 27, 1932	895,084	[4] 5,000	620,500	
Mid-West States Utilities Co	Lon J. Jester	Trustee	June 29, 1934 [5]	816,105	[6] 2,186,676	1,915,000	509,700
Southwest Telephone Co. (Dallas, Tex.)	William H. Heald and Chester H. Loveland.	Receivers	Nov. 9, 1932	4,370,493	[7] 540,500	2,852,400	650,000
Southwestern States Telephone Co	do	do	do	3,765,272	[8] 500,000	2,300,000	800,000
Total class A				20,780,984	12,493,178	19,715,900	4,762,200
CLASS B							
Kansas Home Telephone Co	M. F. Cosgrove and A. L. Mullergren.	Receivers	Nov. 20, 1934	491,995	[9] 160,730	186,000	
Total class B				491,995	160,730	186,000	
Grand total				21,272,979	12,653,908	19,901,900	4,762,200

[1] Owns and operates eletcric, gas, ice, and water utilities; segregation of capitalization, etc., not available.
[2] Represents return for telephone business only.
[3] Includes $6,653,402 book liability for 288,896 shares of common stock without par value.
[4] Represents book liability for 1,000 shares of common stock without par value.
[5] Lon J. Jester was appointed receiver on Nov. 9, 1931, and appointed as trustee as of June 29, 1934.
[6] Represents book liability for 88,221 shares of class A common stock without par value and 150,000 shares of class B common stock without par value.
[7] Includes $12,500 book liability for 25,000 shares of common stock without par value.
[8] Includes $100,000 book liability for 25,000 shares of common stock without par value.
[9] Includes $85,730 book liability for 500 shares of common stock without par value.

The amount of revenues received by class I steam railways, during 1934, is shown in table VI. The returns are included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission. The carriers will be requested to segregate the amount applicable to telegraph and telephone service in future reports.

TABLE VI.—*Revenues received by class I steam railways as reflected in account 138, "Telegraph and telephone" in the annual reports filed by railways with the Interstate Commerce Commission for the year ended Dec. 31, 1934*

Name of railway	Amount of revenue	Name of railway	Amount of revenue
Akron, Canton & Youngstown Ry. Co.	$128	Nevada Northern Ry. Co.	7,804
Ann Arbor R. R. Co.	1,816	New Jersey & New York R. R. Co.	95
Atchison, Topeka & Santa Fe Ry. Co.	300,432	New York Central R. R. Co.	6,814
Atlanta & West Point R. R. Co.	130	New York, Chicago & St. Louis R. R. Co.	2,050
Baltimore & Ohio R. R. Co.	60,167	New York, New Haven & Hartford R. R. Co.	28,703
Boston & Maine R. R. Co.	18,293	New York, Ontario & Western Ry. Co.	5,950
Central R. R. Co. of New Jersey	7,450	New York, Susquehanna & Western R. R. Co.	199
Chesapeake & Ohio Ry. Co.	6,734	Norfolk Southern R. R. Co.	6,134
Chicago, Burlington & Quincy R. R. Co.	136,816	Norfolk & Western Ry. Co.	121
Chicago Great Western R. R. Co.	456	Northern Pacific Ry. Co.	80,810
Chicago & Illinois Midland Ry. Co.	329	Northwestern Pacific R. R. Co.	508
Chicago, Indianapolis & Louisville Ry. Co.	1,186	Oklahoma City-Ada-Atoka Ry. Co.	502
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	38,423	Oregon Short Line R. R. Co.	57,505
Chicago, Rock Island & Gulf Ry. Co.	827	Oregon-Washington Railroad & Navigation Co.	499
Chicago, Rock Island & Pacific Ry. Co.	12,360	Pennsylvania R. R. Co.	118,976
Clinchfield R. R. Co.	3,889	Pennsylvania-Reading Seashore Lines	5,926
Colorado & Southern Ry. Co.	871	Pere Marquette Ry. Co.	4,500
Delaware & Hudson R. R. Corporation	14,065	Pittsburgh & Lake Erie R. R. Co.	37
Delaware, Lackawanna & Western R. R. Co.	6,274	Pittsburg & Shawmut R. R. Co.	457
Denver & Rio Grande Western R. R. Co.	3,328	Pittsburg & Shawmut & Northern R. R. Co.	1,419
Denver & Salt Lake Ry. Co.	5,511	Reading Co.	5,595
Detroit & Mackinac Ry. Co.	343	Rutland R. R. Co.	367
Detroit, Toledo & Ironton R. R. Co.	801	St. Joseph & Grand Island Ry. Co.	2,970
Duluth, Missabe & Northern Ry. Co.	72,506	St. Louis, San Francisco & Texas Ry. Co.	119
Duluth, South Shore & Atlantic Ry. Co.	304	San Antonio, Uvalde & Gulf R. R. Co.	2,299
Duluth, Winnipeg & Pacific Ry. Co.	1,075	San Diego & Arizona Eastern Ry. Co.	2,656
Erie R. R. Co.	5,601	Southern Pacific Co.	40,971
Georgia R. R. (lessee organization)	298	Spokane International Ry. Co.	135
Grand Trunk Western R. R. Co.	6,913	Spokane, Portland & Seattle Ry. Co.	3,574
Great Northern Ry. Co.	112,950	Texas Mexican Ry. Co.	4,557
Gulf, Mobile & Northern R. R. Co.	6,744	Texas & New Orleans R. R. Co.	11,030
Lake Superior & Ishpeming R. R. Co.	1,786	Texas & Pacific Ry. Co.	3,057
Lehigh & Hudson River Ry. Co.	607	Toledo, Peoria & Western R. R.	1,926
Lehigh Valley R. R. Co.	11,060	Union Pacific R. R. Co.	88,127
Long Island R. R. Co.	6,598	Virginian Ry. Co.	2,163
Los Angeles & Salt Lake R. R. Co.	17,502	Western Ry. of Alabama	41
Louisville & Nashville R. R. Co.	41,449	Wichita Falls & Southern R. R. Co.	861
Maine Central R. R. Co.	626	Yazoo & Mississippi Valley R. R. Co.	3,285
Midland Valley R. R. Co.	651		
Minneapolis & St. Louis R. R. Co.	716	Total for United States	1,483,377
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	52,890	Copper River & Northwestern Ry. Co. (located in Alaska)	1,910
Mississippi Central R. R. Co.	305		
Missouri & North Arkansas Ry. Co.	278	Grand total	1,485,287
Missouri Pacific R. R. Co.	9,750		
Nashville, Chattanooga & St. Louis Ry.	9,007		

In the accompanying chart no. 1 the total operating revenues, total operating expenses, and net operating income of all communication carriers are indicated. The relative amounts applicable to telephone, and to telegraph, cable, and radiotelegraph carriers are shown separately. The uniform system of accounts used by telephone carriers differs from that prescribed for telegraph, cable, and radiotelegraph carriers. In the former classification the amount of "Uncollectible operating revenues" is deducted from the gross operating revenues when transferred to the income statement, whereas in the latter classification it is handled as an income account and deducted subsequently. The "Uncollectible operating revenues" applicable to telegraph, cable, and radiotelegraph carriers, which were deducted from the gross operating revenues during 1934, amounted to $946,113.

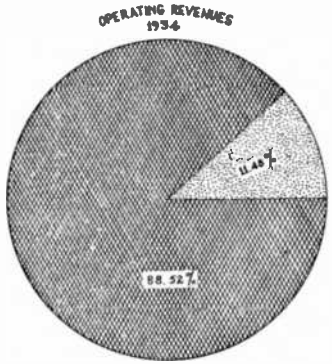
OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING REVENUES FOR THE YEAR, 1934, OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION.

CHART NO. 1.

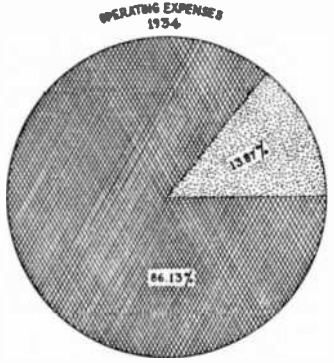
KEY

TELEGRAPH, CABLE, AND RADIO.

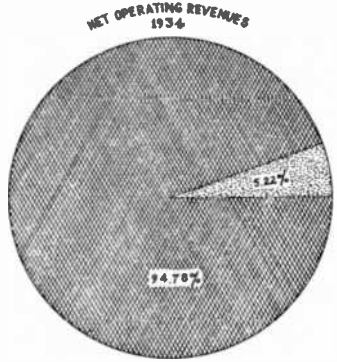
TELEPHONE.



	$
TELEPHONE CARRIERS	964,512,017
TELEG. & CABLE	118,167,777
RADIO	6,963,056
TOTAL TELEGRAPH, CABLE, & RADIO CARRIERS	125,130,833
TOTAL ALL REPORTING CARRIERS	1,089,642,850



	$
TELEPHONE CARRIERS	679,694,810
TELEG. & CABLE	103,802,360
RADIO	6,686,380
TOTAL TELEGRAPH, CABLE & RADIO CARRIERS	109,488,749
TOTAL ALL REPORTING CARRIERS	789,183,559



	$
TELEPHONE CARRIERS	284,817,207
TELEG. & CABLE	15,365,408
RADIO	536,676
TOTAL TELEGRAPH, CABLE & RADIO CARRIERS	15,902,084
TOTAL ALL REPORTING CARRIERS	300,459,291

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

AUGUST 1935

MONTHLY REPORTS

A list of the 59 telephone carriers reporting on a monthy basis is shown in table VII, and the carriers marked with an asterisk are included in the Bell System. Table VIII represents the "Summary of monthly reports of large telephone carriers", showing data for the month of May 1935 and cumulative figures for the period from January to May 1935, inclusive. These summaries are issued on a monthly basis by the Commission and distributed to a wide range of organizations.

TABLE VII.—*List of 59 large telephone carriers reporting on a monthly basis to the Federal Communications Commission during 1934*

Name of carrier	Office address
American Telephone Co	Abilene, Kans.
*American Telephone & Telegraph Co	New York, N. Y.
*Bell Telephone Co. of Nevada	San Francisco, Calif.
*Bell Telephone Co. of Pennsylvania	Philadelphia, Pa.
Bluefield Telephone Co	Bluefield, W. Va.
Carolina Telephone & Telegraph Co	Tarboro, N. C.
*Chesapeake & Potomac Telephone Co	Washington, D. C.
*Chesapeake & Potomac Telephone Co. of Baltimore City	Baltimore, Md.
*Chesapeake & Potomac Telephone Co. of Virginia	Richmond, Va.
*Chesapeake & Potomac Telephone Co. of West Virginia	Charleston, W. Va.
*Cincinnati & Suburban Bell Telephone Co	Cincinnati, Ohio.
Commonwealth Telephone Co. (Pennsylvania)	Kingston, Pa.
*Dakota Central Telephone Co	Aberdeen, S. Dak.
DeKalb-Ogle Telephone Co	Sycamore, Ill.
*Diamond State Telephone Co	Philadelphia, Pa.
*Home Telephone & Telegraph Co. of Spokane, Wash	San Francisco, Calif.
*Illinois Bell Telephone Co	Chicago, Ill.
Indiana Associated Telephone Corporation	La Fayette, Ind.
*Indiana Bell Telephone Co	Indianapolis, Ind.
Inter-Mountain Telephone Co	Bristol, Tenn.
Interstate Telephone Co	Spokane, Wash.
Jamestown Telephone Corporation	Jamestown, N. Y.
Keystone Telepnone Co. of Philadelphia	Philadelphia, Pa.
Lincoln Telephone & Telegraph Co	Lincoln, Nebr.
Michigan Associated Telephone Co	Madison, Wis.
*Michigan Bell Telephone Co	Detroit, Mich.
Middle States Telephone Co. of Illinois	Pekin, Ill.
*Mountain States Telephone & Telegraph Co	Denver, Colo.
Nebraska Continental Telephone Co	Columbus, Nebr.
*New England Telephone & Telegraph Co	Boston, Mass.
*New Jersey Bell Telephone Co	Newark, N. J.
*New York Telephone Co	New York, N. Y.
*Northwestern Bell Telephone Co	Omaha, Nebr.
Ohio Associated Telephone Co	Erie, Pa.
*Ohio Bell Telephone Co	Cleveland, Ohio.
*Pacific Telephone & Telegraph Co	San Francisco, Calif.
*Petersburg Telephone Co	Richmond, Va.
*Rio Grande Valley Telephone Co	Dallas, Tex.
Rochester Telephone Corporation	Rochester, N. Y.
San Angelo Telephone Co	San Angelo, Tex.
Southeast Missouri Telephone Co	Cape Girardeau, Mo.
*Southern Bell Telephone & Telegraph Co	Atlanta, Ga.
*Southern California Telephone Co	San Francisco, Calif.
Southern Indiana Telephone & Telegraph Co	Seymour, Ind.
*Southern New England Telephone Co	New Haven, Conn.
Southwest Telephone Co. (Texas)	Brownwood, Tex.
Southwestern Associated Telephone Co	Lubbock, Tex.
*Southwestern Bell Telephone Co	St. Louis, Mo.
Southwestern States Telephone Co	Brownwood, Tex.
Star Telephone Co	Ashland, Ohio.
*Tri-State Telephone & Telegraph Co	St. Paul, Minn.
Two States Telephone Co	Texarkana, Tex.
*United Telephone Co. (Kansas)	Abilene, Kans.
United Telephone Co. (Missouri)	Do.
United Telephone Cos., Inc	Do.
United Telephone Co. of Pennsylvania	Harrisburg, Pa.
West Coast Telephone Co	Everett, Wash.
Western Telephone Corporation of Missouri	Kansas City, Kans.
*Wisconsin Telephone Co	Milwaukee, Wis.

* Represents carriers included in the Bell System.

TABLE VIII.—*Summary of monthly reports of large telephone carriers*

[Compilations, subject to revision, from reports of revenues and expenses of 59 telephone carriers, each having annual operating revenues in excess of $250,000]

MONTH OF MAY

Item	1935	1934	Increase or decrease (−)	
			Amount	Ratio
Number of carrier telephones in service at end of month	14,354,501	14,031,414	323,087	*Percent* 2.3
Operating revenues:				
Subscribers' station revenues	$51,365,846	$50,362,204	$1,003,642	2.0
Public telephone revenues	3,632,241	3,527,700	104,541	3.0
Miscellaneous local service revenues	856,773	934,888	*−78,115*	*−8.4*
Message tolls	21,250,329	20,443,423	806,906	3.9
Miscellaneous toll service revenues	2,426,047	2,489,400	*−63,353*	*−2.5*
Revenues from general services and licenses	1,049,229	1,041,910	7,319	.7
Sundry miscellaneous revenues	3,156,747	2,922,461	234,286	8.0
Uncollectible operating revenues (Dr.)	331,177	318,054	13,123	4.1
Operating revenues	83,406,035	81,403,932	2,002,103	2.5
Operating expenses:				
Depreciation and extraordinary retirements	14,649,716	14,608,917	40,799	.3
All other maintenance	15,367,530	15,262,131	105,399	.7
Traffic expenses	11,740,111	11,451,676	288,435	2.5
Commercial expenses	6,567,961	6,261,089	306,872	4.9
General office salaries and expenses	4,703,914	3,957,660	746,254	18.9
General services and licenses	1,019,729	1,013,968	5,761	.6
All other operating expenses	5,010,251	4,784,600	225,651	4.7
Operating expenses	59,059,212	57,340,041	1,719,171	3.0
Income items:				
Net operating revenues	24,346,823	24,063,891	282,932	1.2
Rent from lease of operating property	209	115	94	81.7
Rent for lease of operating property	7,086	7,792	*−706*	*−9.1*
Net operating income before tax deduction	24,339,946	24,056,214	283,732	1.2
Operating taxes	8,287,657	8,381,909	*−94,252*	*−1.1*
Net operating income	16,052,289	15,674,305	377,984	2.4
Ratio of expenses to revenues (percent)	70.81	70.44	0.37	
Change in capital items:				
Increase during month:				
In "Telephone plant"	$3,014,233	$2,744,727		
In "Capital stock"	*−517,805*	100		
In "Funded debt"	221,680	*−56,500*		

FIVE MONTHS ENDED WITH MAY [1]

Operating revenues:				
Subscribers' station revenues	$253,579,540	$248,634,019	$4,945,521	2.0
Public telephone revenues	17,421,451	17,268,386	153,065	.9
Miscellaneous local service revenues	4,271,573	4,715,806	*−444,233*	*−9.4*
Message tolls	99,599,137	97,386,684	2,212,453	2.3
Miscellaneous toll service revenues	12,063,480	12,624,999	*−561,519*	*−4.4*
Revenues from general services and licenses	5,213,953	5,092,712	121,241	2.4
Sundry miscellaneous revenues	15,595,736	14,643,411	952,325	6.5
Uncollectible operating revenues (Dr.)	1,694,654	2,171,722	*−477,068*	*−22.0*
Operating revenues	406,050,216	398,194,295	7,855,921	2.0
Operating expenses:				
Depreciation and extraordinary retirements	73,186,898	73,036,038	150,860	.2
All other maintenance	73,093,144	71,941,432	1,151,712	1.6
Traffic expenses	55,588,207	54,177,854	1,410,353	2.6
Commercial expenses	31,762,159	30,534,415	1,227,744	4.0
General office salaries and expenses	23,065,711	19,791,790	3,273,921	16.5
General services and licenses	5,066,270	4,949,082	117,188	2.4
All other operating expenses	25,331,522	23,883,701	1,447,821	6.1
Operating expenses	287,093,911	278,314,312	8,779,599	3.2
Income items:				
Net operating revenues	118,956,305	119,879,983	*−923,678*	*−.8*
Rent from lease of operating property	1,081	747	334	44.7
Rent for lease of operating property	35,556	38,210	*−2,654*	*−6.9*
Net operating income before tax deduction	118,921,830	119,842,520	*−920,690*	*−.8*
Operating taxes	41,271,040	39,839,044	1,431,996	3.6
Net operating income	77,650,790	80,003,476	*−2,352,686*	*−2.9*
Ratio of expenses to revenues (percent)	70.70	69.89	0.81	
Changes in capital items:				
Increase during month:				
In "Telephone plant"	$5,389,159	$3,084,475		
In "Capital stock"	*−517,805*	20,091,600		
In "Funded debt"	*−1,647,070*	*−975,400*		

[1] Returns in 1935 reflect adjustments covering estimated refunds.

The tabulation of "Operating data from monthly reports of telegraph carriers" in table IX shows data for the month of May 1935 and cumulative figures for 5 months. It is also issued on a monthly basis by the Commission.

TABLE IX.—*Operating data from monthly reports of telegraph carriers*

[Compilations, subject to revision, from reports of revenues and expenses of telegraph, cable, and radiotelegraph carriers]

FOR THE MONTH OF MAY 1935

Name of carrier (a)	Total operating revenues (b)	Total operating expenses (c)	Operating income [1] (d)	Net income (e)
All America Cables, Inc.	$382,383.14	$330,132.06	[2] $3,282.34	$29,518.58
Canadian Pacific Ry. Co. (lines in United States)	307.32	1,580.11	[2] 1,272.79	[3]
Central Idaho Telephone & Telegraph Co.	171.93	64.36	98.37	98.37
Central Radio Telegraph Co.	656.17	1,202.76	[2] 848.66	26.34
Colorado & Wyoming Telegraph Co.	1,236.81	887.10	269.64	32.22
Commercial Cable Co. (New York and Limited)	357,079.63	280,525.55	63,144.24	[2] 16,451.08
Commercial Pacific Cable Co.	88,314.85	62,332.23	18,025.18	26,677.50
Continental Telegraph Co.	1,058.76	2,741.13	[2] 1,873.34	[3]
Globe Wireless, Ltd.	30,990.83	24,134.28	6,585.35	6,558.65
Great Northwestern Telegraph Co. of Canada				[4] 1,583.71
Mackay Companies, The (Postal Telegraph Cable Co.)	1,947,619.66	1,721,858.16	169,094.83	[2] 57,449.82
Mackay Radio & Telegraph Co., Inc. (California)	91,853.03	75,546.46	16,324.03	2,430.86
Mackay Radio & Telegraph Co., Inc. (Delaware)	69,045.42	91,250.52	[2] 22,671.06	[2] 53,808.11
Magnolia Radio Corporation	294.70	273.95	21.53	21.53
Michigan Wireless Telegraph Co.	615.62	400.74	214.88	214.88
Minnesota & Manitoba R. R. (lines in United States)	511.22	418.45	92.77	92.77
Mountain Telegraph Co.	296.06	274.51	3.05	[2] 62.54
Mutual Telephone Co. (wireless department, Hawaii)	4,258.61	3,743.32	85.29	85.29
Northern Telegraph Co.	4,582.34	3,791.10	544.60	748.09
Olympic Radio Co.	148.50	260.00	[2] 131.48	[2] 131.48
Pere Marquette Radio Corporation	900.13	900.13		
R. C. A. Communications, Inc.	349,644.58	329,655.73	1,356.17	8,694.36
Radiomarine Corporation of America	76,864.63	64,397.63	9,504.00	9,914.59
Tidewater Wireless Telegraph Co.	371.87	535.04	[2] 172.27	[2] 172.27
Tropical Radio Telegraph Co.	46,950.87	46,858.31	393.64	2,567.25
United States-Liberia Radio Corporation	5,800.92	4,663.26	818.56	818.85
Wabash Radio Corporation	922.28	885.04	32.12	32.12
Western Radio Telegraph Co.	1,135.22	252.78	876.94	767.07
Western Union Telegraph Co.	7,861,316.81	6,241,748.64	1,281,160.17	680,275.56
Total	11,325,331.91	9,291,313.35	1,538,393.42	643,083.29

FOR 5 MONTHS ENDED WITH MAY 1935

All America Cables, Inc.	$1,886,740.38	$1,510,799.04	$221,529.51	$266,455.40
Canadian Pacific Ry. Co. (lines in United States)	1,014.27	7,268.02	[2] 6,253.75	[3]
Central Idaho Telephone & Telegraph Co.	504.74	215.24	243.50	243.50
Central Radio Telegraph Co.	916.65	2,169.26	[2] 1,685.12	[2] 810.12
Colorado & Wyoming Telegraph Co.	6,191.39	3,612.40	2,178.80	965.29
Commercial Cable Co. (New York and limited)	1,625,801.06	1,408,477.13	150,387.69	[2] 222,524.01
Commercial Pacific Cable Co.	441,141.54	305,362.26	161,299.68	154,273.36
Continental Telegraph Co.	5,522.26	12,410.29	[2] 7,812.00	[3]
Globe Wireless, Ltd.	141,497.31	116,365.01	23,932.20	23,853.12
Great Northwestern Telegraph Co. of Canada			[2] 204.59	[4] 7,145.94
Mackay companies, The (Postal Telegraph-Cable Co.)	9,131,199.65	8,497,849.78	350,016.54	[2] 776,019.30
Mackay Radio & Telegraph Co., Inc. (California)	416,156.38	378,720.56	27,693.41	[2] 41,658.48
Mackay Radio & Telegraph Co., Inc. (Delaware)	325,999.67	442,185.20	[2] 117,166.50	[2] 265,632.03
Magnolia Radio Corporation	1,159.18	1,400.52	[2] 232.63	[2] 232.63
Michigan Wireless Telegraph Co.	1,412.49	1,530.61	[2] 118.26	[2] 118.26
Minnesota & Manitoba R. R. (lines in United States)	1,632.63	1,655.93	[2] 23.30	[2] 23.30
Mountain Telegraph Co.	1,347.57	1,365.93	[2] 111.00	[2] 428.95
Mutual Telephone Co. (wireless department, Hawaii)	20,676.67	18,722.34	[2] 90.67	[2] 90.67
Northern Telegraph Co.	25,165.57	18,104.66	5,479.16	6,371.78
Olympic Radio Co.	858.29	964.41	[2] 215.71	[2] 215.71
Pere Marquette Radio Corporation	4,247.01	4,247.01		
R. C. A. Communications, Inc.	1,692,904.08	1,568,629.92	39,605.98	76,893.29
Radiomarine Corporation of America	370,931.23	311,098.01	45,566.22	47,703.59
Tidewater Wireless Telegraph Co.	1,943.15	2,033.33	[2] 155.28	[2] 155.28

Footnotes at end of table.

TABLE IX.—*Operating data from monthly reports of telegraph carriers*—Contd.

FOR 5 MONTHS ENDED WITH MAY 1935—Continued

Name of carrier (a)	Total operating revenues (b)	Total operating expenses (c)	Operating income [1] (d)	Net income (e)
Tropical Radio Telegraph Co.	$279,956.48	$236,049.17	$43,982.70	$54,862.54
United States-Liberia Radio Corporation	26,901.80	23,301.23	2,541.09	2,543.03
Wabash Radio Corporation	5,170.11	4,993.16	153.31	153.31
Western Radio Telegraph Co.	3,072.16	3,835.85	[3] 791.49	[3] 901.36
Western Union Telegraph Co.	36,173,754.78	30,246,619.05	4,257,252.73	1,405,575.15
Total	52,593,818.50	45,129,985.32	5,137,002.28	738,229.20

[1] Represents difference between columns (b) and (c), also includes deductions for uncollectible operating revenues and taxes assignable to operations.
[2] Deficit or other reverse item.
[3] Operating deficit assumed by parent company.
[4] Operated by Western Union Telegraph Co., lessee.

A summary of monthly reports received from 29 carriers in the Bell System is given in table X showing the amounts applicable to telegraph operations, and reflecting only the items which are readily available from the carriers' accounts. This summary covers the month of May 1935 and the cumulative figures for 5 months. It includes the Christian-Todd Telephone Co. and the Home Telephone & Telegraph Co. of Southern Oregon, which do not file regular monthly reports, inasmuch as their annual operating revenues are less than $250,000. The Dakota Central Telephone Co., the Rio Grande Valley Telephone Co., and the Tri-State Telephone & Telegraph Co. are included in the Bell System and file regular monthly reports. They are primarily engaged in furnishing telephone service, and do not report any revenue from telegraph operations.

TABLE X.—*Summary of monthly reports of large telephone carriers relative to available data concerning telegraph operations*

[Compilations, subject to revision, from reports of revenues and expenses of 29 Bell System carriers]

Item	May 1935		Cumulative figures	
	Total operating revenues and expenses	Amounts applicable to respondents' telegraph operations [1]	Total operating revenues and expenses [2]	Amounts applicable to respondents' telegraph operations [1]
Operating revenues:				
Subscribers' station revenues	$49,580,923	$7,659	$244,776,432	$38,220
Public telephone revenues	3,605,061	----------	17,290,766	----------
Miscellaneous local service revenues	821,813	192,592	4,096,050	980,210
Message tolls	20,692,696	322,214	97,006,983	1,442,360
Miscellaneous toll service revenues	2,411,911	1,180,614	11,996,733	5,952,878
Revenues from general services and licenses	1,048,645	----------	5,211,050	----------
Sundry miscellaneous revenues	3,058,466	----------	15,117,672	----------
Uncollectible operating revenues (Dr.)	314,048	676	1,608,851	6,217
Total	80,905,467	1,702,403	393,886,885	8,407,451
Operating expenses:				
Depreciation and extraordinary retirements	14,216,562	42,473	70,978,022	208,706
All other maintenance	14,938,779	298,685	70,987,102	1,503,712
Traffic expenses	11,334,735	101,058	53,627,140	479,532
Commercial expenses	6,378,829	23,278	30,835,163	133,450
General office salaries and expenses	4,550,453	----------	22,304,924	----------
General services and licenses	1,009,897	315	5,017,160	1,568
All other operating expenses	4,901,059	109,059	24,774,482	542,563
Total	57,330,314	574,868	278,523,993	2,869,531
Net operating revenues	23,575,153	1,127,535	115,362,892	5,537,920

[1] Reflects only items which are readily available from carriers' accounts.
[2] Returns in this column reflect adjustments covering estimated refunds.

Table XI shows the operating revenues, operating expenses, and net operating income of the telephone carriers reporting on a monthly basis, from January 1933 to May 1935, inclusive, and chart no. 2 indicates the trend during this period. The refunds, in excess of $16,000,000, to Chicago coin-box subscribers cover an 11-year period and were deducted during June 1934 by the Illinois Bell Telephone Co. They have been excluded from table 11, but restored in chart no. 2 to preserve the consistency of the trend.

TABLE XI.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to May 1935, inclusive*

Month	Operating revenues	Operating expenses	Net operating income
1933			
January	$77, 770, 502	$56, 935, 698	$13, 509, 781
February	74, 142, 647	54, 338, 092	12, 570, 032
March	77, 031, 165	56, 148, 510	13, 760, 374
April	76, 173, 578	54, 469, 262	14, 364, 306
May	78, 888, 681	56, 099, 741	15, 449, 167
June	78, 793, 476	54, 997, 987	15, 645, 565
July	77, 525, 294	54, 289, 555	15, 402, 089
August	77, 453, 068	54, 510, 020	15, 834, 100
September	76, 706, 882	54, 123, 136	15, 250, 313
October	78, 516, 222	55, 012, 772	16, 055, 009
November	77, 349, 341	55, 573, 560	14, 481, 857
December	78, 778, 569	57, 749. 700	14, 911, 664
Total	929, 129, 425	664. 248, 053	177, 234, 257
1934			
January	79, 640, 131	55, 595, 597	16, 175, 496
February	76, 614, 086	53, 606, 708	15, 229, 109
March	80, 696, 191	56, 566, 019	16, 073, 173
April	79, 839, 955	55, 203, 947	16, 851, 393
May	81, 403, 932	57, 340, 041	15, 674, 305
June	[1] 64, 626, 505	[1] 40, 102, 626	[1] 16, 908, 761
July	78, 576, 342	57, 525. 077	13, 263, 070
August	79, 290, 310	57, 347, 305	14, 149, 842
September	78, 075, 839	55, 719, 928	14, 660, 444
October	81, 638, 451	58, 051, 599	16, 209, 469
November	79, 583, 123	57, 050, 446	15, 118, 955
December	[1] 80, 411, 034	[1] 58, 713, 909	[1] 14. 980, 225
Total	[1] 940, 395, 899	[1] 662, 825, 202	[1] 185, 294, 242
1935			
January	81, 475, 230	57, 823, 355	15, 377, 419
February	[1] 77, 834, 421	[1] 55, 419, 745	[1] 14, 214, 133
March	81, 207, 443	57, 292, 323	15, 793, 043
April	82, 127, 087	57, 499, 276	16, 213, 906
May	83, 406, 035	59, 059, 212	16, 052, 289
Total	[1] 406, 050, 216	[1] 287, 093, 911	[1] 77, 650, 790

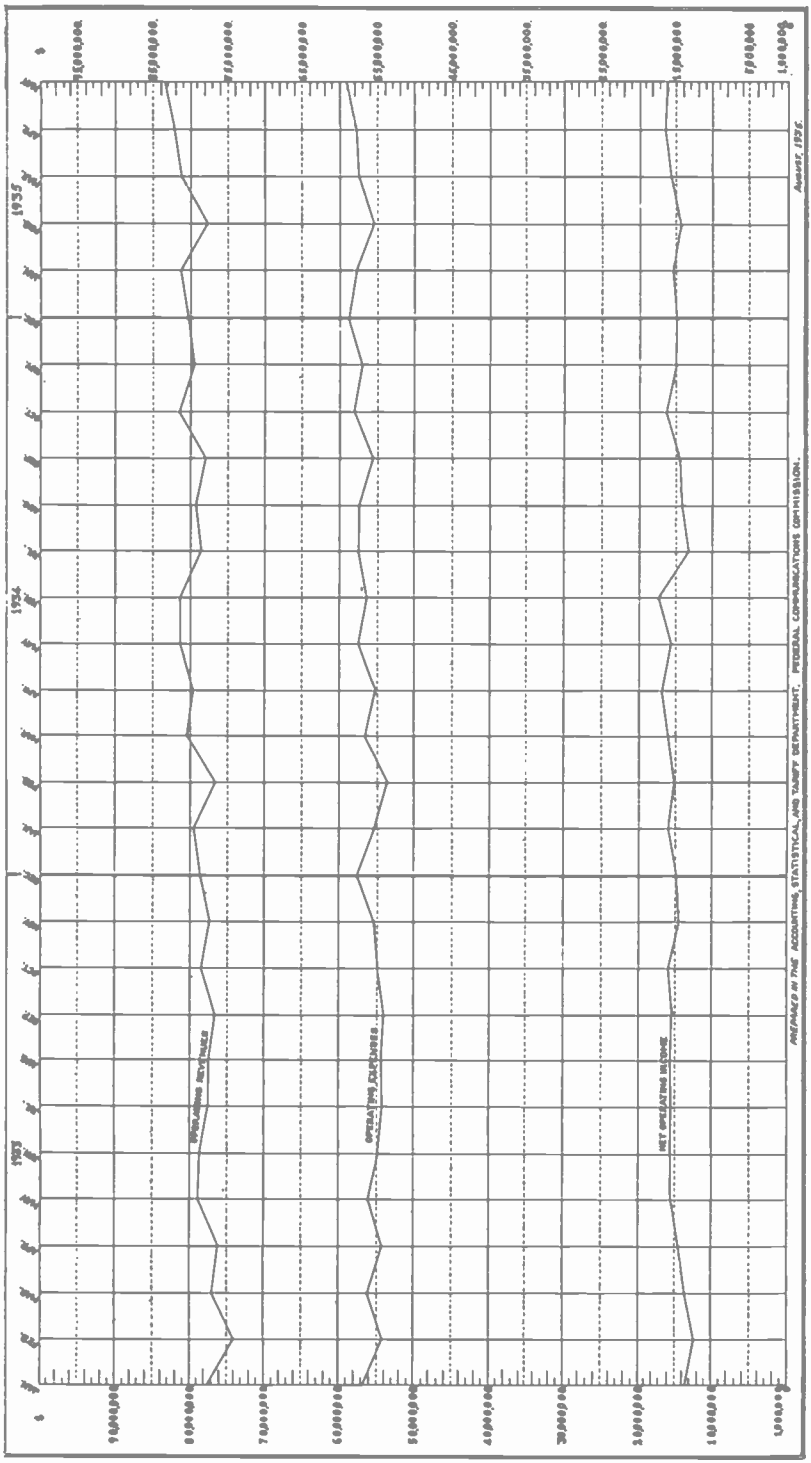
[1] These returns reflect adjustments covering estimated refunds.

Table XII shows the operating revenues, operating expenses, operating income, and net income of large telegraph, cable, and radiotelegraph carriers reporting on a monthly basis from July 1934 to May 1935, inclusive, and chart no. 3 indicates the trend during this period. The following is a list of the telegraph carriers which have reported regularly on a monthly basis and are included in table XII:

All America Cables, Inc.
Commercial Cable Co. (N. Y. and Ltd.).
Commercial Pacific Cable Co.
Globe Wireless, Ltd.
Mackay Cos., The (Postal Telegraph-Cable Co.)
Mackay Radio & Telegraph Co., Inc. (Calif.).
Mackay Radio & Telegraph Co., Inc. (Del.).
R. C. A. Communications, Inc.
Radiomarine Corporation of America.
Tropical Radio Telegraph Co.
Western Union Telegraph Co.

CHART NO. 2.

TELEPHONE STATISTICS SHOWING REVENUES, EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS



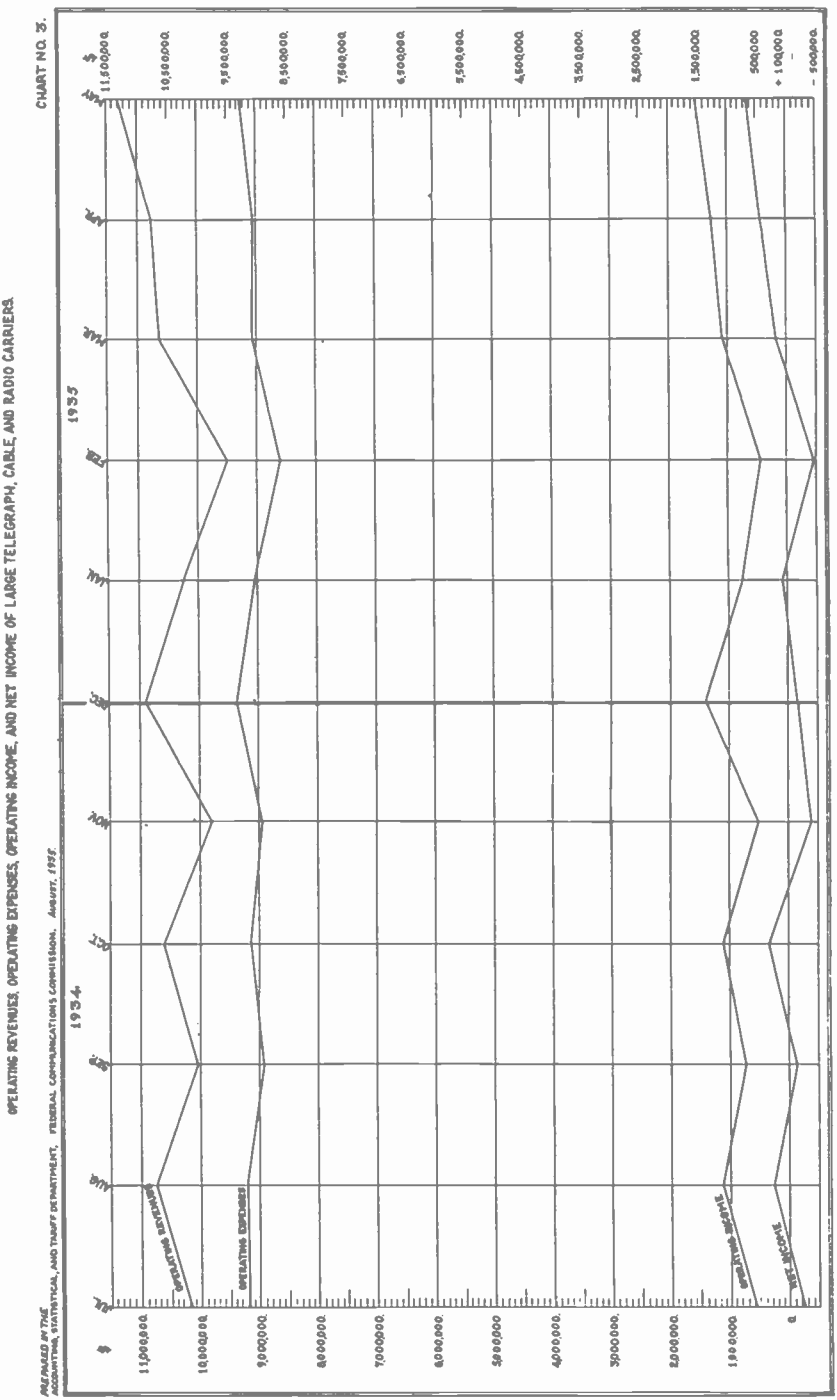


CHART NO. 25.
OPERATING REVENUES, OPERATING EXPENSES, OPERATING INCOME, AND NET INCOME OF LARGE TELEGRAPH, CABLE, AND RADIO CARRIERS
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION. AUGUST, 1935
1934
1935
OPERATING REVENUES
OPERATING EXPENSES
OPERATING INCOME
NET INCOME

TABLE XII.—*Monthly operating statistics showing operating revenues, operating expenses, operating income, and net income as reported by large telegraph, cable, and radiotelegraph carriers from July 1934 to May 1935, inclusive*

Month	Operating revenues	Operating expenses	Operating income	Net income
1934				
July	$10,187,606	$9,190,316	$560,687	[1] $841,494
August	10,788,336	9,214,474	1,129,707	263,984
September	10,084,138	8,922,574	734,833	[1] 151,196
October	10,624,331	9,136,716	1,111,103	312,163
November	9,840,905	8,935,064	501,616	[1] 396,928
December	10,905,635	9,350,594	1,412,584	[1] 197,683
Total	62,430,951	54,749,738	5,450,530	[1] 411,154
1935				
January	10,260,120	9,042,419	767,745	72,894
February	9,523,416	8,602,729	465,491	[1] 465,699
March	10,623,767	9,066,799	1,100,390	194,291
April	10,776,716	9,041,769	1,270,840	426,156
May	11,302,063	9,268,440	1,539,634	638,929
Total	52,486,082	45,022,156	5,144,100	868,571

[1] Deficit or other reverse item.

The amount of operating revenues, operating expenses, and net operating income, during 1934, of large telephone carriers, reporting on a monthly basis, are shown in chart no. 4 with the portion applicable to the Bell System. In chart no. 5 the number of telephones in service of large telephone carriers reporting on a monthly basis, are shown with the number applicable to the Bell System, and the number in service of carriers other than those in the Bell System.

Employees of the large telephone carriers and large telegraph, cable, and radiotelegraph carriers reporting on a monthly basis, are shown in chart no. 6, indicating the number of employees in the Bell System, and the total number of telephone employees, in contrast with the number of telegraph and cable, and radiotelegraph employees.

TELEPHONE STATISTICS SHOWING REVENUES, EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS.
A COMPARISON OF BELL SYSTEM CARRIERS WITH OTHERS

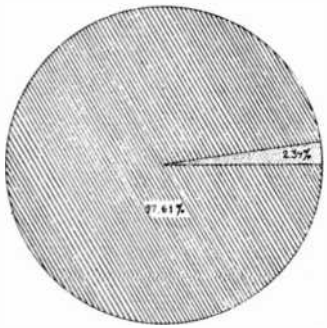
CHART NO. 4.

KEY

BELL SYSTEM CARRIERS

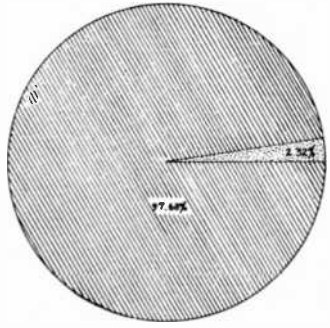
OTHER THAN BELL SYSTEM CARRIERS

OPERATING REVENUES
1934



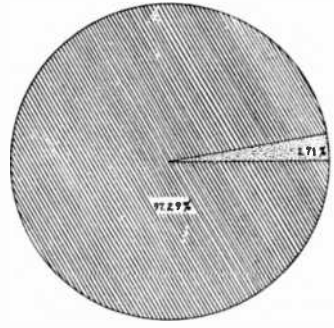
	$
ALL LARGE TELEPHONE CARRIERS	940,395,699
BELL SYSTEM CARRIERS	917,958,321.
OTHER THAN BELL SYSTEM CARRIERS	22,437,378.

OPERATING EXPENSES
1934



	$
ALL LARGE TELEPHONE CARRIERS	662,825,203.
BELL SYSTEM CARRIERS	647,442,051
OTHER THAN BELL SYSTEM CARRIERS	15,383,151.

NET OPERATING INCOME
1934



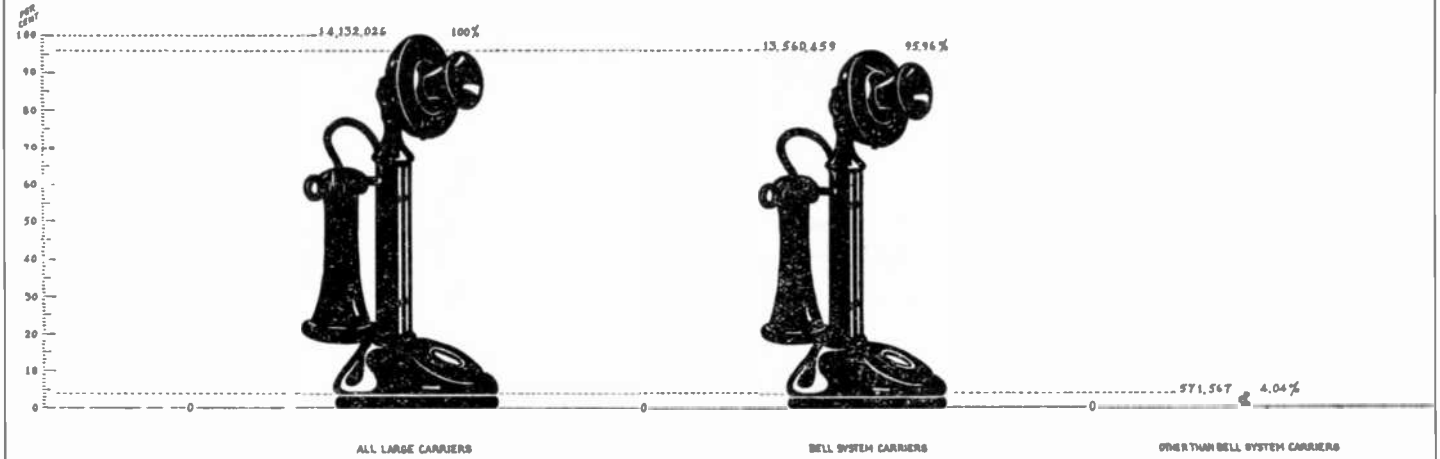
	$
ALL LARGE TELEPHONE CARRIERS	185,894,242.
BELL SYSTEM CARRIERS	180,266,791.
OTHER THAN BELL SYSTEM CARRIERS	5,028,451.

PREPARED IN THE
ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT,
FEDERAL COMMUNICATIONS COMMISSION.

AUGUST, 1935

CHART NO. 5.

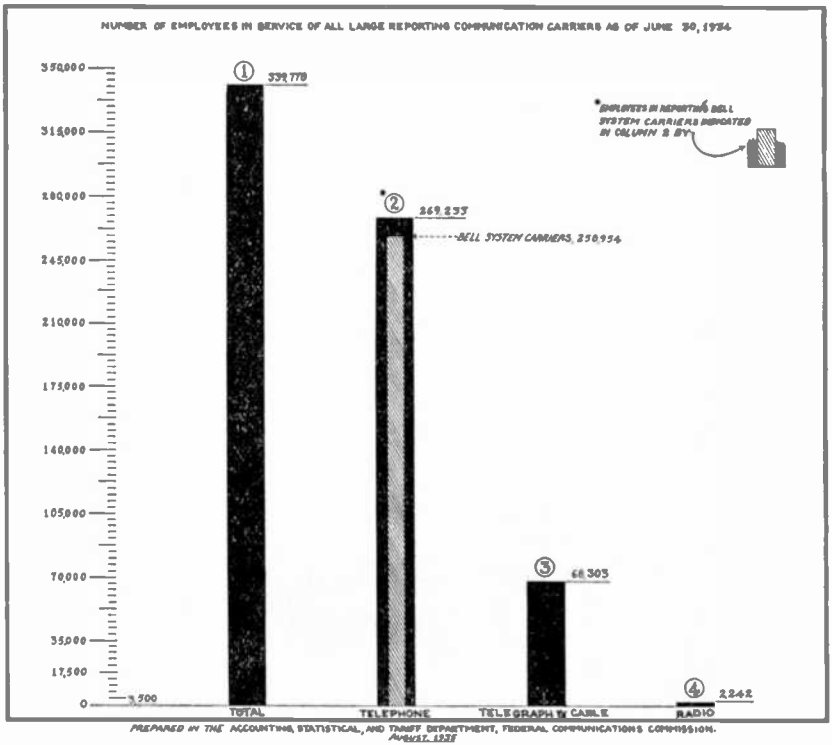
CHART SHOWING NUMBER OF TELEPHONES IN SERVICE AT END OF YEAR 1934, AS REPORTED BY LARGE TELEPHONE CARRIERS.
A COMPARISON OF BELL SYSTEM CARRIERS WITH OTHERS



AUGUST 1935

PREPARED IN THE
ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT
FEDERAL COMMUNICATIONS COMMISSION.

CHART NO. 6.



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.
AUGUST, 1935

SECOND ANNUAL REPORT

OF THE

Federal Communications Commission

FOR THE

FISCAL YEAR ENDED JUNE 30

1936

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1936

FEDERAL COMMUNICATIONS COMMISSION

ANNING S. PRALL, *Chairman.*
IRVIN STEWART, *Vice Chairman.*
GEORGE HENRY PAYNE.
EUGENE O. SYKES.
THAD H. BROWN.
PAUL A. WALKER.
NORMAN S. CASE.
JOHN B. REYNOLDS, *Acting Secretary.*

FEDERAL COMMUNICATIONS COMMISSIONERS—1934–36

Name	State from which appointed	Period of service
Eugene O. Sykes	Mississippi	July 11, 1934–
Thad H. Brown	Ohio	July 11, 1934–
Paul A. Walker	Oklahoma	July 11, 1934–
Norman S. Case	Rhode Island	July 11, 1934–
Irvin Stewart	Texas	July 11, 1934–
George Henry Payne	New York	July 11, 1934–
Hampson Gary	Texas	July 11, 1934–Jan. 1, 1935.
Anning S. Prall	New York	Jan. 17, 1935–

PRINCIPAL OFFICE

Washington, D. C.

DISTRICT OFFICES

Atlanta, Ga.
Baltimore, Md.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Dallas, Tex.
Denver, Colo.
Detroit, Mich.
Galveston, Tex.
Honolulu, Hawaii
Kansas City, Mo.
Los Angeles, Calif.
Miami, Fla.
New Orleans, La.
New York, N. Y.
Norfolk, Va.
Philadelphia, Pa.
Portland, Oreg.
St. Paul, Minn.
San Francisco, Calif.
Seattle, Wash.

CENTRAL MONITORING STATION

Grand Island, Nebr.

OTHER MONITORING STATIONS

Baltimore, Md.
Great Lakes, Ill.
Portland, Oreg.
Hingham, Mass.
San Pedro, Calif.
Marietta, Ga.

CONTENTS

SECOND ANNUAL REPORT OF THE FEDERAL COMMUNICATIONS COMMISSION

LETTER OF TRANSMITTAL

WASHINGTON, *January 5, 1937.*

To the Congress of the United States:

Herewith is submitted the second annual report of the Federal Communications Commission covering the fiscal year ended June 30, 1936.

On June 30, 1936, the term of Commissioner George Henry Payne expired. Effective July 1, 1936, he was reappointed for a term of 7 years.

At the close of business on June 30, 1936, the Commission's staff was composed of 366 employees at the seat of government and 122 employees in the field service.

The secretary of the Commission, Mr. Herbert L. Pettey, who had served since April 1, 1933, resigned on April 30, 1936. His successor has not been selected, but since May 1, 1936, Mr. John B. Reynolds has been acting secretary.

An amendment to paragraph (f) of section 4 of the Communications Act of 1934, was approved on January 22, 1936, authorizing the Commission to appoint a chief accountant at an annual salary not to exceed $9,000, and not more than three assistants to the chief accountant, without regard to the civil-service laws or the Classification Act of 1923, as amended.

An act was approved on June 5, 1936, repealing section 302 of the Communications Act of 1934, which section provided for the division of the United States into five zones. It further amended subsection (b) of section 307 of the Communications Act of 1934, so as to authorize the Commission to make equitable distribution of radio facilities among the several States and communities so as to eliminate the necessity for the equal distribution of radio facilities, both reception and transmission, among the zones and States within the zones according to population. Hence quota units are no longer necessary.

There were no major changes in the organization of the Commission during the past fiscal year. However, for the purpose of better administration and to effect further economies, an additional field office of 10 accountants was established in New York City.

On December 18 the Commission approved a complete new set of rules of practice and procedure promulgated pursuant to the Communications Act of 1934, superseding those promulgated pursuant to the Radio Act of 1927, as amended.

ANNING S. PRALL, *Chairman.*

REPORT OF THE SECRETARY

JOHN B. REYNOLDS, *Acting Secretary*

The Secretary, under the administrative direction of the Commission, is charged with the direct responsibility for the propriety and efficacy of its administrative policies and for the successful conduct of its organization; plans, assigns, directs, and assumes full responsibility for administrative matters as delegated by the Commission; supervises and directs the installation of office systems, methods, policies, and procedure; correlates and coordinates the various activities of the Commission and acts as the responsible officer in connection with the business transactions and operations of the Commission; directs the preparation of estimates and serves as Budget Officer for the Commission before the Bureau of Budget and various congressional appropriations committees; prepares reports and recommendations to the Commission relative to the requirements of and changes in personnel; attends all Commission meetings and acts as consultant to the Commissioners in matters relating to governmental procedure and requirements, and performs such other duties as directed by the Commission.

COMMISSION SESSIONS AND ACTIONS

In addition to public sessions for the hearing of oral arguments in docket cases, and for other purposes, the Commission and its divisions held 191 sessions during the fiscal year. Record of these sessions is maintained in the minutes, which show each application or other matter approved or designated for hearing, disposition after hearings before Commission examiners or following oral arguments, and various other actions.

The numbers of radio applications received, licenses and other authorizations issued, and the effects in numbers of stations of various classes, will follow in a report by the License and Records Section. The hearings before examiners are the subject of report by the Chief Examiner and other aspects are covered at length in the reports of the General Counsel, Chief Engineer, and Chief Accountant.

DOCKET SECTION

Many applications and other matters coming before the Commission require hearings as provided by the Communications Act. The records of the Docket Section show the cases designated for hearing and related matters as follows:

By Commission en banc:	
Matters designated for hearing	207
Petitions and motions handled	9
Decisions adopted after hearing	3
Arguments held before Commission en banc	1
Hearings held before Commission en banc	3

By Broadcast Division:	
Applications designated for hearing	605
Petitions and motions handled	492
Applications dismissed	132
Applications denied as in default for failure to file appearance	27
Applications reconsidered and granted without hearing	38
Cases on which preliminary orders were written [1]	245
Statements of fact and grounds for decisions published [1]	120
Cases on which oral arguments were held before Broadcast Division	132
Cases heard before Broadcast Division	24
By Telegraph Division:	
Matters designated for hearing	236
Petitions and motions handled	16
Applications dismissed	9
Applications denied as in default	8
Applications reconsidered and granted without hearing	26
Cases on which preliminary orders were written [1]	43
Statements of fact and grounds for decision published [1]	6
Reports adopted	4
By Telephone Division:	
Matters designated for hearing	36
Petitions and motions handled	4
Applications dismissed	2
Cases on which preliminary orders were written	1
Reports adopted	1

[1] The difference between number of preliminary orders written and statements of fact published is due to cases combined for the statements, cases dismissed at request of applicants or failures to appear at hearings.

LICENSE AND RECORDS SECTION

WM. P. MASSING, *Chief of Section*

The organization and functions of the License and Records Section remained unchanged. This Section is composed of three principal units, Broadcast, Commercial, and Amateur.

There were received 47,912 applications for radio, telephone, and telegraph facilities and 34,590 authorizations were issued, exclusive of thousands of licenses issued to radio operators, professional and amateur.

The following table shows the number of new radio stations authorized during the past year, the number deleted, and the total number of stations as of June 30, 1936.

TABLE I.—*New radio stations authorized during the year, stations deleted, and total at close of the year*

Nature of service and class of station	New stations authorized	Stations deleted	Total number of stations June 30, 1936
Agriculture: Point-to-point telegraph	0	2	7
Amateur: Amateur	7,471	[1] 11,032	46,850
Aviation:			
Aeronautical	73	19	247
Aeronautical point-to-point	14	3	107
Airport	11	15	23
Aircraft	246	134	471
Marker beacon	2	1	4
Broadcast: Broadcast	38	5	656
Emergency:			
Marine fire	0	0	2
Police, municipal	54	5	243
Police, State	49	6	101
Special emergency	24	11	57
Experimental:			
General experimental	743	142	1,450
Special experimental	106	106	126
Experimental relay broadcasting	0	0	12
Experimental visual broadcasting	1	1	21
Experimental broadcast	0	0	4
Fixed public:			
Point-to-point telegraph	54	11	420
Point-to-point telephone	29	2	138
Fixed public press: Point-to-point telegraph	1	3	75
Geophysical: Geophysical	49	1	179
Marine relay: Marine relay	1	1	42
Mobile press: Mobile press	0	0	5
Public coastal:			
Coastal telegraph	7	10	107
Coastal telephone	2	1	3
Coastal harbor	12	7	42
Private coastal:			
Coastal telegraph	0	0	3
Coastal harbor	0	0	2
Ships: Ship	188	129	2,020
Temporary:			
Broadcast pick-up	30	5	59
Motion picture	3	0	4
Total	9,208	11,652	53,480

[1] Total eliminations —— offset considerably by delayed renewals, etc.

BROADCAST

TABLE II.—*Applications received and authorizations issued during the past 6 years*

	Fiscal year 1931	Fiscal year 1932	Fiscal year 1933	Fiscal year 1934	Fiscal year 1935	Fiscal year 1936
Applications received	3,784	2,519	2,193	2,590	3,652	3,567
Authorizations issued	3,233	2,534	2,446	2,503	3,434	3,407

Applications received and instruments of authority issued comprised construction permits, licenses, modifications of construction permits and licenses, consent to voluntary assignments of construction permits and licenses, extension of licenses, installation of automatic frequency control equipment, special authorizations, emergency authorizations, consent to transfer control of corporations, and permits to locate, maintain, or use studio or apparatus for production of programs to be transmitted or delivered to foreign radio stations.

In addition to the applications shown in table II, there were received 1,905 informal applications, which consisted of requests for (1) extension of equipment and program test periods; (2) operation for a limited period in a manner not authorized in the station's license or by regulations; (3) departure from hours of operation as licensed; and (4) partial or entire suspension of operation of a station. There were issued 776 informal authorizations consisting of letters, telegrams, and approved deviations from time-sharing agreements.

Thirty-eight new broadcast stations were authorized (see table III) and five broadcast stations were deleted (see table IV).

TABLE III.—*New stations authorized (total, 38)*

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KANS	Charles C. Theis, Wichita, Kans.	1,210	100	Unlimited.
KBIX	Oklahoma Press Publishing Co., Muskogee, Okla.	1,500	100	Do.
KBST	Big Spring Herald Broadcasting Company, Big Spring, Tex.	1,500	100	Do.
KDNC	Democrat-News Co., Inc., Lewistown, Mont.	1,200	100	Do.
KEUB	Eastern Utah Broadcasting Co. (Sam G. Weiss), Price, Utah.	1,420	100	Do.
KHBC	Honolulu Broadcasting Co., Ltd., Hilo, Hawaii.	1,420	100	Do.
KNEL	G. L. Burns, Brady, Tex.	1,500	100	Daytime.
KNET	John Calvin Welch, Wm. M. Keller, and Bonner Frizzell, d/b as Palestine Broadcasting Association, Palestine, Tex.	1,420	100	Do.
KOVC	George B. Bairey, Valley City, N. Dak.	1,500	100	Unlimited.
KPDN	Pampa Daily News, Inc., Pampa, Tex.	1,310	100	Daytime.
KPLT	The North Texas Broadcasting Co., Paris, Tex.	1,500	100	Do.
KRBC	Reporter Publishing Company, Inc., Abilene, Tex.	1,420	100	Unlimited.
KRLH	Clarence Scharbauer, Midland, Tex.	1,420	100	Daytime.
KRNR	Southern Oregon Publishing Co., Roseburg, Oreg.	1,500	100	Do.
KRRV	Red River Valley Broadcasting Corp., Sherman, Tex.	1,310	100	Do.
KUTA	Jack Powers, Frank C. Carman, David G. Smith and Grant Wrathall, d/b as Utah Broadcasting Company, Salt Lake City, Utah.	1,500	100	Unlimited.
KVCV	Golden Empire Broadcasting Co., Redding, Calif.	1,200	100	Do.
WAPO	W. A. Patterson, Chattanooga, Tenn.	1,420	100	Daytime.
WAYX	E. F. & S. F. Sapp, d/b as Waycross Broadcasting Co., Waycross, Ga.	1,200	100	Unlimited.
WBLY	Herbert Lee Blye, Lima, Ohio	1,210	100	Daytime.
WBNY	Roy L. Albertson, Buffalo, N. Y.	1,370	100 250-LS	All hours except those WSVS operates.

TABLE III.—*New stations authorized (total, 38)*—Continued

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
WDWS	Champaign News Gazette, Champaign, Ill	1,370	100	Daytime.
WEOA	Evansville on the Air, Inc., Evansville, Ind	1,370	100	Unlimited.
WFOY	Fountain of Youth Properties, Inc.. St. Augustine, Fla.	1,210	100	Do.
WGRC	Northside Broadcasting Corp., New Albany, Ind	1,370	250	Daytime.
WHBB	Dr. Wm. J. Reynolds and W. J. Reynolds, Jr., Selma, Ala.	1,500	100	Do.
WHLB	Head of The Lakes Broadcasting Company, Virginia, Minn.	1,370	100	Unlimited.
WJBR	J. B. Roberts, Gastonia, N. C	1,420	100	Do.
WJNO	Hazlewood, Inc., West Palm Beach, Fla	1,200	100	Do.
WJRD	James R. Doss, Jr., Tuscaloosa, Ala	1,200	100	Daytime.
WLAK	Lake Region Broadcasting Co., Lakeland, Fla	1,310	100	Unlimited.
WLMU	Lincoln Memorial University, Middlesboro, Ky	1,210	100	Do.
WMIN	Edward Hoffman, St. Paul, Minn	1,370	100	Do.
WNLC	Thames Broadcasting Corporation, New London, Conn.	1,500	100	Daytime.
WSAY	Brown Radio Service & Laboratory (Gordon P. Brown, owner), Rochester, N. Y.	1,210	100	Do.
WSPG	Portland Broadcasting System, Inc., Portland, Maine	640	500	Limited.
WSPR	Quincy A. Brackett, Lewis B. Breed, Edmund A. Laport, co-partners, d/b as Connecticut Valley Broadcasting Company, Springfield, Mass.	1,140	500	Limited, KVOO, WAPI
WTHT	The Hartford Times, Inc., Hartford, Conn	1,200	100	Daytime.

TABLE IV.—*Stations deleted (total 5)*

Call letters	Licensee and location	Date of deletion
KPJM	M. B. Scott and Edward C. Sturm, d/b as Scott and Sturm, Prescott, Ariz. (Application for renewal of license denied. Decision Oct. 1, 1935, effective Nov. 26, 1935.)	Dec. 16, 1935
WBHS	Virgil V. Evans, Huntsville, Ala. (Application for renewal of license dismissed with prejudice Nov. 19, 1935.)	Nov. 19, 1935
WCAC	Connecticut State College, Storrs, Conn. (Station voluntarily surrendered its license.) (Effective Apr. 30, 1936.) (Approved Apr. 24, 1936.)	Apr. 30, 1936
WOS	State of Missouri, Missouri State Highway Patrol, Jefferson City, Mo. (Station voluntarily released its hours of operation to station KFRU, effective Mar. 27, 1936.)	Mar. 27, 1936
WRBX	Richmond Development Corporation, Roanoke, Va. (Station voluntarily released its hours of operation to station WHIS, effective Sept. 23, 1935.) (Approved Sept. 17, 1935.)	Sept. 23, 1935

Three complete lists of radio broadcast stations authorized by the Commission, arranged (1) alphabetically by call letter, (2) alphabetically by State and city, and (3) numerically by frequency, were compiled and prepared for distribution to the general public, with monthly supplements. There were also published from time to time, for distribution to the general public, lists of relay broadcasting stations, visual broadcasting stations, and experimental broadcasting stations.

COMMERCIAL

TABLE V.—*Applications received and authorizations issued during the past 6 years*

	Fiscal year					
	1931	1932	1933	1934	1935	1936
Applications received	6,246	5,515	6,837	8,139	8,221	9,751
Authorizations issued	5,395	6,053	6,617	7,336	7,772	8,427

Applications and authorizations shown in the above table comprise construction permits, modifications of construction permits, licenses, modifications of licenses, renewals of licenses, assignments of construction permits and licenses, and temporary authorizations.

There were also received 27 applications for additional telegraph-wire facilities and 15 applications for additional telephone-wire facilities. The Commission granted 19 applications for additional telegraph-wire facilities and 15 applications for additional telephone-wire facilities.

As of June 30, 1936, there were 2,020 ship stations licensed aboard vessels of United States registry, 1,962 of which are licensed to use radiotelegraph equipment; and 58, radiotelephone equipment. One hundred and eighty-nine of these vessels operate on the Great Lakes. Approximately 329 are compulsorily equipped with radiotelegraph apparatus, and the remainder are voluntarily equipped.

Approximately 1,839 vessels have been authorized for regular maritime service, communicating with other ships and coastal telegraph stations. Fifty-eight have been authorized to communicate on a desgnated frequency with specified public coastal harbor telephone stations, as compared with 26 at the end of the previous fiscal year; and 98 have been granted authority to operate on the general frequency of 2,738 kilocycles for communication between ship harbor stations, either telephone or telegraph, as compared with 53 at the end of the previous fiscal year. There are three municipal fireboats authorized to operate on a specified frequency and 95 vessels operating on specific frequencies allocated for Alaskan waters, as compared with 58 at the end of the previous fiscal year. Twenty-two vessels, yachts operating outside of general traffic lanes and vessels on special scientific expeditions, were granted special authority to communicate with amateur stations.

A complete revision of telephone and telegraph application forms was made in collaboration with the Legal and Engineering Departments.

The Radio Service Bulletin, containing in tabular form a complete record of all new assignments of radio facilities, changes and deletions relative to all classes of radio stations, except amateur, in the United States and its possessions, was issued semimonthly. This bulletin is primarily for notifications to the Bureau of the International Telecommunication Union at Bern, Switzerland.

There were also prepared for distribution to the general public the following lists of radio stations: Municipal police, State police, coastal stations, point-to-point telegraph stations, airport stations, aeronautical and aeronautical point-to-point stations, and experimental stations.

AMATEUR

Amateur radio licensing continued without radical change in nature or numbers. Related regulations were amended in detail for improved operation and regulation. One change rendered licenses more available to applicants unable to appear for operator examination at customary points due to physical disability or to locations in military service and C. C. C. camps. Applications for amateur radio privileges continued to exceed greatly all other classes combined.

Amateur radio applications

Receipts:	
Pending, July 1, 1935	1,479
Received during the fiscal year	32,647
Total	34,126
Disposals:	
Approved	21,946
Returned to applicants	5,851
Referred to other Federal agencies, etc	519
Failed required examinations	5,093
Total	33,409
Pending, close of June 30, 1936	717

Ordinarily applications for both operator and station licenses were submitted on a joint application form and the two applications counted as one. On the other hand, a much smaller number of returned and referred applications were received and counted a second time. Roughly, half of the applications were for renewals of expiring licenses or modifications for changed locations, while half involved examinations for operator licenses or changes in class of operating privileges.

Amateur examinations

Nature	Number	Passed	Failed	Percent failed
Code tests	11,164	8,687	2,477	22
Written tests:				
Class A envelope [1]	2,528	2,008	520	21
Class B envelope [1]	6,478	4,982	1,496	23
Class C envelope	2,093	1,626	467	22
Abridged (rules 405–406)	751	574	177	24
Total	11,850	9,190	2,660	22

[1] In 222 instances the examination included both A and B envelopes.

The operator and station licenses actually issued are separately counted, including reissues for the purpose of bringing together on joint-card form the amateur's operator and station licenses formerly issued as separate documents at different times and for different periods. All issues exceeded 100 per day.

Amateur radio authorizations

Station licenses:	
New	7,471
Renewals	2,487
Modifications and reissues	9,473
Total	19,431
Operator licenses	19,215
Operator-license endorsements	1,828
Duplicates of lost or destroyed licenses	496
	21,539
Total	40,970

The licenses of 23 amateur operators were suspended or withheld, in nearly all cases for a period of 6 months, while 104 were debarred from examination, usually for like period. In much larger numbers, licenses were deleted from the records following expiration, or surplus issues canceled, but renewals and other issues caused a net increase in the total number valid of record.

Amateur station licenses valid of record

Valid at close of fiscal year 1935		45,561
Plus:		
Expired but not deleted June 30, 1935	4,850	
New issues, fiscal year 1936	7,471	
		12,321
Total		57,882
Less eliminations, fiscal year 1936:		
Cancelations		364
Deletions		7,968
Expirations (renewal yet possible)		2,700
Total		11,032
Valid of record close of June 30, 1936		46,850

The Commission's amateur license holders, distributed throughout the States, Territories, and possessions from Maine to Samoa and Alaska to Puerto Rico, comprise probably three-fourths of the radio amateurs of the world.

RADIO OPERATORS, PROFESSIONAL CLASSES

There is maintained a central record of licenses of various professional classes required to qualify radio operators for service at any of the numerous kinds of transmitting stations maintained by commercial interests. To permit quick service in connection with sea, air, and land stations, the licensing in such cases is to a large extent decentralized, with 22 offices of issue, including Washington. Examinations, failures, license issues, renewals, endorsements, etc., are reported for posting on the one complete record.

During the fiscal year 13,950 such reports were received for record. A large number of the licenses were of radiotelephone third class, for which the requirements are relatively simple, authorizing the radiotelephone operators on aircraft and most of the shift operators at police transmitters.

Attempts to obtain licenses improperly or other infractions led to a dozen instances of withholding license issues temporarily or suspensions of 6 or 12 months.

APPROPRIATION ACCOUNT

For the fiscal year ended June 30, 1936, there was appropriated $1,500,000, plus $25,000 for printing and binding, which amounts are accounted for as follows:

01 Personal services	$975,849.57
01 Personal services	301,042.89
02 Supplies and materials	29,126.40

0236 Gasoline and oil	$2,411.41
04 Storage and care of vehicles	3,468.62
05 Communication service	14,311.33
06 Travel expenses	53,011.01
0610 Carfare	672.68
07 Transportation of things	1,103.45
082 Stenographic reporting	3,903.24
10 Heat, light, power, and water	4,003.44
11 Rents	12.163.32
12 Repairs and alterations	8,366.64
13 Special and miscellaneous	699.43
30 Equipment	72,986.94
Total obligations	1,483,120.37
Estimated savings	16,879.63
Total	1,500,000.00

PRINTING AND BINDING

02 Printed forms and letterheads	$9,522
08 Printing and binding	13,502
Total	23,024
Estimated savings	976
Total	24,000
Transferred to 1937 appropriation	1,000
Total	25,000

INTERNATIONAL RADIO ACCOUNTING

In accordance with governing provisions of international agreement, the Commission collects from American shipowners and radio companies tolls covering radiotelegraph messages transmitted from American ships to foreign coastal stations, pays foreign administrations amounts due and collects from them tolls due American companies on messages transmitted to American ships from foreign coastal stations. In addition, accounts are received for messages originating in the United States and addressed to vessels of any nationality via radio.

The accounts set up by the foreign administrations in gold francs (4.9249 times the value of a French franc) are converted into United States currency, responsibility for the charges ascertained and the accounts billed to the various American companies. When collections have been effected, the money is temporarily deposited in a special account with the Treasurer of the United States, where it remains until drafts or checks are to be drawn covering payment of accounts to be settled with the foreign administrations concerned. These are drawn in whatever currency the creditor administration demands.

Special efforts are made to keep the accounts moving, holding them only long enough to permit collection of the charges due. The cash handled represents collections only; no appropriation account is involved. The speed with which the accounts may be settled depends on the completion of collections from American companies; no single account may be disbursed until all charges are collected. The work during the fiscal year may be summarized as follows:

Number of accounts received	860
Number of accounts paid	1,118
Collections effected from American companies	$41,890.12
Disbursements made to foreign administrations	$41,152.27

SUPPLIES AND PRINTING

A Section of Supplies and Printing was reorganized during the fiscal year to meet increasing needs. A great variety of articles and services are needed for the Commission and its offices, including special technical equipment.

The special investigation conducted pursuant to Public Joint Resolution No. 8 required numerous commodities, publications, and specially printed forms.

A uniform procedure in requisitioning was established and a list of blank forms issued for increased efficiency in the handling of requisitions and the elimination of considerable correspondence.

MAIL AND FILES

All available records concerning regulation of telephone and telegraph by the Interstate Commerce Commission or the Post Office Department, prior to the enactment of the Communications Act, have been transferred to the Commission so that a complete history of Federal regulation of these industries might be in its files. The entire files were rearranged to serve more efficiently.

Correspondence was sent and received during the fiscal year as follows:

Outgoing pieces	347,207
Incoming pieces	267,205
Total	614,412

REPORT OF EXAMINING DEPARTMENT

DAVIS G. ARNOLD, *Chief Examiner*

ORGANIZATION

The Examining Department is organized with a Chief Examiner, an assistant Chief Examiner, and six other examiners. The principal functions of the Department are to conduct hearings, formal and informal, on applications, petitions, and complaints filed with the Commission, when the Commission so directs; and to conduct hearings and investigations instituted by the Commission on its own motion concerning rates, rules, regulations, services, and practices of carriers subject to the Communications Act of 1934, as directed by the Commission.

In addition to its hearing and regular examining work performed during the year, the Department cooperated actively with the other departments of the Commission, particularly in the preparation of rules of practice and procedure, which were adopted and published by the Commission during the fiscal year, and in the preparation of opinions in certain cases previously heard and reported by members of the staff.

EXAMINERS' HEARINGS AND REPORTS

Hearings in 491 formal docket cases were conducted by the Chief Examiner and other examiners of the staff during the fiscal year. Reports were submitted to the Commission on 67 cases carried over from the fiscal year 1935, and on 257 cases heard during the fiscal year 1936. Final reports on a large group of related cases were near completion when the fiscal year ended.

An indication of the volume and scope of the work handled may be had from the following schedule, tabulating the cases assigned by the Commission and the three divisions of the Commission (Broadcast, Telegraph, and Telephone) for hearings before examiners.

Hearings before examiners, fiscal year 1936	*Number of cases*
Applications of individuals, under sec. 212 of the act, for authority to hold positions in more than 1 carrier	169
BROADCAST	
Applications for construction permits for new stations	146
Applications from station licensees for construction permits to increase facilities	52
Applications for construction permits for changes in locations	8
Applications for modification of station licenses	29
Applications for renewal of station licenses	15
Applications for consent to assignment of station license	2
Applications for consent to transfer of station control	3
Application for construction permit for experimental visual broadcast station	1

TELEGRAPH	*Number of cases*
Applications from licensees for licenses to use additional frequencies	6
Hearings to investigate circumstances relating to operation of certain telegraph stations	3
Hearings upon orders of suspension of licenses directed to radio amateur operators	2
Applications for renewal of station licenses	33
Application for modification of license	1
Hearing upon complaint against carrier alleging unjust and unreasonable discriminations, and request for order directing carrier to provide a special classification and special rates	1
TELEPHONE	
Hearings in proceedings to determine whether respondents should be classified as connecting carriers under sec. 2 (b) (2) of the Communications Act of 1934	14
Hearing upon petition for consent to consolidation of telephone communications systems	1
Hearings upon applications for renewal of licenses for radio-telephone stations	4
Hearing upon application for construction permit for radio-telephone station	1

REPORT OF THE LAW DEPARTMENT

HAMPSON GARY, *General Counsel*[1]

INTRODUCTION

Since the last annual report, the General Counsel secured, July 24, 1935, the approval of the Commission for a reorganization of the Law Department into three divisions such as those established by order no. 1 of the Commission, promulgated pursuant to the Communications Act of 1934, viz, (1) Broadcast, (2) Telegraph, (3) Telephone.

THE GENERAL COUNSEL'S OFFICE

The General Counsel maintains supervision over and has responsibility for the work of all divisions of the Law Department, and, in addition thereto, takes direct charge of and responsibility for all matters pertaining to the Commission as a whole which include all three divisions thereof. Under him are 3 Assistants General Counsel and 27 attorneys as provided for by section 4 (f), of the Communications Act of 1934 (48 Stat. 1066).

DIVISIONS OF THE LAW DEPARTMENT

The Broadcast Division of the Law Department has charge of all legal matters pertaining to the licensing of radio-broadcasting stations and the regulation of radio broadcasting in the United States under the Communications Act of 1934.

The Telegraph Division of the Law Department has charge of all legal matters pertaining to the licensing of radiotelegraph and special classes of stations, the licensing of radio operators and the regulation of interstate and foreign communications by telegraph originating or received in the United States whether by wire, wireless, or cable under the Communications Act of 1934.

The Telephone Division of the Law Department has charge of all matters pertaining to the licensing of radiotelephone stations as well as the regulation of interstate and foreign communications by telephone originating or received in the United States, whether by wire, wireless, or cable under the Communications Act of 1934.

AMENDMENTS TO THE COMMUNICATIONS ACT OF 1934

During the past fiscal year the Communications Act of 1934 was amended in several respects. Section 4 (f) of the act was amended so as to provide for the appointment of a chief accountant and not more than three assistants. Section 302 of the act, which provided for the division of the United States into five zones, was repealed.

[1] Appointed General Counsel July 3, 1935.

Section 307 (b) of the act was amended so as to eliminate the necessity for the establishment of quota units in the distribution of radio broadcasting facilities throughout the United States.

The Law Department undertook the preparation and compilation of an index to the Communications Act of 1934, as amended, and secured authorization from the Commission to have the act, as amended, and an index to same, printed in pamphlet form.

From time to time as bills for the purpose of amending the act are introduced in Congress, they are sent by chairmen of committees of the Senate and the House to this Commission for review and comment. The Commission refers such matters to a legislative committee composed of three of its members, which frequently requires memoranda from the Law Department concerning the legality and constitutionality of various proposals.

RULES AND REGULATIONS OF THE COMMISSION

The Communications Act of 1934, which became law June 19, 1934, provides for a continuance of such rules and regulations of the Interstate Commerce Commission as applied to the administration of the regulation of telephone and telegraph, existing rules and regulations of the Federal Radio Commission, and such rules or regulations of the Postmaster General as relate to communications, until such time as the Federal Communications Commission should adopt other or different rules.

During the period covered by this report, the Law Department had primary responsibility for the drafting of Rules of Practice and Procedure for the Commission. These were completed and adopted by the Commission December 18, 1935. Thereafter, the Law Department undertook the preparation and compilation of a comprehensive index to said Rules of Practice and Procedure and secured authorization from the Commission to have both rules and index printed in loose-leaf pamphlet form for convenient use of the personnel of the Commission and of members of the public having business before it.

In addition to the general revision of the Rules of Practice and Procedure as stated, the Commission has amended certain of its existing technical regulations. It has appointed a standing committee on rules composed of a member of each department of the Commission and the Secretary, with the General Counsel as chairman. It is the duty of this committee to draft regulations from time to time for the consideration of the Commission. A general revision of its technical rules is contemplated by the Commission, and some of the ground work in this behalf was done in the last fiscal year.

VOLUME I. FEDERAL COMMUNICATIONS COMMISSION REPORTS

Section 4 (m) of the Communications Act of 1934 provides that the Commission shall publish its reports and decisions in such form and manner as may be best adapted for public information and use.

Pursuant to this requirement, the Commission, during the last fiscal year, instituted the practice of publishing each year in one or more volumes, as may be necessary, its reports, statements of fact and grounds for decisions, and orders. The Law Department had pri-

mary responsibility for the correlation and preparation of the material constituting volume I, covering a period from July 11, 1934, when the Commission came into being, to and including June 30, 1935. In this connection, the Law Department prepared, also, headnotes to all final reports, statements of fact and grounds for decisions and orders, a comprehensive index-digest of the same, and superintended generally the publishing of this volume by the Government Printing Office.

APPLICATIONS

RADIO LICENSING

The term "radio licensing" includes broadcast stations, radiotelegraph stations, radiotelephone stations, and special classes of stations.

Formerly, all applications relating to the licensing of radio stations and operators were handled by one division of the Law Department, regardless of the class or character of authorization requested. With the reorganization of the Law Department as hereinbefore described, applications were handled by that division of the Law Department to which is assigned primary responsibility for legal matters pertaining to a particular service. In all, the Law Department handled approximately 10,000 applications. These included applications for construction permits for new stations, and modifications of construction permits, applications for licenses covering authorized construction, informal and special authority applications, applications for renewals of licenses, applications for assignments of licenses and for transfers of stock control of licensee corporations, amended applications of various kinds, and miscellaneous applications.

Besides preparation and review of numerous forms of applications, and of licenses for various types of authorization issued by the Commission, the Radio Applications Section of each division of the Law Department is required to examine and review each application received by the Commission and prepare an opinion in writing for the Commission concerning the legal sufficiency thereof, to be submitted to the appropriate division as a basis for final action. In connection with these applications, it is necessary for this section of each division to recommend action to the appropriate division of the Commission upon petitions, motions, and other pleadings filed by applicants and others interested.

In cases which the Law Department recommends to be set for hearing before the Commission, a division thereof, a member, director, or examiner, this section of each division of the Law Department prepares bills of particulars upon which the cases are to be heard, and prepares legal opinions and recommendations on a variety of questions looking to administrative action by the Commission with respect to the licensing of radio stations of all classes.

FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY

Applications filed for certificates of public convenience and necessity, or to supplement facilities, are reviewed and examined by the Law Department in the same manner as are radio licensing applications.

FOR AUTHORITY TO CONSTRUCT NEW LINES, ETC.

Section 214 of the act provides that no carrier subject to the Communications Act of 1934 shall undertake the construction of a new line or of an extension of any line, or shall acquire or operate any line, or extension thereof, or shall engage in transmission over or by means of such additional or extended line, unless and until there shall have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require the construction, or operation, or construction and operation, of such additional or extended line: *Provided*, That no such certificate shall be required under this section of (1) a line within a single State, unless said line constitutes part of an interstate line; (2) local, branch, or terminal lines not exceeding 10 miles in length; or (3) any lines acquired under section 221 of this act: *Provided, further*, That the Commission may upon appropriate request being made authorize temporary or emergency service, or the supplementing of existing facilities without regard to the provisions of this section.

(*a*) *Telegraph.*—During the period covered by this report, 27 applications were filed for the acquisition and operation of new or supplemental telegraph lines under authority of section 214 of the Communications Act of 1934. None of these applications involved construction, but sought authority to lease such lines or circuits from other telephone or telegraph carriers. Nineteen of the applications were granted during the fiscal year, while 8 were pending on June 30, 1936.

(*b*) *Telephone.*—During the period covered by this report 15 applications were filed for certificates under section 214 of the Communications Act of 1934 for the acquisition and operation of new or supplemental telephone lines. All were granted during the fiscal year. These applications sought approval of expenditures ranging from a few hundred dollars to more than half a million dollars.

FOR AUTHORITY TO CONSOLIDATE

Section 221 of the act provides that upon application of one or more telephone companies for authority to consolidate their properties into a single company, or for authority for one or more companies to acquire the whole or any part of another telephone company, when such consolidated company would be subject to the act, the Commission shall give notice of the public hearing upon the application to the governors and State utility commissions of the States in which the physical property is located. If the Commission finds that the proposed application will be of advantage to the persons to whom service is to be rendered and is in the public interest, it shall issue its certificate to that effect. The act provides that any such consolidation that may be authorized by the Commission shall not be deemed to be in violation of the antitrust laws enacted by Congress.

This section of the Communications Act of 1934 was taken from the Interstate Commerce Act. This Commission has accepted the interpretation of the Interstate Commerce Commission that this section is permissive and not mandatory. As a practical matter, applications under this section will be made only when a telephone company de-

sires to have an immunity from any possible violation of the anti-trust acts.

Only one application to the Commission has been made under this section. That was an application for the approval of a contract to purchase the physical property of the North Western Indiana Telephone Co. by the Crown Point Telephone Co., a subsidiary of the Illinois Bell Telephone Co., for approximately $514,000. This application was designated for hearing before an examiner.

TARIFF REGULATION

The Communications Act of 1934 imposes the duty upon this Commission of determining what classifications, charges, and practices of the telegraph and telephone carriers engaged in interstate commerce, by wire or radio, are reasonable and nondiscriminatory. During the past year the Law Department has assisted the Tariff Section of the Accounting Department in its work of clarifying the tariffs of the various telephone and telegraph carriers subject to the act and bringing about the elimination of discriminatory tariffs and practices. It has determined the legal basis and prepared the orders for an extensive readjustment of present tariffs to correspond to the requirements of the act. On July 31, 1935, the Commission issued its Tariff Circular No. 1, effective September 1, 1935, governing the construction, filing, and posting of tariffs for both telephone and telegraph carriers.

The Telegraph Division of the Commission, during the previous fiscal year, conducted an extensive hearing upon the classification, regulation, and practices of the various telegraph carriers subject to the jurisdiction of the Commission. Many of the more serious irregularities in the tariffs as originally filed with the Commission have been eliminated and extensive work has been done in further study of the telegraph industry and in the legal problems involved looking toward a final determination of the lawful character of the many tariffs and practices of the different companies and of the proper character of the competitive relationship which should be permitted between them. Further discussion of special features of this work will be found below under "Complaints and investigations and hearings."

COMPLAINTS AND INVESTIGATIONS ARISING UNDER TITLE III OF THE ACT

Associated with the preparation of legal recommendations upon each application filed with the Commission is the complaint and investigation work. The Commission annually receives a large number of communications, reports, etc., from its field offices and from members of the listening public, concerning the service of existing licensees. The Applications Section of each division of the Law Department has initial responsibility for the investigation of these complaints and makes recommendations concerning them to the appropriate division of the Commission.

(A) RADIO BROADCAST LICENSEES

While the past fiscal year has been characterized by an increase in the number of complaints received with regard to the program service of broadcast stations, the majority of the investigations conducted pursuant to such complaints resulted in informal adjustment thereof. In only 11 instances did the investigations, conducted as a result of complaints, or reports from the Commission's field offices, require formal action, these being concerned with stations that broadcast lottery programs, objectionable medical programs, stock-selling schemes, and commercial fortune-telling programs. Final Commission decision has been rendered with respect to 5 of the aforementioned 11 cases, 1 resulting in the failure to renew the license of a station and its consequent deletion.

Order no. 2 of the Broadcast Division requires a broadcast station to report to the Commission all contracts affecting the control of the station and, in addition, all transfers of stock in licensed corporations. The Law Department has endeavored to keep an accurate and up-to-date file on the order no. 2 work. An index has been made of all persons or legal entities to whom licenses have been granted, or who have an interest in any license, and a complete file is kept in the Law Department of all information received under the call letters of the station. Each application for a broadcast license is checked to compare the information therein contained with that contained in the order no. 2 files. All applications are checked with the general complaint and investigation files. During the fiscal year, 255 discrepancies were noted as between the information supplied on the applications and the information available under the order no. 2 returns. These 255 cases included a few where the return itself indicated possible violation of section 310 of the Communications Act of 1934 by transfer of control without consent of the Commission. Of the 255 cases, 208 were satisfactorily explained and the records corrected; 18 unauthorized transfers of control were found which resulted in the filing of applications for the Commission's consent; and 29 were in the process of investigation at the close of the fiscal year.

(B) TELEPHONE, TELEGRAPH, AND OTHER RADIO STATION LICENSES

A great many investigations hereunder were conducted during the past fiscal year. These included investigations to determine the needs or the character of operation of radio stations in the telephone, telegraph, press, police, aviation, and experimental services. Most of them resulted in agreement between the parties concerned. Thus, for example, an informal conference between all parties concerned, including the principal users of the service, resulted in the establishment of a multiple address press radio service. In a similar manner, a dispute between stations in the police radio service at Oak Park, Ill., and Chicago, Ill., was settled after a hearing. Only five of these investigations resulted in hearings and final reports by the Commission. Three of these cases concerned violations of the Ship Act of 1910, which requires ships of certain classes to carry radio installations and operators for the protection of life and property at sea.

(C) OPERATOR LICENSEES

The investigation of all alleged violations by radio operator licensees, including amateurs, is conducted by the Law Department. The scope of this work may be indicated by the fact that there are over forty-five thousand (45,000) licensed amateur operators, and over half that number of licensed professional operators. During the past fiscal year such investigations resulted in the withholding or suspension of 12 professional operator licenses and 23 amateur operator licenses. Also, 104 persons were barred from examination for periods of 6 to 12 months.

(D) CRIMINAL INVESTIGATIONS

The Law Department assisted the Department of Justice in the investigation of 51 cases, 2 of which involved possible violations of section 325 (b) which requires a permit of maintenance of studios of foreign broadcasts, and 49 of which related to alleged violations of sections 301 and 318 of the act which require licenses for stations and operators thereof. Of the two cases involving a violation of section 325 (b) of the Communications Act, one is still under investigation, and, in the other case, three parties have been indicted by the Federal grand jury of the District Court of the Southern District of Texas at Laredo. This case is pending and will be tried during the fall term at Laredo, Tex. It is the first case of its kind to be tried under this section of the act. Of the 49 cases investigated for alleged violations of sections 301 and 318, 1 resulted in a conviction for the operation of an unlicensed station and a jail sentence of 57 days was imposed; 1 case was nolle prossed after indictment; 7 are pending trial in the near future; 9 are being further investigated and violators observed; and 31 were disposed of by issuing warnings to violators.

(E) MISCELLANEOUS

During the fiscal year covered by the First Annual Report of the Federal Communications Commission a report was made of a hearing held under section 307 (c) of the act, which provides for a study of the proposal that Congress by statute allocate fixed percentages of radio broadcasting facilities to particular types or kinds of non-profit radio programs or to persons identified with particular types or kinds of non-profit activities. Following this report, a Federal Radio Education Committee was appointed composed of 40 persons prominent in the field of education and radio. The Commission is represented on this committee. During the year the full committee appointed a subcommittee on conflicts. The first meeting of the subcommittee was held in Washington during the week beginning April 28, 1936, and lasted 3 days. A member of the Law Department has served as a member of the latter committee.

The general purpose of the subcommittee on conflicts is to investigate and determine the differences arising between the commercial and the social or educational broadcasters and secure the utmost possible cooperation between the two groups. After the 3-day session, a full report was made to the Federal Radio Education Committee with concrete suggestions for future work.

COMPLAINTS AND INVESTIGATIONS UNDER TITLE II OF THE COMMUNICATIONS ACT OF 1934

The Commission receives many complaints, both formal and informal, relating to telegraph and telephone services, classifications or charges. An examination and review of all such complaints is made by the Law Department, which advises the Commission as to the legal sufficiency thereof and whether or not they relate to matters over which the Commission has jurisdiction.

Examples of complaints filed with the Commission during the past fiscal year are: A complaint was filed before the Telegraph Division by Aeronautical Radio, Inc., a company furnishing a Nation-wide aviation radio service, a petition to require the telephone company to furnish it a leased-wire service under its existing tariffs or to establish a separate classification for such service at a reduced rate. The hearings and argument in this matter were concluded near the close of the fiscal year, and the decision of the Telegraph Division has not yet been entered.

In December 1935 a complaint was filed with the Telephone Division by the Pensacola Broadcasting Co., operating Station WCOA, against the American Telephone & Telegraph Co. Briefly stated, it was alleged that the contract between the Pensacola station and Columbia Broadcasting System required the station to pay Columbia the same amount for telephone circuits used in receiving broadcast programs as Columbia in turn paid the American Telephone & Telegraph Co. under a contract with it.

It was also claimed that the wire charges in the tariff filed with the Commission by the American Telephone & Telegraph Co. were unjust, unfair, and unreasonable, particularly as to the calculation of the mileage charged for. The tariff charge was $60 per circuit mile for the class of service in question. The circuit mileage for which petitioner paid was calculated from Mobile in a northeasterly direction to Flomaton, Ala., a distance of 61 miles, thence southeasterly from Flomaton to Pensacola, a distance of 48 miles, or a total of 109 miles. The air-line distance from Mobile to Pensacola is 67 miles. The petitioner claimed that the program service which it received from Columbia actually came from New York and other eastern points, and that the mileage charge of the 61 miles from Flomaton to Mobile was a "back-haul", for which it should not be charged and that the tariff should be corrected.

The complaint was set for hearing but, before the hearing, complainant and the telephone company reached an agreement as to an adjustment, which reduced the back-haul charge from Flomaton to Mobile 50 percent, so that under the settlement Station WCOA would pay for 75½ miles instead of 109 miles. Thereupon, the telephone company filed a tariff to this effect, and the petitioner withdrew its complaint. There are some eight or nine other broadcast stations with similar mileage situations which will benefit by the new tariff provision.

In the matter of informal complaints by the public, the Law Department investigates the same and endeavors to effect a settlement of the issues between the parties. As an illustration of this type of

thing: A letter was received from a State Tuberculosis Sanitarium at Norton, Kans. It was thought unwise for the patients to congregate in the general amusement room or chapel. There had been installed some sort of a general radio hook-up with wires and headphones for each patient. The institution had its own P. B. X. switchboard with two trunk telephone lines into the city of Norton. It was stated that the local telephone manager had notified the officials of the sanitarium that this service by which the patients were able to receive sermons and religious services held in churches at Norton would have to be discontinued under a ruling of the Commission.

The physical facts were not altogether clear from the letter. The Commission had made no ruling in matters of the kind. The Law Department telephoned an operating official of the American Telephone & Telegraph Co. in New York and read him the letter. He agreed to get in touch with the Southwestern Bell Telephone Co. which operates in Kansas, and ascertain the facts and endeavor to straighten the matter out so that the patients would not be deprived of receiving programs. Within 5 days of the receipt of the complaint the Commission received a telegram from the State board at Topeka, Kans., operating the Tuberculosis Sanitarium, stating that the entire matter had now been adjusted and expressing appreciation for the assistance rendered.

If settlement cannot be reached in matters of informal complaints, the Law Department recommends to the Commission what disposition of the complaint should be made.

Investigations are frequently instigated under the act on the Commission's own initiative, in which case the Law Department has primary responsibility for the conduct thereof. For example, *In the Matter of Minimum Guarantee and Joint-User Provisions in Teletypewriter Exchange Service Schedules of the Bell System Companies:* This was an investigation initiated on the Commission's own motion into the matter of tariff schedules which had been filed by certain Bell System companies for teletypewriter exchange services, providing for a minimum guaranty of $30 per month and containing joint-user provisions. The opinion of the Division contains findings in respect to the application of the guaranty and the charges for joint users, as a result of which new tariffs were filed by the respondent carriers in accordance therewith.

On October 30, 1935, the Commission authorized the director of telephone, chief accountant, and assistant general counsel to conduct informal conferences with officials of the American Telephone & Telegraph Co., and the Southern Bell (operating in the nine States of North Carolina, South Carolina, Kentucky, Tennessee, Georgia, Alabama, Mississippi, Florida, and Louisiana), as a result of which that company agreed to file new tariffs, effective January 1, 1936, reducing its interstate rates for distances between 56 miles and 318 miles to the same level as the American Telephone & Telegraph Co. for similar distances. It was estimated that this reduction would amount to approximately $125,000 annually.

In 1935 conferences were had by the Commission and its staff with officials of the American Telephone & Telegraph Co. looking to the establishment of a direct radiotelephone circuit from New York to

Paris. Radiotelephone communication with Europe is now handled over circuits of the American Telephone Co. between New York and London. The circuits are licensed by the Commission. Connection is had at London with the British Telephone System (operated by the British Post Office) and it furnishes the telephone service to and from New York with various points on the continent.

A sufficient number of the circuits, heretofore licensed for use between New York to London, are to be used for direct radiotelephone service to Paris. As soon as the French Government completes the installation of the terminal facilities in France the direct service between New York to Paris will be put into operation.

CLASSIFICATION OF TELEPHONE COMPANIES

When the Federal Communications Commission was organized July 11, 1934, it received from the Interstate Commerce Commission a mailing list of some 6,500 telephone companies. It was soon ascertained that many of these companies had long since gone out of existence. The Commission was confronted with the problem of determining what telephone companies were subject to its jurisdiction. A questionnaire was prepared by the Law Department and sent out to the names on the list. In many instances the determination of the classification of a particular company has required considerable correspondence and study to develop the facts. With the exception of a small number of companies, involving disputed questions of law and fact, the task of classification has been completed. In addition to a large number of companies classified in the fiscal year 1935, during the fiscal year 1936 some 2,200 telephone companies have been definitely advised of their classification. Class A companies are those with gross revenue of $100,000 and over; class B companies are those with gross revenue of $50,000 and not more than $100,000. Companies with less than $50,000 gross revenue are not designated by a class letter. Approximately 250 companies from the three classes are fully subject to the act; a very large number of companies are subject to sections 201–205 only; and a substantial number of companies are outside the jurisdiction of the Commission. It has been necessary for the Telephone Division to refer approximately 25 companies to an examiner for hearings, to determine the question of control and resulting jurisdiction as contemplated by section 2 (b) (2). Eight of such companies filed responses to the various orders of the Commission, and the hearings were therefore canceled. Hearings have been held in 14 of these cases, in Washington; Jefferson City, Mo.; Chicago; Indianapolis; Columbus, Ohio; and Madison, Wis. Hearings in two cases have not as yet been held.

DEPRECIATION

Section 220 (b) provides that the Commission shall, as soon as practicable, prescribe for telephone carriers the classes of property for which depreciation charges may be properly included under operating expenses and the percentage of depreciation which shall be charged with respect to each of such classes of property, classifying the carriers as it may deem proper for this purpose.

There is no more important, complicated, or difficult problem relating to telephone and telegraph companies than that of depreciation. The same subject was included in section 20 of the Interstate Commerce Act. Notwithstanding that the Interstate Commerce Commission gave serious consideration to the subject, it had been unable to fix specific rates for depreciation for classes of telephone property at the time the Federal Communications Commission was established and took over jurisdiction of the matter.

The Commission appointed an interdepartmental committee on depreciation and cost schedules, composed of the general counsel, chief engineer, and chief accountant, to study this problem.

HEARINGS

Under various sections of the Communications Act of 1934 the Commission is required to hold hearings in the exercise of its regulatory powers. For example, section 204 of the act provides that "whenever there is filed with the Commission any new charge, classification, regulation, or practice, the Commission may, either upon complaint or upon its own initiative without complaint, upon reasonable notice, enter upon a hearing concerning the lawfulness thereof." Section 205 (a) of the act gives the Commission the power to determine and prescribe maximum and minimum charges and classifications, practices, and regulations, "after full opportunity for hearing." Section 209 declares: "If, after hearing on a complaint, the Commission shall determine that any party complainant is entitled to an award of damages under the provisions of this act", it shall make an order directing the carrier to pay, etc. Section 213 (a) provides that "the Commission may from time to time, as may be necessary for the proper administration of this act, and after opportunity for hearing, make a valuation of all or of any part of the property owned or used by any carrier subject to this act, * * *." Section 214 (d) states: "The Commission may, after full opportunity for hearing, in a proceeding upon complaint or upon its own initiative without complaint authorize or require by order any carrier, party to such proceeding, to provide itself with adequate facilities for performing its services as a common carrier; * * *." Section 221 requires the Commission to "fix a time and place for a public hearing" upon application of one or more telephone companies for authority to consolidate their properties, etc. Section 303 gives the Commission power to make regulations not inconsistent with law as it may deem necessary to prevent interference between radio stations and to carry out the provisions of the act with respect to the regulation thereof, provided, however, that changes in frequencies, authorized power, or in times of operation of any station shall not be made without the consent of the licensee, unless, "after a public hearing", the Commission shall determine that such changes will promote public convenience or interest or will serve public necessity or the provisions of the act will be more fully complied with. Section 309 (a) provides that in the event the Commission, after examination of any application for station license, or for the renewal or modification of the station license, shall be unable to determine therefrom that the granting thereof will serve public interest, convenience, and necessity, "it

shall notify the applicant thereof, shall fix and give notice of a time and place for hearing thereon, and shall afford such applicant an opportunity to be heard under such rules and regulations as it may prescribe." Section 312 (a) of the act provides for the revocation of station licenses: *Provided however*, That "no such order of revocation shall take effect until 15 days' notice in writing thereof, stating the cause for the proposed revocation, has been given to the licensee. Such licensee may make written application to the Commission at any time within said 15 days for a hearing upon such order, and upon the filing of such written application said order of revocation shall stand suspended until the conclusion of the hearing conducted under such rules as the Commission may prescribe * * *." Section 312 (b) provides for the modification of station licenses by the Commission: *Provided however*, That "no such order of modification shall become final until the holder of such outstanding license or permit shall have been notified in writing of the proposed action and the grounds or reasons therefor and shall have been given reasonable opportunity to show cause why such an order of modification should not issue."

The Law Department has primary responsibility for the preparation and conduct of all hearings held by the Commission, a division thereof, a member, director, or examiner under any of the foregoing provisions of the act.

Hearings before the Commission are either informal or formal. (See 106.1–106.3, inclusive, Federal Communications Commission Rules of Practice and Procedure.)

INFORMAL HEARINGS

Beginning June 15, to and including June 26, 1936, an informal hearing was held before the Commission en banc for the purpose of ascertaining the views of interested parties as to the uses and needs of the various services, with particular reference to the allocation of frequencies above 30,000 kilocycles, and of reviewing present frequency allocations to services in the radio spectrum below 30,000 kilocycles.

FORMAL HEARINGS

Matters involving the jurisdiction of two or more divisions of the Commission are heard by the Commission en banc or by it referred to a member, director, or an examiner for hearing.

The Commission en banc heard the matter of the petition of the American Telephone & Telegraph Co. and the New York Telephone Co. in connection with the installation of experimental coaxial cable between New York and Philadelphia, Pa., the estimated cost of construction of which was $580,000. The testimony showed that this new type of cable will permit 240 telephone circuits to be operated simultaneously or 10 to 20 times as many telegraph circuits, or combinations of both, and it had great possibilities in the field of television. On February 26, 1936, the Commission issued a certificate of public convenience and necessity. (Vol. 2, Federal Communications Commission Reports; not yet published.)

During the last fiscal year 278 applications under section 212 of the Communications Act of 1934 for orders to authorize applicants

to hold positions with more than one carrier subject to the act were referred to and heard by examiners.

The complaint of *Leon Cammen* v. *The American Telephone and Telegraph Company* alleging certain discriminatory and otherwise unlawful practices of the company effectuated by their tariff filings was by the Commission en banc referred to and heard by an examiner. After careful consideration of the whole record, the Commission was of the opinion that the evidence adduced was not sufficient to require changes in the Rules and Regulations or practices or modifications of the tariffs of the defendants in any of the respects as sought by plaintiff and dismissed the bill. (Vol. 2, Federal Communications Commission Reports; not yet published.)

(A) BROADCAST

During the past fiscal year, 296 hearings were had in broadcast cases. Of these, 14 were heard before the Broadcast Division en banc, none before a member of the Broadcast Division, none was heard before the Director of that Division, and 282 were heard before examiners appointed by the Broadcast Division.

All broadcast hearings in the last fiscal year were held pursuant to section 309 (a) of the act and included stations in every section of the United States, its Territories, and possessions. Of the hearings held during the period of this report, probably the two most complicated are the so-called *Brooklyn cases* and those known as the *640 cases*.

The *Brooklyn cases* involved 18 conflicting applications by existing licensees and applicants for new stations, all in the same geographical area. The first hearing in this matter was conducted by the Federal Radio Commission before an examiner appointed by that Commission. After the examiner had filed his reports, the case was remanded for further hearing. Thereafter, the Communications Act of 1934 became law, and the matter was taken over by the Federal Communications Commission. Additional applications having been filed meanwhile, the Federal Communications Commission designated the same, with the pending applications, for hearing before an examiner, and such further hearing was held. On December 17, 1935, the Commission made its decision (vol. 2, Federal Communications Commission Reports; not yet published). Several petitions for rehearing under section 405 of the act were made and granted. Said rehearing had not been had at the close of this fiscal year.

The *640 cases* involved 13 applications, affecting primarily the use of the frequency 640 kilocycles in a number of localities in the United States. The applications were divided into groups and heard together before the Broadcast Division en banc. This frequency is designated by rule 116 of the Commission for the use of "clear channel stations"; that is, on which no simultaneous nighttime operation is permitted. Among others, proposals were made by several of the applicants for simultaneous nighttime operation on 640 kilocycles, in violation of this rule. The hearing also involved the use of this frequency by competing applicants for new stations in Portland, Maine, and Pittsfield, Mass. The Commission's decision, June 12, 1936, will be reported in volume 2, Federal Communications

Commission Reports, when the same is published. Two appeals have been taken to the United States Court of Appeals for the District of Columbia from this decision insofar as it relates to the Portland, Maine, application, and these are pending in that court.

(B) TELEGRAPH

During the past fiscal year 13 hearings were had in telegraph cases. Of these, 3 were heard before the Telegraph Division en banc, none were heard before a member of the Telegraph Division, none were heard before the Director of that Division, and 10 were heard before examiners duly appointed by the Telegraph Division.

Four of these were alleged violations of the Ship Act, 2 for alleged violations by radio-operator licensees, 1 upon an application for renewal of 33 station licenses, 2 upon complaints involving the regulations and tariffs of the American Telephone & Telegraph Co. as affecting its telegraph services, 1 upon an application for a new point of communication, 1 against the American Telephone & Telegraph Co. seeking the enlargement of its private-line service, 1 for the purpose of investigating a proposed rule permitting international multiple-address service, and 1 upon application of a commercial radiotelegraph carrier for additional frequencies to be used in its fixed public service.

Of the foregoing, the following cases are considered of particular interest in addition to those heretofore discussed: The hearing on the application of the Mackay Radio & Telegraph Co. to add Oslo, Norway, as a primary point of radiotelegraph communication. This was an application before the Telegraph Division for modification of fixed public-service licenses of stations of the Mackay Radio & Telegraph Co. to add Oslo, Norway, as a point of communication, which involved the need for an additional direct radio circuit to this point; the adequacy of existing radio and cable facilities between the United States and Norway; the possibility of providing a new or improved service, or reduction in rates, or an increase in traffic; the effect of a grant of such application upon the revenues of competing telegraph carriers; and the question of whether the authorization was necessary for the continued operation of the applicant company or its associated companies comprising the International System. The application was denied.

Thereafter, the Mackay Co. filed a petition for rehearing by the Commission en banc to reconsider and reverse, change, or modify, the decision of the Telegraph Division, and also requested a stay of the effective date of the final order until October 1, 1936. The latter request was granted, and the petition for rehearing is now pending before the Commission.

The hearing upon applications of Globe Wireless, Ltd. This company filed applications for licenses to use five additional frequencies for its fixed public service point-to-point radiotelegraph stations, which were set for hearing to determine the applicant's need for the additional frequencies in rendering its "radio mail" service. The Commission found that the existing frequencies licensed to this company were inadequate at certain seasons and under certain operating conditions to permit it to render an efficient and reliable service, and the applications were, therefore, granted.

(C) TELEPHONE

During the past fiscal year 20 hearings were had in telephone cases, 19 of which were heard by examiners appointed by the Telephone Division, 1 was heard by the Telephone Division en banc, 5 involved applications for radiotelephone facilities, 14 related to the jurisdiction of the Commission over telephone companies under section 2 (b) (2) of the act, one was a joint petition pursuant to section 221 (a) of the act, requesting the Commission to issue a certificate to the effect that the proposed acquisition of the properties of the North Western Telephone Co. by the Crown Point Telephone Co. would be of advantage to the persons to whom service is to be rendered and in the public interest. The Commission directed that the latter case be heard before an examiner to determine (1) the financial ability of the acquiring carrier to purchase the property outlined in the application without impairing its ability to perform its service to the communities now served by both carriers, (2) to ascertain the reasonableness of the valuation of the property sought to be purchased by the acquiring carriers, and (3) to ascertain whether or not the proposed acquisition will be of advantage to the persons to whom service is to be rendered and in the public interest. At the close of this fiscal year the case was pending decision of the Telephone Division.

REPORTS AND DECISIONS OF THE COMMISSION

During the last fiscal year, the Law Department assisted in the preparation of 132 reports and decisions for approval and adoption by the Commission. Of these, 120 were statements of fact and grounds for decision and orders in broadcast cases involving 190 applications decided by that division, 6 were statements of fact and grounds for decision in telegraph cases, and 4 were reports of telegraph investigations, 1 was a report by the Telephone Division, and 1 was a report of the Commission en banc in the matter of a complaint involving both the Telegraph and Telephone Division. All of these reports and decisions will be incorporated in volume 2, Federal Communications Commission Reports, when published.

LITIGATION

The Law Department has charge of, and responsibility for, all litigation in which the Commission is interested or is a party.

On July 1, 1935, there were pending the following number of cases: One in the United States District Court for the Northern District of Illinois, three in the United States Court of Appeals for the District of Columbia, and two in the Supreme Court of the District of Columbia.[2] All were disposed of during the last fiscal year as follows: One was dismissed on motion of the Commission, two were dismissed on motion of appellant, two were dismissed on motion of plaintiff, and one was decided by the United States Court of Appeals for the District of Columbia affirming the decision of the Commission. During the fiscal year covered by this report seven new cases were filed, four in

[2] The name of this court was changed in the last session of Congress to the United States District Court for the District of Columbia.

the United States Court of Appeals for the District of Columbia, two in the United States District Court for the District of Columbia, and one in the United States District Court for the Southern District of New York. Of these, one was dismissed on motion of appellant, two were dismissed on motion of Commission after argument, and four are still pending.

The following cases are thought to be of sufficient interest to warrant special consideration. A brief synopsis of each is given below:

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

Head of the Lakes Broadcasting Company v. *Federal Communications Commission;* Red River Broadcasting Company, Intervenor. Decided May 4, 1936—Not yet reported

This was an appeal from a decision of the Commission, Broadcast Division, granting an application for the removal of Station KGFK, a 100-watt unlimited-time station, from Moorhead to Duluth, Minn. The application had been originally granted by the Commission without hearing, but later protested by two parties, one of them appellant. The application had been set for hearing, heard by the Commission, and its grant reaffirmed. Appellant, Head of the Lakes Broadcasting Co., one of the two protesting parties before the Commission, is the licensee of a broadcast station located at Superior, Wis., adjacent to Duluth, Minn., to which latter point Station KGFK had been authorized to move. The Commission had found in its decision, after hearing, that a comparison of the Moorhead, Minn.-Fargo, N. Dak., area and the Duluth, Minn.-Superior, Wis., area, from the standpoint of broadcast service available, warranted a removal of the Moorhead station, and that such removal would not materially affect the Superior, Wis., station.

The court upon a review of the evidence held that the decision of the Commission in granting the application for removal was based upon substantial evidence and was not arbitrary or capricious. It, therefore, affirmed the Commission's decision.

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

Monacacy Broadcasting Company v. *Prall et al.* Equity No. 60543 Not reported

This case involved a bill for injunction filed by the Monocacy Broadcasting Co. to restrain the Commission from holding a hearing upon plaintiff's application before the Commission for a new station at Rockville, Md., and praying that the court order the Commission to issue a construction permit for the erection by plaintiff of said station. The Commission had originally granted the plaintiff's application without a hearing, in conformity with its Rules of Practice and Procedure. After the granting thereof, the Commission had received a formal protest from a Philadelphia station and, under its rules, had suspended its action in granting the application and set the same for hearing before an examiner. Prior to the hearing before the examiner, the protest of the Philadelphia station had been withdrawn, and the Commission, in lieu of making final its action originally taken in granting the application, ordered that the application remain on

the calendar for hearing. This action of the Commission, in ordering the application to remain on the calendar for hearing, involved the interpretation to be placed upon a rule of the Commission. The Commission filed a motion to dismiss the bill of complaint upon the ground that it did not commit error in retaining plaintiff's application on the calendar for hearing, and that the court was without jurisdiction to issue the relief prayed for.

After argument upon the Commission's motion to dismiss, the court entered its order dismissing the bill of complaint on the grounds: First, that the court should give weight to the decision of the Commission construing the law under which it operates or its own rules and regulations; and, second, that in any event under the decision of the United States Court of Appeals for the District of Columbia in the *Jenny Wren case* (referred to in the last annual report), the court had no jurisdiction to grant the relief prayed for, the plaintiff having a plain, speedy, and adequate remedy at law under section 402 (b) of the Communications Act of 1934 providing for appeals from Commission orders to the United States Court of Appeals for the District of Columbia.

William Randolph Hearst v. *Hugo L. Black, et al.* Equity No. 60937

This was an action for an injunction brought against Hugo L. Black, et al., constituting a committee of the United States Senate, and Anning S. Prall, constituting the Federal Communications Commission, based on an allegation that plaintiff's constitutional rights in connection with inspection of certain telegrams in possession of the Western Union Telegraph Co. were violated or were threatened to be violated. Plaintiff filed a motion for a preliminary injunction which, after argument, was denied. The matter is still pending before the courts of the District of Columbia.

Crow v. *United States Civil Service Commission and Federal Communications Commission.* At Law No. 87295

On April 18, 1936, David R. Crow filed a petition for mandamus against the Civil Service Commission and the Federal Communications Commission in the District Court of the United States for the District of Columbia. The petitioner alleged that he was a veteran with disability preference and at the top of the list for certain specified legal positions on the roster of the Civil Service Commission. He alleged that the permanent appointments of 10 attorneys by the Federal Communications Commission under Executive order of the President were illegal and that the Executive order was void. The answer of the respondent alleged that the 10 attorneys had been temporarily employed with the consent and approval of the United States Civil Service Commission soon after the organization of the Federal Communications Commission, so that it might function until the establishment of a roster of attorneys by the Civil Service Commission. All of these attorneys had successfully passed the competitive examination held by the Civil Service Commission. On September 26, 1935, the President issued an Executive order at the request of the Federal Communications Commission authorizing the appointment of said attorneys without regard to their relative

standings on the Civil Service Register. The petitioner filed a demurrer to the answers, which squarely raised the question of the validity of the Executive order. The court overruled the demurrer, and the petitioner has taken an appeal to the United States Court of Appeals for the District of Columbia. This appeal is still pending.

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

American Telephone and Telegraph Company et al. v. United States of America and Federal Communications Commission. Equity No. 81–366

Pursuant to section 220, on June 19, 1935, the Telephone Division promulgated a uniform system of accounts for telephone companies, effective January 1, 1936. In November 1935 the Bell System companies filed in the District Court of the United States for the Southern District of New York a bill of complaint seeking to have the order of the Commission prescribing the uniform system of accounts enjoined as being unconstitutional and void. A hearing was had in New York City before a three-judge court, composed of Judges Mattern, Hand, and Knox. A temporary injunction was granted pending final decision. On February 18, 1936, the three-judge court rendered its decision sustaining the order of the Commission except in one or two minor particulars and dissolving the temporary injunction. The three-judge court denied the petition of the telephone companies for a stay of the accounting order pending final decision of the appeal to the Supreme Court of the United States. An appeal has been perfected by the telephone companies to the Supreme Court of the United States, which court has stayed the accounting order until the case shall be finally disposed of by it.

IN THE SUPREME COURT OF THE UNITED STATES

During the last fiscal year, the Supreme Court of the United States denied a petition for writ of certiorari in the *Jenny Wren case* (reported in the last Annual Report of this Commission), 296 U. S. 624; 78 F. (2d) 729.

SPECIAL TELEPHONE INVESTIGATION

The regular staff of the Law Department has not participated in the work of the special telephone investigation under Public Resolution No. 8, which is being conducted by a special staff set up by the Commission specifically to carry on the special investigation. However, realizing that when the special investigation is concluded the regular staff will be confronted with many difficult problems, it has been the policy of the Law Department to endeavor to follow the developments of the special investigation at its public hearings insofar as time and opportunity would permit.

REPORT OF THE ENGINEERING DEPARTMENT

T. A. M. CRAVEN, *Chief Engineer*

GENERAL

The work of the Engineering Department is performed by an organization consisting of the following sections:

(*a*) Telegraph Section.
(*b*) Telephone Section.
(*c*) Broadcast Section.
(*d*) International Section.
(*e*) Field Section.
(*f*) Technical Information Section.

The activities of the various sections, with the exception of the last named, are described in the First Annual Report of the Federal Communications Commission for the fiscal year 1935. Since that report, certain functions of the Telegraph, Telephone, and Broadcast Sections have been organized into a separate Technical Information Section, the primary function of which is to keep the Engineering Department and the Commission informed of technical trends in communications. It was ascertained from experience that such a section was necessary in order to keep abreast of the rapid technical progress being made in the art of communications. The Technical Information Section was formed during the month of June 1936.

Dr. C. B. Jolliffe, who was the first chief engineer of the Federal Communications Commission, resigned effective November 12, 1935. He was succeeded on December 2, 1935, by T. A. M. Craven.

The principal engineering items of general interest since June 30, 1935, have been:

(*a*) Progress being made in the development of new portions of the radio spectrum which promises to increase the total available number of channels for communication.

(*b*) The advancing development of television.

(*c*) Facsimile communication.

(*d*) The commencement of construction for field tests of the coaxial cable system.

(*e*) Collection of engineering data with respect to the performance of broadcast stations.

(*f*) Preparation for the International Telecommunication Conference scheduled to be held in Cairo, Egypt, in February 1938, and preparation for the next meeting of the International Consulting Committee on Radio, scheduled to be held in the spring of 1937 in Bucharest, Rumania.

(*g*) New forms of interference.

Details of these developments will be discussed at greater length elsewhere in this report.

One of the foremost problems confronting the Commission for the past several years has been the formulation of a frequency allocation plan which would meet the pressing demands of the industry for the increasing use of radio in the existing types of service, as well as provide for the inauguration of new services such as television, facsimile, police, and aviation.

With the rapid technical advances in the art, and with the increasing use of radio by the various types of service, the efforts of the Commission have been concentrated on establishing methods to increase the number of available channels, both by technical improvements of existing apparatus as well as the extension of the useful portions of the radio frequency spectrum.

This problem is not only one involving international cooperation, particularly in the bands up to 30,000 kc, but also requires close cooperation between the Government departments interested in radio, the manufacturers of radio apparatus, and the users of radio equipment.

The Commission has established a policy of cooperation with the industry in the solution of this pressing problem in order that there might be a centralization of coordinated effort in this country toward better and more economical use of the radio frequency spectrum. As a result of these efforts, experimentation has been encouraged along specific lines and much factual data necessary in the solution of the problem has been secured. It is expected that additional information will become available rapidly, as the results of this intensive guidance of research progress further into actual accomplishment.

In order that this program could be brought more clearly before the country and in order that the problems might be better understood by all concerned, the Commission called an informal engineering hearing of all persons and organizations interested in the development of the radio art. This hearing was held in the offices of the Commission at Washington, D. C., from June 15 to 26, 1936. The purposes of the hearing were as follows:

(1) To determine the present and future needs of the various classes of service for frequencies above 30,000 kc, with the view of ultimately allocating such frequencies to services.

(2) To secure for the public and the Commission a keener insight into the conflicting problems which confront the industry and the regulatory body in the application of the new frequencies to the service of the public.

(3) To guide experimentation along more definite lines as may be justified from the evidence presented at the hearing.

(4) To review present frequency allocations to services in the radio spectrum below 30,000 kc.

(5) To assist the Government in its preparation for the International Telecommunication Conference at Cairo in 1938.

The Interdepartment Radio Advisory Committee particularly was invited to attend this hearing and to present a consolidated estimate of the requirements of the Government for radio services.

Widespread interest was manifested in the hearing, and approximately 100 persons, representative of all important phases of the radio industry, presented testimony. The transcript of the hearing,

excluding the exhibits, comprises 2,049 pages of most valuable engineering testimony from some of the most competent engineers in the country, and includes information resulting from experimentation and investigation of the propagation characteristics of various frequencies, apparatus limitations, evaluation of various services from the standpoint of public need and benefit, and many other important technical phases.

Among the groups which were represented are the following:

United States Government departments.
Broadcasters.
Commercial communication companies (domestic and international).
Aviation services.
Police departments.
Fire departments.
Forestry conservation departments.
Amateur services.
Television experimenters.
Manufacturers of radio equipment.
Private experimenters.
Labor organizations.
Motion-picture producers.
Power transmission systems.
Press organizations.
Educational groups.
Representatives of radio-set manufacturers.
International Scientific Radio Union.
American Medical Association.
Doctors' Telephone Service.
Geophysical service.
Electric railways.
Operators of facsimile transmission.

The record of this hearing, as well as the information compiled in previous years, will in all probability form a basis for an early allocation of frequencies above 30,000 kc and is already forming the basis for the formulation of proposals of the United States to be presented to the various governments of the world for consideration at the next International Telecommunication Conference to be held in Cairo, Egypt, in 1938.

The greatest interest centered around the facts which were developed with respect to the estimated requirements for Government services and the estimated minimum requirements for television. There were also presented to the Commission the estimated requirements of such strikingly different services, as police communication, communication for aviation, and many other well-known services.

While there has not been time in which to draw specific conclusions from the evidence given at the hearing, it was obvious that the allocated radio spectrum from 10 to 30,000 kc is not sufficient to accommodate the existing world-wide demands for radio facilities, and is totally incapable, at the present stage of technical development, of accommodating the new services which are being organized. It was also obvious that while there is a potential possibility of extending the useful radio spectrum to 10,000,000 kc, technical developments to date indicate that in the immediate future extension will in all probability be limited to approximately 200,000 kc. The evidence also indicated that insufficient knowledge is available to date with respect to the practicality of much of the spectrum between 30,000

and 200,000 kc, and that while development in this portion of the spectrum might be considered as emerging from the laboratory, it nevertheless requires further development before it could be allocated to various services for commercial operation on a permanent basis.

However, the evidence showed the necessity for making tentative allocations in order to avoid the pitfalls of premature intrenchment resulting from huge expenditures for experimental apparatus, developing into future obstacles of a practical nature when the time becomes opportune for permanent allocation.

It was also indicated that even though the useful radio spectrum in the next few years will be seven times as extensive as that of today, there would not be made available such additional multiplication of channels, and that with the advent of new services such as television and other new uses for radio, the Commission would continue to be confronted with a dearth of radio facilities in the face of a large demand therefor.

While the technique of television has progressed during the past year, it seemed generally the consensus of opinion that television is not yet ready for public service on a national scale. It must still be considered as experimental. There are numerous obstacles to be overcome and much technical development is required before television can be established on a sound national scale. Nevertheless, the rate of progress is rapid and the energies of the laboratories of the country are being concentrated on the technical development of television.

The rapid progress being made in the development of facsimile communication, both in the transmission of photographs and in the transmission of printed matter by radio and wire, has reached a stage which commands attention. Facsimile transmission and reception has the possibility of affecting considerably the method of conducting record communications in the future. While the future economic problems and benefits presented by facsimile are not yet clearly understood, it appears that the potentialities of this new service are of sufficient importance to require close attention to the results of experimentation and evolution in commercial operation.

The inauguration of field tests of the coaxial cable system between New York and Philadelphia is a forward step in the technique of communications. The results of these tests should be viewed with interest because of the potentialities involved in the application of this type of cable to the service of the public in the future. If the coaxial cable system should prove to be practical, it may bring about economic results of possible benefit to the public. The Commission's policy in this respect is to give full consideration to this technological trend and its social and economic consequences. This subject is covered in more detail later in this report.

During the past year the Commission, in cooperation with the industry, has made an intensive technical survey of the performance of broadcast stations with a view of ascertaining scientific facts leading possibly to an improved allocation of frequencies to broadcasting. This survey has just been completed, and its results are being studied so as to be available prior to October 5, 1936, on which date the Commission will hold a hearing with respect to improvements in

the existing principles of allocation of frequencies to broadcast stations.

The fact that the use of radio is international and the fact that the inherent properties of radio frequencies used by one nation or one service can affect, by reason of interference, the use of these frequencies by another nation or service, make the problem of radio communication one which affects all the nations of the world. In the past these nations have found it necessary to agree upon certain standard practices, as well as provisions for avoiding mutual interference in the use of radio. The next conference dealing with the technical state of the radio art will be held in Bucharest, Rumania, in 1937, and that dealing with agreed practices will be held in Cairo, Egypt, in 1938. Further details with respect to these conferences are mentioned elsewhere in this report.

The increasing use of electrical therapeutic machines on the part of hospitals and physicians, as well as the general public, has created a new type of interference to radio communications. For example, it was ascertained that the use of a diathermy machine in this country could interrupt an international radio communication service. Further, preliminary investigation indicates that interference caused by this type of machine may affect seriously the value of television broadcasting. In addition to this type of interference, the interference caused by the ignition system of an automobile may have a serious effect upon the usefulness of the new portion of the radio frequency spectrum above 30,000 kc, which is now being developed. Preliminary investigations inaugurated by this Commission indicate that the problem is soluble, if the cooperation of the manufacturers of therapeutic machines, the manufacturers of radio, and the automobile industry can be obtained. However, at this time the Commission's investigation of this phase of radio interference is not completed.

Pursuant to Section 218 of the Communications Act of 1934 the Commission inaugurated an investigation of the patent situation in the communications industry. The various carriers were required to submit a list of their patents and the Commission is now making an analysis of each response with the view of obtaining information concerning the various intricate phases of this important activity of the communications industry. This analysis is, of necessity, an extensive undertaking, and at this time no conclusions can be reached. However, it is a continuing study and it is expected that at a later date the Commission will be in a position to render a report to Congress on the matter.

TELEGRAPH SECTION

GENERAL

The Telegraph Section of the Engineering Department is charged with the technical examination of all matters relating to record communication by wire, radio, or cable; fixed and mobile radio services as assigned; preparation and presentation of expert testimony at hearings, conferences, etc.; preparation of technical regulations; studies concerning the use of facilities; and qualifications and classifications of radio operators.

During the past year many new assignments were made to stations in all parts of the world, and the problem of finding adequate space in the needed portions of the spectrum for the United States was more difficult than at any time before.

To show the tremendously rapid growth in the use of radio frequencies during the last few years, a comparison with the original international frequency list established by the Berne Bureau in December 1928 is illuminating. In the original list of December 1928 a total of approximately 1,700 stations were listed. Five years later the number of stations was approximately 17,000, or a 10-fold increase. A rough check of the latest list dated March 1936 shows a total of 25,000 stations. These figures are for stations at fixed locations and do not include ship, aircraft, amateur, and portable stations.

Thus it is obvious that the difficulties of fulfilling the radio phase of the requirement of the Communications Act of 1934 for the establishment and maintenance of a rapid efficient world-wide wire and radio communication service with adequate facilities at reasonable charges for the public and for the purpose of the national defense are becoming increasingly difficult by reason of the lack of space in the useful radio spectrum. Detailed studies of an engineering nature are being made of the existing facilities both wire and radio, and the advantages and disadvantages of "direct communication" versus "indirect communication" are being thoroughly investigated, as well as technical improvements leading to increasing the availability of space in the "ether".

FIXED SERVICES

On June 30, 1936, there were 321 point-to-point radiotelegraph stations licensed for fixed public service, 75 licensed for fixed public press service, and 7 for agriculture service in the United States, its territories (except Alaska), and possessions subject to the jurisdiction of the Commission. Although the majority of these stations are licensed and operated primarily for international and overseas communication, the figures include approximately 130 stations which communicate with similarly licensed stations within the continental United States on condition [1] that the use of frequencies above 6,000 kilocycles for domestic service shall not interfere with international service. Except for agriculture service each licensee may transmit only correspondence for the general public pursuant to tariffs filed with and accepted by the Commission and the necessary service messages incidental to the expeditious movement of this traffic. Addressed program material to overseas points and the one-way transmission of press to two or more fixed points and to ships at sea are among the classes of traffic handled as public correspondence in conformity with established tariffs.

The majority of these stations are licensed for communication directly with many foreign countries and United States possessions as shown by the following tabulation:

[1] Pursuant to Art. 7, par. 19, of the General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932.

Licensees

Points of communication authorized by licenses	Globe Wireless, Ltd.	Hearst Radio, Inc.	Mackay Radio & Telegraph Co.	Press Wireless, Inc.	Government of Puerto Rico	RCA Communications, Inc.	South Puerto Rico Sugar Co.	Southern Radio Co.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation.
Argentina			x	x		x				
Australia						x				
Austria			x	x		x				
Bahama Islands									x	
Belgium				x		x				
Bolivia								x		
Brazil			x	x		x				
British Honduras									x	
Canada				x		x				
Chile			x	x		x				
China	x		x	x		x				
Colombia			x			x			x	
Costa Rica						x			x	
Cuba		x	x	x		x			x	
Curacao, D. W. I					x	x	x			
Czechoslovakia			x			x				
Denmark			x			x				
Dominican Republic						x	x			
El Salvador			x							
England				x		x				
Fiji Islands						x				
France			x	x		x				
French Indo-China						x				
Germany			x	x		x				
Guadaloupe, F. W. I							x			
Guam	x									
Guatemala						x			x	
Haiti			x			x	x			
Hawaii	x		x	x		x				
Holland				x		x				
Honduras									x	
Hungary			x							
Italy				x		x				
Japan			x	x		x				
Java				x		x				
Liberia						x				x
Manchuria				x		x				
Mexico		x		x		x			x	
Nicaragua						x			x	
Norway						x				
Panama						x			x	
Persia						x				
Peru			x							
Philippines	x		x	x		x				
Poland						x				
Portugal						x				
Puerto Rico						x	x		x	
Siam						x				
Spain			x	x		x				
Surinam						x	x			
Sweden						x				
Switzerland						x				
Syria						x				
Tahiti						x				
Turkey						x				
Union of Soviet Socialist Republics				x		x				
Vatican City			x			x				
Venezuela						x	x			

With the exception of Australia, Persia, Siam, Fiji Islands, and Tahiti, direct radiotelegraph service to each of the countries and possessions listed is available through the facilities of one or more of these communication companies. Communication with Australia is available via stations at Montreal, Canada; with Tahiti and the Fiji Islands via Hawaii; and with Siam via the Philippines. Service between the United States and Persia has not yet been inaugurated.

Commencing on January 13 and continuing until January 28, testimony relative to applications of the Mackay Radio & Telegraph Co. for modification of certain station licenses to authorize the addition of Oslo, Norway, as a point of communication was heard by the Telegraph Division. In addition to the applicant, the International Telephone & Telegraph Corporation, the Postal Telegraph-Cable Co., All America Cables, Inc., Commercial Pacific Cable Co., Cuban All America Cables, Inc., The Western Union Telegraph Co., the French Telegraph Cable Co., and RCA Communications, Inc., were represented and heard. Upon careful consideration of all the evidence, the Telegraph Division on June 3 denied the applications upon its finding that there were adequate radio and cable facilities, keen competition, and existing service with which there is no complaint. This decision will become effective on October 1, 1936, unless the Commission en banc should decide that the case should be reopened for further hearing as requested by the Mackay Radio & Telegraph Co. Prior to this decision, additional applications were received from the Mackay Co. requesting authority to communicate with Warsaw, Poland, and Rome, Italy, on which no action has yet been taken.

On November 26, 1935, the Commission designated for hearing the applications for renewal of a considerable number of point-to-point telegraph station licenses in the fixed public and fixed public press services but renewed the licenses upon a temporary basis pending its final decision. The parts set for hearing covered authorized points of communication outside of the United States to which, according to information in possession of the Commission, no traffic had been directly transmitted by stations of the applicant during the preceding license period. It is not expected that the hearing will be held until a final decision is rendered in the Mackay-Oslo case.

Special authority was granted for certain stations in the United States to communicate directly with Addis Ababa, Ethiopia. A regular circuit to that point, however, has not been established On September 24, Port-au-Prince, Haiti, was authorized as an additional point of communication for the stations located at Sayville, N. Y. Stations at New Orleans, La., were licensed on May 26 to communicate additionally with La Ceiba, Honduras, and Puerto Cabezas, Nicaragua, for the handling of possible occasional traffic direct to those points when stations at La Lima, Honduras, and Managua, Nicaragua, are closed for the night. Due to the completion of a new and modern station at La Lima, Honduras, the fixed service stations at New Orleans were licensed additionally on March 3 to communicate directly with that point instead of relaying through other stations.

Additional and more modern transmitting equipment for improved international and overseas fixed public service was installed during the year in accordance with construction permits at Brentwood and Rocky Point, N. Y., and Palo Alto and Mussel Rock, Calif. Receiving stations of the various operating companies used for the same service likewise are undergoing more or less continuous improvement and expansion, which in some cases involves the purchase of additional land and the erection of new buildings and antenna systems.

Work is now in progress involving the removal of all point-to-point transmitters and antenna systems at Sayville, N. Y., to the new transoceanic station location at Brentwood, N. Y., several miles distant, without interrupting the international, overseas, and domestic circuits operated out of New York City by means of this equipment.

The completion of an important technical development was represented by the licensing on June 16 of a new high-frequency transoceanic transmitter at Rocky Point, N. Y., capable of a power output of 200 kilowatts. In general, the maximum power of transmitters used for this service is 50 kilowatts. The new transmitter will be used primarily for transmission to London, Berne, and Geneva and will provide an improved transatlantic circuit particularly for multiplex, printer, and facsimile operation.

On April 7, 1936, as the result of a hearing in August 1935, the Telegraph Division approved the assignment of five additional frequencies to Globe Wireless, Ltd., for the purpose of permitting this company to offer a more continuous communication service. All of the additional frequencies were in the 4,000–5,000 kilocycle band and are useful primarily for night-time communication, especially on the shorter circuits. All other fixed service frequencies licensed for the use of this company are above 7,000 kilocycles and consequently are unsuited for use on all of their circuits at night. Although only one class of service, designated as "Radiomail", is rendered by this company, the additional frequencies were licensed solely to make available a more diversified allocation thereby overcoming an obvious technical circuit deficiency.

The use of fixed public press service stations at Hicksville, N. Y., San Francisco, and Honolulu for the transmission of multiple-address press messages to a number of fixed receiving stations in the United States and Canada, and simultaneously to ships at sea, continued to develop during the year. A large proportion of the subscribers at fixed points are broadcast stations, which receive the press through the services of radiotelegraph operators and rebroadcast it on the regular aural broadcast frequencies to the general public.

As a result of an informal hearing on March 30, 1936, the Telegraph Division on May 19, 1936, promulgated a new rule (241–a) particularly designed to permit expeditious action in the granting of authority to licensees of fixed public press stations to transmit multiple address messages to additional specified points throughout the world as and when the necessity arises. At the hearing it was contended by operating officials that in many cases the urgent need for authority to transmit press messages to an additional point no longer exists after such authority is finally obtained by compliance with routine procedure. Under the new rule, fixed public press licenses may be issued (subject to the required showing of public interest), providing for multiple-address transmission to "two or more fixed points"; these points must be notified to the Commission when transmission is first inaugurated and are subject to confirmation or other appropriate action of the Commission within 30 days.

Improved equipment and increased power for the transmission of press messages have been provided during the year for stations near New York, Chicago, and San Francisco. A new direct press circuit

between Carlstadt, N. J., and Redwood City, Calif., was authorized on June 2, 1936. In addition, a similar circuit between Tinley Park, Ill., and Redwood City, Calif., was approved on October 8, 1935.

The majority of domestic point-to-point telegraph stations are located in the principal cities and are operated by large communication companies in conjunction with their international and overseas circuits. In their present stage of development they provide limited competition with the parallel intercity landwire telegraph circuits. A new domestic station of this type at Huntington Beach, Calif., to serve the city of Los Angeles was licensed on July 16, 1935, and is authorized to communicate with San Francisco.

Stations located in and near the oil fields of Texas, Oklahoma, and adjoining States continue to serve the general public and especially satisfy communication needs peculiar to the oil and natural gas industries operating in these areas. During the year additional stations of this group were licensed at Crane, Tex., and near East St. Louis, Ill. On April 15, 1936, eight portable stations of this system were licensed for use at locations in the oil fields where adequate wire facilities are not available.

Other groups of stations, providing domestic circuits only, are operated in the Great Lakes region, principally in connection with the maritime operations on the Great Lakes; in Hawaii for interisland telegraph service, and in California for the expeditious handling of market information for the benefit of fruit growers exchanges and other agricultural interests. The last-mentioned agriculture group operates on frequencies allocated especially for this class of station; the same frequencies are available for similar service at any location and for assignment to any properly qualified applicant.

Applications for construction permits requesting the establishment of fixed stations to render private service on behalf of private business organizations and inquiries concerning this subject have been received by the former Radio Commission and this Commission. However, in view of the statutory requirement of public interest, convenience, or necessity, and because of the definitely limited number of available frequencies for radio communication, such applications are usually designated for hearing. In no case has fixed private service been authorized except where the safety of life and property is involved and the required service cannot be supplied by wire lines or by public service radio communication companies.

MARITIME SERVICES

On June 30, 1936, there were 57 coastal telegraph stations in the public coastal service and 3 in the private coastal service licensed by the Commission for operation in the United States, its territories and possessions exclusive of Alaska. Additional licenses for marine relay service were in effect for 42 of these stations. On the same date, there were also 5 mobile press stations licensed for mobile press service.

Coastal stations are licensed for private service only under exceptional circumstances where the required communication cannot be provided efficiently by public service stations; for example, the In-

land Waterways Corporation, authorized by an act of Congress, is the licensee of a private coastal telegraph station at Memphis, Tenn., used for necessary communication with its vessels navigating the Mississippi, Missouri, and Ohio Rivers.

There were 2,020 licensed ship stations on June 30, 1936. Of this number, 95 are licensed to operate on frequencies allocated for use exclusively in Alaskan waters.

Ship stations are licensed in three classes. The division by classes on June 30, 1936, was 329 in the first class, none in the second class, and 1,691 in the third class. Most of the stations in the first class are compulsorily equipped with radio apparatus under the Ship Act of 1912. Those in the third class are voluntarily equipped.

At the request of the chairman of the Senate Committee on Commerce a representative of the Engineering Department assisted that committee throughout the year in preparing legislation to replace the Ship Act of 1910, as amended in 1912, requiring the installation of radio equipment on certain vessels of the United States. The effect of the new legislation would have been to increase the number of American vessels compulsorily fitted with radio apparatus. The bill, S. 4619, was passed by the Senate, but failed of enactment in the House during the closing days of the last session of Congress.

On June 19, 1936, the Senate consented to the ratification of the International Convention for the Safety of Life at Sea signed in London, 1929. The effective date of the convention as applying to the United States is dependent upon ratification by the President and the deposit of the ratification with the British Government. This convention will require all cargo ships over 1,600 tons and all passenger ships going on an international voyage to be equipped with radio apparatus, and maintain certain prescribed hours of watch for safety purposes. It is anticipated that approximately 1,200 ships of the United States will be affected by this treaty.

The General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932, provide for the use of an automatic alarm signal in connection with ship station receivers for calling the attention of a ship operator off duty to the presence of a distress call. These regulations prescribe the exact combination of signals to be transmitted for this purpose by the vessel in distress, specify general conditions to be met by apparatus to be employed for receipt of this combination of signals, and provide that before an administration may approve such a device, it must be satisfied by practical tests that the apparatus complies with these international requirements. The Convention for the Safety of Life at Sea recognizes the use of an automatic distress alarm in lieu of a certified watcher or a qualified operator. Realizing that the United States might become a party to this convention in the near future, the Commission on July 15, 1935, after considerable study in cooperation with the United States Department of Commerce and other interested parties, promulgated its specifications for auto-alarms which may be installed aboard vessels of United States registry, if and when the convention becomes effective for such vessels. At present, the United States Ship Act of July 23, 1912, requires that on United States or foreign vessels compulsorily equipped pursuant to this stat-

ute, the radio apparatus must be in charge of a person skilled in the use of such apparatus at all times while the vessel is being navigated.

Regulations were promulgated (effective Jan. 1, 1936) by the United States Department of Commerce, Bureau of Navigation and Steamboat Inspection, which require the installation of radiotelegraph transmitting and receiving apparatus on at least one motor lifeboat of passenger vessels over 2,500 gross tons, when these vessels navigate more than 200 miles from land. These regulations prescribe certain technical standards to be met by such installations and in order to assist in the administration and enforcement of these safety measures, the Commission on October 1, 1935, promulgated a new rule (281½) specifying additional requirements for lifeboat radio stations with respect to emission, frequency stability, power input, antenna, receiver, power supply, method of installation, spare parts, instructions, and provisions for effective and regular inspection. Although a minimum range of 50 nautical miles is required, tests have shown that ranges from 100 to 200 miles are obtained with equipment designed and built by commercial firms to comply with these regulations. In cases of distress, after the motor lifeboat is launched, it may take in tow other lifeboats from the vessel and, by using the radio transmitter, enable a rescuing ship to take radio direction-finder bearings and thus establish definitely the position of the lifeboats.

In general, only minor changes concerning the operation of coastal stations occurred during the year. The service of one of the larger stations located at Palo Alto, Calif., was improved by the installation of two new high-frequency replacement transmitters of modern design. An additional transmitter for coastal service was installed at one of the two coastal telegraph stations in Hawaii. A change in the frequency assignment of this station also was approved to permit the more expeditious handling of traffic with ship stations whose operators have formed the practice of listening on preferred frequencies. A construction permit was granted on May 12, 1936, authorizing the Mackay Radio & Telegraph Co. to remove all coastal transmitters from the long-established Sayville, N. Y., station to a more favorable site for efficient transmission at Amagansett, N. Y. This project is expected to be completed within the next few months, and will not interrupt the regular handling of marine traffic by the licensee through its New York City message center.

On June 30, 1936, the Telegraph Division granted authority for the coastal station at Bolinas, Calif., to transmit press material, upon a secondary basis, to subscribers at insular possessions of the United States, except to Puerto Rico and Hawaii, simultaneously with transmission of the same material to ship stations. In practice, the station makes no change in its normal mode of operation as a result of this authorization. Its regular press transmission to ships is simply overheard and legally copied for use by the involved subscribers at fixed points within the specified areas. The purpose is to provide a press service to persons located on small islands and in isolated regions which would not otherwise receive press dispatches. In view of the efficient existing point-to-point facilities for handling press traffic to Hawaii and Puerto Rico these areas were omitted from

this authorization. The new service is intended to be especially beneficial to the residents of Midway and Wake Islands who are stationed at these points in connection with the operation of the transpacific commercial air route.

AVIATION SERVICE

The growth of the aviation industry reported in the last annual report has continued until at the present time there are only two lines carrying mail and passengers which are not equipped for two-way radio communication. Provisions have been made in the Commission's plan for the development of this service for the accommodation of these two lines if they should at any time desire to install radio equipment or be required to make such an installation by the Government.

During the past year construction permits were granted to the Pan American Airways System for stations on Long Island to serve as the western terminus of a proposed North Atlantic air service to be operated by Pan American Airways and the Imperial Airways of Great Britain as a joint project. It is probable that in the near future announcement will be made of plans for this airline which at the present are somewhat nebulous. The same company inaugurated transpacific air transport service on November 22, 1935. In this service the company operates ground stations at San Francisco, Hawaii, Midway Island, Wake Island, Guam, and the Philippines.

There are at present seven major chains using 59 frequencies for communication with aircraft and 39 frequencies for point-to-point communication between airports. A great many of these frequencies are duplicated in various sections of the country in order to reduce the ill effects of a shortage in frequencies suitable for the communication needs of this industry.

The Commission has cooperated with other agencies with regard to the coordination of activities in the interest of safety of life and property in the air. The Radio Technical Committee for Aeronautics, composed of representatives of Government departments and commercial organizations interested in aviation, was formed under the auspices of the Bureau of Air Commerce. The Commission has had representatives at the various meetings of this committee; and insofar as its recommendations have affected the use of radio communications by commercial interests, an effort has been made to carry them out. One of the most important of these recommendations is that with regard to the assignment of a long-distance daytime frequency for itinerant airmen. Such a frequency has been assigned and will be used, for the most part, in the western section of the United States for flying across established routes where the distances between radio stations involved are beyond the communication range of the frequencies previously assigned and most generally used.

POLICE STATIONS

There has been no change in the plan of operation or the number of conventional radio frequencies set aside for radiotelephone communication between police headquarters and police cars. There has

been a steady growth in this system, although not so much as in previous years. This is probably due to the rapid increase in experimental use by municipal and State police departments of the frequencies above 30,000 kilocycles discussed elsewhere in this report.

As in the case of municipal police, there has been no change in the policy or number of frequencies allocated for use by State police departments. The number of stations in use by such organizations has practically doubled, there now being a total of 101 stations operated by 15 States.

The report of the Associated Police Communication Officers mentioned in the last annual report with regard to the establishment of an intercity radiotelegraph network was received and given thorough study. As a result the Commission has allocated frequencies, established rules and regulations, and provided an operating procedure for such a system. Due to some protests against the allocations which were filed by television experimenters, these rules are not yet effective. However, it is believed that a satisfactory solution will be reached and there will be no need to extend the effective date now set beyond September 15, 1936. Under this plan the United States will be divided into zones. Tentatively, zone boundaries will coincide with State boundaries. All licensed radiotelegraph stations within a zone may communicate with each other under the direction of a control station, known as an interzone police station. This station will have control of the operation of other stations within the zone and may also communicate with interzone police stations in the neighboring zones. Under limited circumstances it may authorize interstate communication between zone stations.

The organization and operating procedure of this system are practically identical with that used by the Army and Navy. The establishment of this system should provide a valuable reserve of trained operators who could be made available to the defense forces in time of national emergency. While this was one consideration used in the establishment of this network, it was felt that since the activities of the police are essentially similar to military activities, the needs for communication are also somewhat similar, and therefore a military communication system should be most suitable.

ALASKA STATIONS

The Commission's policy of cooperation with the office of the Chief Signal Officer of the Army in connection with the administration of radio stations in Alaska has been continued with very satisfactory results. A large number of new stations have been established, including those operated by the Territory of Alaska in the Aleutian chain in the Eastern Hemisphere.

At the time of the last report one aviation chain had been established, namely, that flown by aircraft of Pacific Alaska Airways, which extended from Nome to Ketchikan via Fairbanks and Whitehorse Canyon. In the past year an additional chain was authorized extending from Kennecott to Dillingham via Anchorage. This chain is not operated as a single unit but is flown by two separate organizations. It is believed that in the near future provision will be made for connecting schedules between these two units and also between

this chain and the chain flown by the Pacific Alaska Airways, in order that the air traveler may receive the maximum benefit of available air transportation.

SPECIAL EMERGENCY STATIONS

The number of stations of this classification has increased approximately 20 per cent, making a total of 57 licensed stations on June 30, 1936. This class of station operates during emergencies, such as floods, earthquakes, and hurricanes, when wire-communication facilities become disrupted. There were several occasions during the past year, particularly during the spring floods of 1936, when these and other radio stations were the only means of communication with the outside world.

GEOPHYSICAL STATIONS

The number of stations in this classification has increased by approximately 20 per cent during the last year, indicating that with the resumption of activity in industry there has been a resumption in the oil industry, with a consequent increased use of radio in the explorations for new oil fields.

MARINE FIRE STATIONS

There has been practically no change in this classification. Since the period of the last report no new stations have been licensed. As yet the majority of cities operating fireboats in connection with the patrolling of water fronts are controlling those fireboats through the agency of municipal police radio stations.

MOTION PICTURE STATIONS

After a short period of quiescence the motion picture industry has again embarked on a program involving photography in remote locations and embodying large groups of personnel. On several occasions use has been made of radio stations authorized under this classification.

AMATEUR SERVICE

On June 30, 1936, there were approximately 46,850 amateur stations licensed by the Commission. Of this number many are affiliated with the Naval Communications Reserve and the Army Amateur Reserve system. A large number of these stations, as well as others not associated with the Army and Navy, continue to cooperate with the American Red Cross in times of emergency, providing communication between headquarters and areas affected by storms, floods, earthquakes, and similar catastrophes when other means of communication fail.

During the past year amateur stations rendered valuable service to the public. Beginning early in July 1935, with the flood in the Finger Lakes region of New York State, and continuing through the severe sleet and snow storms of the past winter, the amateurs furnished in many cases the sole means of communication between the stricken areas and outside aid. Their services to the public during the disastrous floods of this spring, which affected 14 States and isolated 20 large cities, were outstanding.

Many amateur stations participated in the Navy Day competition held on October 28, 1935, when a message from the Secretary of the Navy to all amateurs was transmitted from the naval radio stations at Arlington, Va., and San Francisco, Calif.

On November 11, 1935, the Chief Signal Officer of the United States Army transmitted a message to members of the Army Amateur Reserve system. These yearly events stimulate interest, encourage accuracy in receiving, and enable amateurs to test their skill and proficiency in the International Morse Code.

Continuing the Commission's policy to encourage technical developments and operating proficiency in the amateur service, a number of rules respecting this service were revised during the past year. The technical and engineering requirements were increased with respect to the equipment used by amateurs, and on June 2, 1936, the Commission increased the code speed requirement from 10 to 13 words per minute.

The Commission has been requested to allocate additional frequencies for radiotelephony in the 3,500–4,000 kilocycle amateur band in order to relieve some of the congestion existing in this frequency band due to the large number of amateur radiotelephone stations in operation. The Commission finds, however, many amateurs oppose any change being made in the present amateur frequency allocation. In order that all interested parties may be given an opportunity to present their views, a public hearing has been set for October 20, 1936.

REPORTS OF DISCREPANCIES IN OPERATION

During the past year approximately 1,500 cases were handled involving violation of the law and/or regulations. This number represents a reduction of approximately 12 per cent over the number of cases handled last year. This reduction was achieved in spite of a larger number of stations in operation and is believed to be due to the activities of the Commission in this regard. On several occasions hearings were held and disciplinary action taken with satisfactory results.

RADIO OPERATORS

Under the provisions of Section 318 of the Communications Act of 1934, licensed radio stations may be operated only by licensed operators. Section 303 of this act, among other things, confers upon the Commission authority to prescribe the qualifications of station operators, to classify them according to the duties to be performed, to fix the form of such licenses, and to issue them to such citizens of the United States as the Commission finds qualified.

Radio operator licenses are classified under three general headings, as radiotelegraph, radiotelephone, and amateur. Radiotelegraph and radiotelephone class licenses are divided into first, second, and third class. Only one class of amateur operator license is issued; however, the privileges granted holders of this class license are designated as Class A, B, or C.

In the administration of operator licensing this limited classification has been found adequate and has enabled the Commission to prescribe the proper qualifications for operators engaged in operating

licensed radio stations in the many services established by this Commission.

Specific rules governing operators' licenses have been prepared. These rules pertain to the requirements for obtaining radio operator licenses of the different classes, the class of licenses valid for the operation of radio stations in the various services, license renewal requirements, points at which examinations are held, and other information pertinent to the subject.

No major changes have been made in the rules governing operator licenses during the past year. However, examinations and other requirements are revised from time to time as technical advancements are made in the radio art.

WIRE TELEGRAPH AND SUBMARINE CABLE

An extensive study was made during the year of the following:

1. *Route miles, wire miles, and telegraph channel miles of the major telegraph carriers.*—This information was made available to the Commission in response to Telegraph Division Order No. 9 and is summarized in statistical form in the last annual report. In this connection no applications for construction of new telegraph wire lines were received during the year. The Western Union Telegraph Co. was granted the authority requested in 12 applications to lease a total of 353 miles of circuit from the Bell Telephone System companies for temporary operation, and the authority requested in four applications to lease a total of 102 miles of circuit from the Bell System for permanent use. The RCA Communications, Inc., was granted the authority requested in four applications to lease a total of 615 miles of circuit from the Western Union Telegraph Co. for permanent use.

2. *Quality of telegraph service.*—This study which is still in progress includes such factors as (1) type of message, (2) time of day, (3) type of circuit, (4) length of haul, (5) number of relays, (6) method of delivery, (7) complaints from customers, and (8) difference between cities with full-time offices and cities with only part-time offices. This study is not yet completed, therefore no conclusions have been drawn.

3. *Message classification.*—This study involves a vast number of problems and is being made as a result of the hearings under Telegraph Division Order No. 12. Since this study has not yet been completed no conclusions have been drawn.

The Western Union Telegraph Co. has recently inaugurated between New York and San Francisco, and between New York and Los Angeles, a telemeter service, a form of leased wire service in which the customer is charged according to the words he transmits instead of according to the time he uses the circuit, as is the case with the leased wire service. The novel feature of this service is that the circuit is always available to the customer and is automatically made available for the use of the telegraph company when the customer is not using it.

VALUATION

In order to keep the Commission informed on current changes in costs and values of carrier properties, and to assist the Accounting Department in determining proper depreciation rates, a unit was

organized on July 1, 1935, to make appraisals and depreciation studies of wire telegraph companies and radio companies.

The Interstate Commerce Commission transmitted to this Commission on July 27, 1935, a tentative valuation of the Western Union Telegraph Co. as of December 31, 1931, which, owing to the pressure of other matters, has not been made final.

In order that the same engineering principles may be applied for telegraph, radio, and telephone companies, work of this character will be consolidated into one unit as soon as the necessary personnel can be made available. The work of the telegraph unit has been a study of recent Supreme Court decisions pertaining to valuation matters, making trends on costs, from reports of carriers and other sources, and a study of the most economical manner of keeping an appraisal current after it is made.

The work of the telegraph unit on appraisals and depreciation included the preparation of Telegraph Division Order No. 25, relating to purchases, by carriers, and the net prices paid for such purchases and the rates of compensation paid its employees, and other general information, so that the Commission may be informed of current changes in costs in accordance with Section 213 (e) of the Communications Act of 1934. This order repealed Valuation Order No. 17, prescribed by the Interstate Commerce Commission, effective May 5, 1915, as revised March 30, 1932, insofar as it applies to carriers subject to the Communications Act. A similar order is contemplated for radio companies.

The Section has completed about 95 per cent of the indexes for units of material and labor for the years 1932, 1933, 1934, and 1935. These indexes were prepared from returns to Valuation Order No. 17. Beginning with 1936 they will be prepared from returns to Telegraph Division Order No. 25. This is a continuing activity.

Indexes are a ready visual reference of the changes in costs and values of carrier properties, in compliance with Section 213 (e) of the Communications Act. The use of indexes, when properly prepared and applied, has been sustained by the United States Supreme Court.

Studies have been completed from valuation data in our files, showing the service life of telegraph poles in the States of Alabama, Arizona, Georgia, Idaho, Massachusetts, New Mexico, Utah, and Washington, to be used in establishing mortality tables in connection with depreciation accounting. This work is a continuing activity, at least until the mortality tables are established.

A draft of Supplement no. 8 to Valuation Order No. 3 prescribed by the Interstate Commerce Commission has been prepared with a view to reducing the expense to the Commission and to the carriers of keeping the engineering reports up to date, as compared to the practice outlined in Valuation Order No. 3. This is a continuing activity.

EXPERIMENTAL AND RESEARCH

Considerable progress was made during the past year in the collection and dissemination of technical data which are of fundamental significance and importance to radio and wire communication services. The information functions heretofore performed by this section of the Engineering Department recently have been transferred to the

newly organized Technical Information Section, as mentioned elsewhere in this report.

During the past year the new devices and improvements, as disclosed by the industry, have progressed at a rapid rate. A careful study and analysis of these developments has been made in order to determine their potentialities and to insure the maximum public benefit as a result of their application to the communications art.

During the past year the use of the very high frequencies for commercial application has shown marked increase, particularly in the police service. In the strictly commercial field, three important radio systems, noteworthy of mention, have been developed and placed into operation on an experimental service basis. The Radio Corporation of America has developed an experimental multichannel circuit between New York and Philadelphia. This circuit, operating on frequencies between 90,000 and 104,000 kilocycles, is unique in its operation in that it employs automatic relay stations at New Brunswick and Trenton, N. J., which may be turned on and off from either terminal station by radio. At the present time, the circuit provides for one telegraph printer channel, one hand telegraph channel, one start-stop channel to control the remote transmitters, and one facsimile circuit, all for simultaneous transmission in each direction. Many future experiments will be necessary to determine future possibilities and limitations of this type of circuit.

In Philadelphia the Atlantic Communications Corporation established a coastal harbor station operating on a frequency of 38,600 kilocycles for communication within a radius of 20 miles with harbor craft in the Delaware-Schuylkill River area. By means of this public service system, it is possible to establish communication from any point with connecting wire telephone facilities to any harbor craft equipped to receive the transmissions in this area. The apparatus employs an A-T cut crystal, maintaining a frequency tolerance of better than 0.02 per cent and affords high quality service of commercial grade.

The Mutual Telephone Co. of Hawaii also placed into operation an experimental circuit between the islands of Molokai and Maui, operating on 220 and 230 megacycles, respectively. Technical considerations which influenced the selection of frequencies in the neighborhood of 230 megacycles for this circuit were primarily those of automobile ignition interference and interference from other sources as well as directional antenna costs. During the experiments conducted, it was noted that frequencies in the range of 150 to 400 megacycles are relatively unaffected by automobile ignition interference. It was further noted that by elevating the directive antenna it was possible practically to eliminate all types of interference.

Progress in the collection of data on wave propagation from 2,500 to 20,000 kilocycles has been continued. However, the need of further experimental data with which to verify and check the results of theory and the accuracy of formulas advanced by mathematical physicists remains. Commercial operating companies are continuing their efforts in the collection of this technical information and are providing comprehensive reports to the Commission. The collection, coordination, and analysis of the technical data obtained from

licensees on the actual use of the frequencies will be continued by the Commission.

Considerable study and analysis of the field intensities necessary for the various services have been made. Some of the many factors involved in the field intensity requirements are well known. However, adequate information with respect to some factors, particularly the reliability of service, is lacking. In connection with this factor as well as all others, further experimental data are required. It will be necessary to draw upon the experience of the communication organizations to a large extent in order to conduct a full analysis of this important subject.

The number of stations in the experimental service has increased approximately 62 per cent in the past 12 months. There are now 1,613 licensed general and special experimental stations, of which 1,359 are under the jurisdiction of the Telegraph Division, 228 under the jurisdiction of the Broadcast Division, and 26 under the jurisdiction of the Telephone Division. It is of particular importance to invite attention to the large increase of general experimental stations operating as municipal police stations. The number of stations of this class has increased from 393 on June 30, 1935, to 963 on June 30, 1936. Other services exhibiting continued interest in the adaptation of the ultra-high frequencies are television, facsimile, broadcast, relay broadcast, aviation, special emergency, geophysical, fixed public and public coastal, fixed public press, coastal and ship harbor, and proposed services for forestry and railroads.

TELEPHONE SECTION

GENERAL

The Telephone Section is responsible for the technical examination of all matters relating to telephone communication (other than broadcasting) by wire or radio, including fixed and mobile radiotelephone services as assigned; preparation and presentation of expert testimony at formal hearings; preparation of technical regulations, and collaboration with the Telegraph Section in matters relating to teletype, telephoto, and facsimile systems.

The Telephone Section of the Engineering Department has had but a nucleus of an organization during the past year because of the necessity of conserving funds. Basic principles for the engineering phases of future regulation of the telephone industry are being carefully formulated, but will not become entirely apparent until after the results of the special investigation of the telephone companies, ordered by Congress, under Public Resolution No. 8, are known. At this time this investigation is still in progress and to date no conclusions can be reached. However, the Telephone Section of the Engineering Department has carried on a definite routine, the scope of which is illustrated in part in this report.

WIRE

SPECIAL STUDIES

During the past fiscal year the Telephone Section conducted the following special studies:

1. Plant engineering and accounting methods employed by certain telephone companies.
2. Study of data to be furnished by telephone carriers in connection with "Applications for certificates of convenience and necessity."
3. Carrier in cable.
4. Development of coaxial cables and coaxial cable systems.
5. Analysis of construction completion reports submitted to the Commission by telephone carriers in connection with certificates of convenience and necessity.
6. Comparison of telephone service in the United States with that in other countries.
7. Frequency band widths for certain Bell System services.

Certificates of Convenience and Necessity

During the past year the Telephone Section of this Department prepared reports with respect to applications for certificates of convenience which were made on the part of the following companies and which were acted upon by the Commission:

(*a*) Inter-Mountain Telephone Co. Application to construct a pole line for telephone toll service between Wytheville and Bland, Va.

(*b*) Crown Point Telephone Co. and Northwestern Indiana Telephone Co. Application for approval of sale of Northwestern Indiana Telephone Co. to Crown Point Telephone Co.

(*c*) New England Telephone & Telegraph Co. and American Telephone & Telegraph Co. Application to construct a cable line between Worcester and Fitchburg, Mass.

(*d*) Inter-Mountain Telephone Co. Application to construct a toll circuit between Johnson City and Erwin, Tenn.

(*e*) Mountain States Telephone & Telegraph Co. Application to extend telephone pole lines in region between Ashton, Idaho, and West Yellowstone, Mont.

(*f*) Inter-Mountain Telephone Co. Application to construct a toll circuit between Bristol, Tenn., and Abingdon, Va.

(*g*) Northwestern Bell Telephone Co. and Tri-State Telephone & Telegraph Co. Application to construct a toll circuit between Spirit Lake, Iowa, and Jackson, Minn.

(*h*) Mountain States Telephone & Telegraph Co. Application to construct an open wire pole line between Mammoth Hot Springs, Wyo., and Cooke, Mont.

(*i*) Northwestern Bell Telephone Co. Application to construct a toll circuit between Pine Ridge, S. Dak., and Rushville, Nebr.

(*j*) Southwestern Associated Telephone Co. Application for approval of sale of telephone properties of the Western Telephone Corporation of Texas, the Western Telephone Corporation of Oklahoma, the Western Telephone Corporation, and the Western Light and Telephone Co., to the Southwestern Associated Telephone Co.

(*k*) Inter-Mountain Telephone Co. Application for authority to construct a toll circuit between Wytheville and Bland, Va.

(*l*) American Telephone & Telegraph Co. Application to supplement existing facilities between Marinette, Wis., and Escanaba, Mich.

(*m*) American Telephone & Telegraph Co. Application to supplement existing facilities between Watertown, N. Y., and the International Boundary (United States-Canada).

Miscellaneous

The section assisted in the presentation of expert testimony in several hearings, among which were those of the American Telephone & Telegraph Co. and the New York Telephone Co., relative to the installation of a coaxial cable system between New York and Philadelphia. The section also made certain field surveys with respect to the valuation and appraisal of telephone properties, including an estimate for the Department of Agriculture pertaining to the relocation of the American Telephone & Telegraph Co.'s pole line within the Squaw Creek Migratory Waterfowl Refuge near Mound City, Mo., and an appraisal in connection with the hearing conducted on the application for the sale of the Northwestern Indiana Telephone Co. to the Crown Point Telephone Co.

Technical Developments in Telephony

During the past year a number of technical developments were effected in telephone communication, the most important of which are as follows:

(*a*) The Commission granted the application of the American Telephone & Telegraph Co. for authority to construct a coaxial cable between New York and Philadelphia, a distance of 94½ miles, and authorized its use for experimental telegraph, telephone, and television purposes. The line structure consists of a gas-filled ⅞-inch lead sheath containing two 19 gauge paper insulated quads. The coaxial structure consists of an outer copper conductor, the inside diameter being 0.27 inch with insulating disks supporting a central copper conductor of 0.072-inch diameter. One such coaxial circuit is used for each direction of transmission. A new type of repeater is to be inserted in the line at 10-mile intervals in order to counteract the large transmission loss of the high frequencies employed. Each repeater is designed to handle the entire range of frequencies in the order of a million cycles or more.

This coaxial cable will have a capacity of 240 telephone channels and more than 2,000 telegraph channels, and will permit a single high grade transmission of moving images. The experiment is one of importance to the country in that it promises a possibility of an increase in availability of channels for telephone and telegraph transmission at a cheaper cost, and also because it gives promise of affording a means of visual communication between points, as well as the relaying by wire of television broadcast programs. At this time the system is not fully developed in its practical phases and the conclusions which can be reached with respect to the application of such a system to the service of the public must of necessity be conservative. In view of the potentialities with respect to the various problems of competition involved between voice communication and record communication, as well as the problems involved in the ultimate application of television for both person-to-person contact and general public broadcasting, the Commission felt it advisable to consider the use of this system entirely experimental at this time. In addition to this, the solution of the various technical obstacles still to be overcome and the lessons to be learned as a result of the field test so far authorized, are still to be ascertained.

(*b*) During the year improvements were made on the cross-bar switch, which is a device for reducing considerably the amount of equipment required for the operation of an automatic telephone exchange. It is also expected that economies of operation will be effected by this apparatus.

(*c*) Many improvements have been announced by telephone manufacturers in connection with the development and improvement of hand telephone sets. The developments have effected improvements both in appearance and operation of station apparatus.

The regular engineering staff of the Telephone Section has cooperated with the Engineering Section of the Special Investigation, the latter staff being under the direction of Mr. Cyrus G. Hill, Engineer in Charge, Special Investigation. Assistance has been given on studies pertaining to patents, depreciation, long lines practices, and manufacturing costs of telephone equipment of the telephone and manufacturing companies under investigation. The result of the engineering phases of the Special Investigation will be made the subject of a separate report to Congress, as it is not entirely within the jurisdiction of the regular Engineering Department of the Federal Communications Commission.

RADIO

Point-to-Point Radio Telephone Stations

On June 30, 1936, there were 44 point-to-point radiotelephone stations in the continental United States, Puerto Rico, and Hawaii, licensed for international and overseas fixed public service in connection with land-wire telephone networks. Eight of these stations are used to interconnect the land line telephone systems of the principal Hawaiian Islands. Two stations, located in Puerto Rico, are utilized for service with the Dominican Republic and with the United States in conjunction with other stations in southern Florida. The Florida stations also connect with the Bahama Islands and 10 Latin American countries. Twenty stations located in New Jersey and New York provide direct connection with similar stations in England, Bermuda, Peru, Brazil, Argentina, and via connecting cables and land lines to many additional foreign countries. There are also six stations near San Francisco employed for direct connection with Hawaii, the Philippines, Japan, and Java, and two stations in Hawaii which communicate directly with San Francisco. The Commission defines one station as all of the radio transmitting apparatus used at a particular location for one class of service and operated under a single instrument of authorization. In the international and overseas service a separate license and call-letter group is issued for each assigned frequency at a given location, pursuant to the requirements of the General Radio Regulations Annexed to the International Telecommunication Convention.

During the year the Commission authorized additional direct point-to-point radiotelephone circuits for public service from Hialeah, Fla., to San Salvador, El Salvador; Tela, Puerto Castilla, and La Lima, Honduras; San Juan, Puerto Rico; also from San Juan to Miami, Fla.; Cuidad Trujillo, Dominican Republic; and from Lawrenceville, N. J., to Paris, France. Public telephone service to

some of these points and to certain other points previously authorized by the Commission was inaugurated on the following named dates:

Miami to Santo Domingo, Dominican Republic, October 31, 1935.
Miami to La Lima, Honduras, January 15, 1936.
Maimi to San Juan, Puerto Rico, February 20, 1936.
Miami to Kingston, Jamaica, April 3, 1936.
Miami to San Salvador, El Salvador, June 10, 1936.

Arrangements were made during the year looking toward the establishment of a direct radiotelephone circuit between New York and Paris to handle calls to and from France which are now routed via London.

At the close of the fiscal year telephone service from the United States had been extended to reach a total of 65 countries, thus making possible interconnection of approximately 93 per cent of the world's telephones. Service to 62 of these countries is provided by means of radio circuits of the American Telephone & Telegraph Co., either direct or through switched connections at the distant terminals. The maximum daily number of calls over these circuits occurred on Christmas Day, when a total of 358 calls was completed. Other companies operating overseas and international public telephone circuits from points outside the continental United States in accordance with licenses granted by the Commission are the Radio Corporation of Puerto Rico, RCA Communications, Inc., and the Mutual Telephone Co. Effective July 1, 1936, there will be substantial rate reductions from all places in the continental United States to most foreign countries.

A tropical hurricane in Florida on September 2, 1935, demolished a 40-mile section of pole line and interrupted wire telephone circuits between Miami and Key West, isolating the latter point with respect to commercial communication service, with no prospect of early renewal. Some small aircraft radiotelephone transmitters, together with suitable receivers, all battery operated, were immediately installed by the American Telephone & Telegraph Co. at Big Pine Key and Tavernier, at each end of the remaining pole lines, and were used temporarily to bridge the 40-mile gap. Special experimental licenses were granted for this purpose by the Telephone Division. Two emergency telephone circuits were established by this method and provided satisfactory service pending reconstruction of the normal facilities.

On November 27, 1935, the Commission designated for hearing in part the applications for renewal of the point-to-point telephone station licenses for the stations at Dixon, Calif., operated by the Transpacific Communication Co., Ltd., a 100 per cent owned subsidiary of the American Telephone & Telegraph Co., and issued temporary renewal licenses. The parts set for hearing covered the points of communication—Shanghai, China, and Sydney, Australia—to which public telephone service had not been established by the licensee. In view of information subsequently received indicating that satisfactory progress was being made toward opening service on the Shanghai circuit, the Telephone Division reconsidered its decision with respect to a hearing on this point and granted same as a regular point of communication. Temporary licenses for the

Dixon stations, however, are still in effect, pending a hearing and decision relative to the granting of Sydney, Australia, as a point of communication in the regular renewal licenses.

Telephony in the Maritime Mobile Service

There are six coastal harbor radiotelephone stations and three coastal radiotelephone stations in the public coastal service licensed by the Commission for operation in the United States, territories, and possessions, exclusive of Alaska. In addition, six point-to-point radiotelephone stations at Dixon, Calif., are licensed secondarily to handle telephone calls with the Steamship *Empress of Britain* and other ships in the Pacific Ocean. The Japanese Administration of Posts and Telegraphs has requested the licensee of the Dixon stations also to provide telephone service with the transoceanic liner Steamship *Chichibu Maru*. A coastal station license for the Dixon transmitter was granted on June 3, authorizing the use of an additional frequency for reliable service over the shorter distances. On March 31 a temporary license for public coastal telephone service was granted for a station in Hawaii to communicate with the steamships *Reliance* and *Empress of Britain*, when these vessels, in the course of their voyages, were within satisfactory communication range.

The coastal stations at Ocean Gate and Lawrenceville, N. J., continue to furnish public telephone service with several foreign transoceanic passenger vessels which regularly carry American citizens. These vessels are listed below:

Aquitania	Europa	Queen of Bermuda
Berengaria	Hamburg	Queen Mary
Bremen	Hansa	Reliance
Columbus	Ile De France	Rex
Conte Di Savoia	Monarch of Bermuda	Transylvania
Deutschland	New York	
Empress of Britain	Normandie	

Public coastal harbor radiotelephone stations near Seattle, Wash.; San Francisco, Calif.; San Pedro, Calif.; New York, N. Y.; Boston, Mass.; and Lorain, Ohio, are licensed for communication primarily with low-power ship telephone stations aboard vessels in and near harbors and on the Great Lakes; however, they may be used also for service to transoceanic vessels nearing or leaving principal ports within communication range.

Since it appeared that the opening of the coastal harbor stations near Seattle, San Francisco, San Pedro, and New York for regular public service had been delayed because of economic reasons, the Telephone Division designated the applications for renewal of these station licenses for hearing to determine the need for the service at these locations. The four applications, all on behalf of the Bell System companies, were consolidated and heard by an examiner on April 21. Although no respondents were involved, a considerable volume of evidence was introduced by the applicants, showing the potential amount of business to be expected at each harbor, the characteristic advantages of telephony rather than telegraphy for harbor service, the nature of the tariff, the investment and operating costs, and the current development and availability of equipment. Temporary renewal licenses have been issued pending the final decision

of the Telephone Division; however, regular public service was inaugurated by the station near Seattle on November 1 and by the stations near San Francisco and San Pedro on March 20. The stations at Boston and Lorain have been in regular operation for some time, and tests are in progress under experimental authorization looking to the opening of the New York station in the near future.

In the Philadelphia, Pa., area considerable success has been obtained in rendering a ship-shore telephone service with vessels on the Delaware and Schuylkill Rivers reliably over distances up to 30 miles by operating both the shore and ship stations exclusively on a very high frequency (38,600 kilocycles). This service is offered to the general public in accordance with an established tariff but at present is conducted under the terms of experimental licenses granted by the Telephone Division and subject to the condition that the assigned frequency may be changed at any time in accordance with the discretion of the Commission.

BROADCAST SECTION

I. GENERAL

The Broadcast Section examines all matters pertaining to broadcast engineering. The stations included in the broadcast service are regular broadcast, experimental high-fidelity broadcast, experimental relay broadcast, experimental visual broadcast, very high frequency experimental broadcast, and broadcast pick-up stations.

II. REGULAR BROADCAST

The basic plan of allocation of regular broadcast facilities in the band 550 to 1,500 kilocycles has continued unchanged insofar as concerns the general plan of allocation of stations by frequency, power, and hours of operation. Individual changes in assignments have occurred, however, as the result of granting of applications on their showing and after hearings. The exception concerning the granting of additional licenses for 100-watt stations without charge to quota, which was included in Section 307 of the Communications Act of 1934, enabled the Commission to grant several licenses for 100-watt stations in areas where a need was shown for additional service and operation as proposed would not interfere with the fair and efficient service of existing broadcast stations. Stations granted without charge to quota were as follows:

100-watt stations, daytime	15
100-watt stations, unlimited	14

There were outstanding at the close of the fiscal year three construction permits for additional 100-wat, unlimited time stations.

A comparison of the number of broadcast stations licensed or under construction at the close of the fiscal years 1927 to 1936 is as follows:

TABLE 1

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
Total number of stations	681	677	606	618	612	604	598	593	623	656
Total simultaneous operations at night	565	514	400	416	420	397	376	397	421	439

1. Repeal of Quota Requirements

The Commission was required by Section 307 (b) of the Communications Act of 1934 to "make and maintain an equal allocation of broadcasting licenses, of bands of frequency, of periods of time for operation, and of station power", to each zone, and "make a fair and equitable allocation of licenses, frequencies, time for operation, and station power to each of the States and the District of Columbia, within each zone, according to population." Under this mandate the Commission established the quota system as embodied in rules 109–111, as revised October 9, 1934. The quota due each zone was based on saturation of the smallest zone as determined by conditions of mutual interference between stations. This condition of saturation had been reached in the smaller zones; and as the aggregate of assignments which could be made in a zone was a function of the total area of the zone, it was apparent that additional facilities could be granted in the larger zones before saturation would be reached.

By an act of Congress approved June 5, 1936, the Communications Act of 1934 was amended in that Section 302 was repealed and Section 307, subsection (b), was rewritten as follows:

> In considering applications for licenses, and modifications and renewals thereof, when and insofar as there is demand for the same, the Commission shall make such distributions of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same.

To enable the Commission to "provide a fair, efficient, and equitable distribution of radio service", the Engineering Department has under consideration a system distribution of facilities based on interference, service, population, etc.

The summary of quota units due and assigned for day and night operation, by zones, as of June 5, 1936, is given in Table 2.

Table 2

	Units due		Units assigned		Net amount over or under quota			
					Units		Percent	
	Day	Night	Day	Night	Day	Night	Day	Night
Zone 1	65	36	47.885	36.315	−17.115	+0.315	−26	+1
Zone 2	65	36	49.99	38.25	−15.01	+2.25	−23	+6
Zone 3	65	36	63.74	46.70	−1.26	+10.70	−2	+30
Zone 4	65	36	68.17	40.43	+3.17	+4.43	+5	+12
Zone 5	65	36	59.50	46.68	−5.50	+10.68	−8	+30
Total	325	180	289.285	208.375				

2. New Technical Rules

The Commission on October 15, 1935, promulgated Rule 131, which reads as follows:

> (*a*) All applicants for new, additional, or different broadcast facilities and all licensees requesting authority to move the location of the station shall specify a radiating system the efficiency of which complies with the requirements of good engineering practice for the class and power of the station.

(*b*) The Commission will publish from time to time specifications deemed necessary to meet the requirements of good engineering practice.

(*c*) No broadcast station licensee shall change the physical height of the transmitting antenna, or supporting structures, or make any changes in the radiating system which will measurably alter the radiation patterns except upon written application to and authority from the Commission.

(*d*) The antenna and/or supporting structures shall be painted and illuminated in accordance with the specifications supplied by the Commission pursuant to Section 303 (q) of the Communications Act of 1934.

The Commission on the same date released the specifications mentioned under Section (b) of the rule and entitled "Minimum Antenna Heights Required for Broadcast Stations Pursuant to Rule 131." These specifications contain the minimum actual physical vertical height of antenna proper or minimum effective field intensity that stations must have in accordance with the recommendations set forth under Antenna Requirements, pages 28 and 29, of the First Annual Report of the Federal Communications Commission.

Before this rule was adopted a study of broadcast station antenna systems revealed that many stations were employing antennas which were very inefficient. In many cases a material increase in the station coverage could have been accomplished by erecting an efficient radiating system. It was not infrequent to find a station making application for an increase in power and proposing to continue in service an antenna system having such low radiating efficiency that its replacement with a modern, well designed structure would accomplish a greater increase in service than that which would be accomplished by the proposed increase in power.

Believing it to be the licensees' obligation to make efficient usage of the assignment granted the Commission promulgated the rule.

The Commission on March 30, 1936, released a statement entitled "Field Intensity Measurements Pursuant to Rule 131." This statement outlines the procedure necessary when an applicant wishes to supply data showing that the antenna efficiency complies with the minimum efficiencies set forth under Rule 131 in lieu of complying with the antenna height requirements of the rule.

On November 12, 1935, the Commission adopted Rule 132, which reads in part as follows:

(*a*) The transmitter proper and associated transmitting equipment of each broadcast station shall be designed, constructed, and operated in accordance with good engineering practice in all phases not otherwise specifically included in these regulations.

(*b*) The transmitter shall be wired and shielded in accordance with good engineering practice and shall be provided with safety features in accordance with the specifications of Article 37 of the current National Electric Code as approved by the American Standards Association.

The rule further provides that spurious emissions, including radio and audio frequency harmonics, shall be maintained at as low a level as required by good engineering practice. The rule became effective upon its adoption: *Provided however*, that existing broadcast stations were allowed 1 year in which to comply therewith. The pertinent sections of the National Electrical Code require that the transmitter shall be enclosed in a metal frame or grill or separated from operating space by proper barriers, that all external metallic parts shall be at ground potential and that no voltages in excess of 150 volts shall be placed on parts exposed to direct contact. It also

requires that all doors allowing access to the transmitting equipment be provided with interlocks which will disconnect voltages in excess of 750 volts when the door is opened. Subsequent to the adoption of this rule, the Commission issued a statement entitled "Interpretations of Good Engineering Practice as Used in Federal Communications Commission Rule 132", which provides a standard to determine whether or not transmitting equipment complies with the rule. These interpretations provide minimum standards of safety appliances and measures required to comply with the pertinent sections of Article 37 of the National Electrical Code and the minimum technical standards which a transmitter should meet in order to be in accordance with the term "good engineering practice" as used in the rule. Contained in the interpretations of good engineering practice is a statement which briefly outlines the purpose of Rule 132. It is quoted:

> The purpose of this rule is to improve broadcast reception and to protect the lives of the station operators. Many frequency deviations are caused by poor equipment. The mutual interference caused by such deviations will thus be reduced as the deviations are reduced. The continuity of service and fidelity of transmission will be improved. This rule is for the good of the licensees as well as the listeners and the cooperation of all licensees is requested in assisting the Commission in the administration thereof.

Subsequent to the adoption of the rule and prior to June 30, 1936, all broadcast stations under the jurisdiction of the Commission were visited by inspectors of the Field Section and a detailed report prepared setting forth the points wherein the transmitting equipment found at the station did not comply with Rule 132 and the "interpretations of good engineering practice." At the time of this inspection the equipment was examined in detail by the inspector and the licensee informed of the corrections necessary in order that his transmitting equipment will comply with the rule. The reports prepared by the inspectors were forwarded to the Commission for study.

On October 29, 1935, the Commission amended Rule 139 to increase the minimum percentage of modulation of which a transmitter must be capable from 75 to 85 per cent and require that on and after November 1, 1936, all broadcast stations shall have in operation a modulation monitor approved by the Commission. The rule also stated that specifications and requirements for approval of these monitors would be published by the Commission. On the same date the Commission published the specifications under the title "Modulation Monitors for Broadcast Stations." These specifications outline the minimum technical requirements which the monitors must meet and state that tests of the instruments will be conducted at the Bureau of Standards before approval by the Commission will be granted.

This rule was promulgated as a result of the engineering conferences held by the Commission during the previous fiscal year and a conference held at the Commission's offices in Washington, D. C., on July 18, 1935, when the final specifications for the monitors were discussed by the Commission's personnel with representatives of manufacturers of radio transmitting apparatus, radio operating companies, etc.

The installation of a modulation monitor and its proper use by station operating personnel will aid materially in correcting two

technical weaknesses common to present-day broadcasting. Over modulation causes audio frequency distortion and the generation of audio harmonics with the attendant broad signal which may cause interference to the reception of stations operating on frequencies many kilocycles removed from the station carrier frequency. Insufficient modulation of the carrier renders the received signals more susceptible to interference and provides much less service than that of which a station is capable if a proper percentage of modulation is maintained.

3. Operation at 500 Kilowatts

As a result of the continued operation of station WLW, Cincinnati, Ohio, on 700 kilocycles, with special experimental authority to operate with a power output of 500 kilowatts during regular broadcast hours, considerable additional information concerning the effectiveness of this high power in serving the rural listener and the listener located in small urban centers remote from other broadcast service has been obtained. The use of a directional antenna at night to prevent interference to CFRB has been continued, and the effect upon the service rendered by the station appears to be slight.

The results of the postcard questionnaire section of the allocation survey made by the Commission indicated that the first choice of the listeners in 13 States was WLW. In addition, WLW was the second choice of listeners in 6 more States.

Several additional clear channel stations have filed applications requesting construction permits or special experimental authority to increase power from 50 to 500 kilowatts.

On June 30, 1936, such applications were pending from the following stations: KDKA, Pittsburgh, Pa.; KFI, Los Angeles, Calif.; KNX, Hollywood, Calif.; WGN, Chicago, Ill.; WHAS, Louisville, Ky.; WHO, Des Moines, Iowa; WJR, Detroit, Mich.; WJZ, New York, N. Y.; and WSM, Nashville, Tenn.

4. Special Broadcast Stations (Formerly Experimental High-Fidelity Broadcast)

Authorizations for this type of regular broadcast station on the frequencies of 1,530, 1,550, and 1,570 kilocycles, are issued only to those primarily interested in a special program of research leading to the development of high-fidelity program transmissions (at least 10 kilocycle audio frequency transmissions). The broadcast of sponsored programs is incidental to the program of research. All rules governing regular broadcast stations apply to special broadcast stations, which are, therefore, required to have frequency monitors, modulation monitors, protected equipment, etc., and are issued a license for a period of 6 months. Five applications were filed during the past year, but none have received final consideration and no grants for new stations were made. There are four stations of this type in operation at the present time.

III. NEW RULES PERTAINING TO ALL BROADCAST STATIONS OTHER THAN REGULAR BROADCAST STATIONS

The importance of broadcast stations in the broadcast service other than the regular stations in the band 550 to 1,500 kilocycles has advanced rapidly in the last few years. At the close of the fiscal year

there were some 287 of these stations licensed. The rules governing their operation also applied to several other services and on many points of operation the requirements were not clear, resulting in the Commission having many unpublished policies. To correct this situation and clarify the requirements for obtaining a license for these experimental broadcast stations new rules were prepared pertaining to relay, international, television, facsimile, and experimental broadcast stations. The new rules were adopted by the Commission on May 27 to become effective July 1, 1936. Prior to July 1 the effective date was extended until September 15, 1936.

To permit a full discussion of the new rules, which established new policies and set up certain new technical requirements for these stations, an informal engineering conference was held on June 8 at which licensees of all these stations were invited to be present and discuss the working of the rules. The licensees were also invited to submit constructive suggestions prior to July 20 in writing. The revision of the rules, if deemed desirable, will go forward during the next fiscal year.

1. International Broadcast Stations (Formerly Experimental Relay Stations)

There were no new international broadcast stations licensed during the fiscal year. The activity of these stations progressed about in keeping with the progress of the broadcast art. The new rules established the name "international broadcast station" in place of that formerly used on account of the fact that this name is more in keeping with the service rendered. As originally conceived these stations would transmit programs for rebroadcasting in foreign nations throughout the world. However, in practice it was found that very little rebroadcasting was done and that stations filled a very important international need by transmitting programs for world-wide reception. The frequencies of operation must be selected dependent upon the time of day, season, and so on, to accomplish the reception in the foreign nation or nations desired.

The conditions of interference as reported in the first annual report have not improved, and as a matter of fact the interference in the band 6,000–6,150 kilocycles has increased substantially. This band is used by many South American nations and has been rendered virtually useless for international transmission between sunset and midnight. The new rules established that the minimum power of these stations should be 5 kilowatts and require that they should render an international service.

2. Relay Broadcast Stations (Formerly Broadcast Pickup Stations in the Temporary and Experimental Service)

By the new rules the name of these stations was changed from broadcast pick-up to relay broadcast stations. This is more in keeping with the purpose of the station as given in the definition of a relay station:

> The term "relay broadcast station" means a station licensed to transmit from points where wire facilities are not available, programs for broadcast by one or more broadcast stations or orders concerning such programs.

The number of relay stations has increased from 102 on July 1, 1935, to 204 on June 30, 1936. The use of these stations has become an integral part of regular broadcasting and many feature programs originating at points where wire facilities are not available are made possible.

The licensee of one of these stations must also hold a license for a regular broadcast station. Two new groups of frequencies were made available in the very high frequency group for this class of station. The very high frequencies are being used more on account of the fact that small mobile or pack sets can be made to operate satisfactorily with a very small antenna on these frequencies. An example of this is the portable relay stations used on the floor of the national political conventions to relay the programs across the room to the receiver and permanent wire-distributing facilities. By this means a high degree of flexibility is accomplished.

3. Visual Broadcast Service (Television Broadcast Stations and Facsimile Broadcast Stations)

In the new rules, visual broadcast service is defined as a service rendered by stations broadcasting images for general public reception. Under this heading is classified (*a*) television broadcast stations licensed for the transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public and (*b*) facsimile broadcast stations licensed to transmit images of still objects for record reception by the general public. A single television broadcast station license authorizes the transmission of both the image and the associated synchronized sound (aural broadcast).

(*a*) *Television broadcast stations.*—No new television broadcast stations were licensed during the fiscal year. Two applications were pending for new stations at the close of the year. The general public interest in television has increased substantially, due to extensive publicity by certain of the large manufacturers of radio equipment and the reports of development in television in European countries. On June 29 television broadcast station W2XF began operating in the Empire State Building, New York, on an experimental basis for public reception. A few receivers were distributed to selected observers. It was reported that the operation would continue as the experimental work permitted.

The new rules governing the television broadcast stations are very specific in prohibiting the sale of programs. The several licensees of television stations have recommended to the Commission certain standards of transmission. While these standards will not be approved by the Commission, the fact that several of the large manufacturers of radio equipment have virtually agreed upon certain standards indicates that this very difficult phase in television development as reported in the last annual report is progressing satisfactorily.

(*b*) *Facsimile broadcast stations.*—Due to the extremely wide band required for television transmission (6 megacycles) frequencies are not available for these stations to transmit high-definition television programs to wide rural areas at the present development

of the art. However, a visual service can be rendered to the rural areas by means of facsimile or record reception. The band width required for this type of transmission reception is no greater than conventional broadcasting. A recorder is required which prints the program similar to a newspaper or page print. Three frequencies were made available by the new rules for stations of this class. These frequencies have such propagation characteristics that secondary service can be rendered for many hundreds of miles. The public has not shown a great interest in this type of broadcast service in that there are no commercial facsimile recorders now on the market. There are many claims that this service will render a valuable contribution.

4. High Frequency Broadcast Stations (Formerly General Experimental Stations Operating as Broadcast Stations)

The interest in high frequency broadcast stations has developed rapidly. There are now 29 of these stations licensed and 53 applications pending for new stations (June 30, 1936). On January 15, 1936, the Broadcast Division suspended granting new licenses for these stations pending consideration of the rules governing their operation. The previous rules were very lax and did not require the licensees to carry on an extensive program of research and experimentation as required to develop this experimental service. The new rules are very specific in requiring licensees of this class of station to carry on experimentation for the development of service. Additional frequencies were made available for these stations. The licensees are not permitted to transmit commercial programs for pay.

5. Experimental Broadcast Stations

This class of broadcast stations was established to permit the carrying on of the development of research for the advancement of the broadcast service along lines other than that permissible by the above-described stations. All the general experimental frequencies were made available for these stations, and other frequencies under the jurisdiction of the Commission provided the experimentation to require such frequencies and no interference will be caused to established stations. The Commission occasionally receives applications for the development of broadcasting which cannot be properly classified under the above list of stations. This new classification permits granting of licenses for these stations. Also there are several stations licensed to carry on development along specific lines which fall under this classification. With all it is desired to offer a class of station where anyone who has a new idea or wishes to carry on some development can be licensed without causing interference to the established services.

IV. TECHNICAL DEVELOPMENTS IN REGULAR BROADCASTING

1. Allocation Survey

The allocation survey which was conducted during the last 6 months of the previous fiscal year has yielded a large amount of useful data. This survey was divided into four principal parts:

namely, (1) questionnaires sent to rural listeners and fourth-class postmasters; (2) the extended field trips made by the Commission personnel, on which radio listeners throughout the United States were interviewed; (3) the continuous recordings of the signal received from broadcast stations in 10 different locations throughout the United States; and (4) the determination of the radiating efficiency and primary service areas of several broadcast stations.

Of the total of 116,000 questionnaires mailed by the Commission, 46,586 were returned. Of this number 13,916 were found to be unsuitable for the purpose of analysis because of insufficient information. The data from the remaining 32,671 questionnaires was tabulated to show the listener preference as to clear, regional, and local channel broadcast stations, the year of manufacture of the receiver used by the listener and the number of tubes employed. From this compilation the national preference of the rural listeners was found to be as follows:

National rural listener preference by channels

Station classification	Per cent	Number of stations licensed
Clear channel	76.3	95
Regional channel	20.6	277
Local channel	2.1	256
Foreign	1.0	----------

These data indicate very clearly the reliance which the rural listener places upon the clear channel broadcast station for service of an acceptable nature. The preference for clear channel stations varies with the States, due to local conditions existing in the area. In general, this preference is greater in the eastern and southern States than in the north-central and northwestern States, due to the differences in station assignments within these areas. However, with only three exceptions, the first choice of the listeners in each State was a clear channel station. The usefulness of the clear channel assignments in rendering service at great distances was amply demonstrated by the fact that the first choices of listeners in the Territory of Alaska and the Territory of Hawaii were clear channel stations located in the southern California area. These same questionnaires indicate by the individual station preferences of rural listeners that with few exceptions the service of regional stations is confined to a limited area within 30 to 75 miles of the transmitter. The general conclusion of the questionnaire survey was that the average rural listener is dependent upon secondary service from clear channel stations, frequently hundreds of miles away. It was not unusual to find reply cards which listed four stations, all at distances of several hundred miles, indicating that in spite of the variations due to fading in the secondary service area the signal is satisfactory for service and that many a listener who would otherwise be without satisfactory radio reception receives considerable entertainment by this means. The effectiveness of the use of high power in extending the coverage and rendering increased service to the rural listeners

was demonstrated by the fact that WLW was the first choice of the listeners in 13 States ranging from Michigan to Florida and from Virginia to Arkansas, and in six additional States, among them Texas, WLW appeared as second choice.

As the questionnaire part of the allocation survey was concluded about March 30, 1935, very few 1935 receivers were included in the tabulation. However, at that time the percentages of receivers in use according to the year of manufacture were as follows:

Year of manufacture of radio receiver

Year of receiver:	*Per cent*
1929 or earlier	26.1
1930	12.7
1931	10.1
1932	12.1
1933	13.8
1934	21.6
1935	3.6

The percentages of receivers employing various numbers of tubes were found to be:

Number of tubes in receiver

Number of tubes:	*Per cent*
4 or less	5.6
5 to 7	69.9
8 or more	24.5

While on the trips made by the inspectors of the Field Section of the Commission's Engineering Department, measurements were made to determine the day field strength at the average limit of the night primary service area of representative stations of the clear, regional, and local classifications. Although sufficient data were not obtained in all cases to be conclusive, results agree very satisfactorily with the present empirical standards of the Engineering Department. The following table contains this information in condensed form and a comparison with the signals protected from interference under existing standards:

Class of channel	Number of measurements	Number of stations	Day field strength at limit of night-time service area mv/m	Present empirical standard of F. C. C. mv/m
Clear	8	4	0.414	[1] 0.5
Regional	123	66	.935	[2] 1.0
Local	44	30	1.27	2.0

[1] From adjacent channel interference.
[2] Night.

At the time of this investigation the listeners interviewed were also questioned as to their choice of stations and the information tabulated as in the questionnaire survey. This preference, as shown by the following table, agrees very closely with the data obtained from the questionnaire survey:

TABLE 3

	First choice	Second choice	Third choice	Total 3 positions
Clear	945 (75.1 per cent)	826 (71.3 per cent)	598 (72.4 per cent)	2,369 (73.3 per cent).
Regional	278 (22.6 per cent)	312 (27 per cent)	203 (24.6 per cent)	793 (24.5 per cent).
Local	28 (2.3 per cent)	20 (1.7 per cent)	25 (3 per cent)	73 (2.2 per cent).

Analysis of the continuous recordings of field strength made at the different locations throughout the United States entailed a great deal of labor and the data were not completely compiled on June 30, 1936. The analysis of these recordings, of which there are in excess of 500 covering approximately 12,000 hours of operation, will be completed shortly and the data will be made available early in the fall of 1936. Preliminary results, based on a partial analysis of the data, were published in answer to question 7 on the Agenda of the Fourth Meeting of the C. C. I. R. to be held in Bucharest, Rumania, during the spring of 1937. From the partial analysis of data a set of curves was drawn showing the received signal which is exceeded 10 per cent of the time and 50 per cent of the time for two different night hours as a function of the distance from the transmitter. Such curves, based on the whole of the data accumulated, will be published when the analysis is completed.

Surveys made by means of the field intensity equipment located in the Commission's test car were necessary to determine the radiating efficiency and primary service areas of the clear channel stations from which night sky wave field intensity recordings were made. These data enabled the personnel of the Commission's engineering department to correct the data from the recordings to show the field intensities at various distances for 1 kw radiated power. The data from the survey also furnished information concerning the primary service areas of representative stations and the effectiveness with which service is rendered from various transmitter locations.

2. DIRECTIONAL ANTENNAS

During the fiscal year 1936 additional licensees and applicants for new stations have installed or requested authority to install many directional antenna systems. The voluminous data available concerning the operation of such systems has enabled engineers to predict with greater accuracy the performance of such antennas. The use of directional antennas has enabled numerous stations to increase their service without interference to the fair and efficient service of other broadcast stations. On June 30, 1936, approximately 40 stations were installing or operating with directional antenna systems.

3. LOW TEMPERATURE COEFFICIENT QUARTZ CRYSTALS

The recent development of quartz plates having a temperature frequency coefficient of less than three cycles per million per degree centigrade has provided the operators of broadcast transmitters with a much more stable source of transmitter frequency. These crystals have been installed in the automatic frequency control units of many broadcast stations with very gratifying results. Their use

has materially decreased the number of citations issued licensees for deviation from assigned frequency in excess of 50 cycles and reduced the heterodyne interference between stations on the shared frequencies.

INTERNATIONAL SECTION

Beginning February 14, 1936, a series of meetings were held for the purpose of preparing the United States material for the Fourth Meeting of the International Consulting Committee on Radio, to be held at Bucharest, Rumania, in May 1937.

The preparatory work was carried on under the direction of the Chief Engineer of the Commission, who organized several committees to prepare recommendations for proposals of the United States Government to the conference. The proposals dealt with technical matters, such as good engineering practice concerning the performance of transmitters, receivers, and antennas, as well as technical information concerning the propagation of radio waves at various frequencies; also proposals were made which dealt with good engineering practice concerning methods to improve the use of frequencies from an engineering standpoint.

This preparatory work was actively carried on through the cooperation of the various Government departments and private organizations interested in communications. The final material was transmitted to the Department of State on May 21, 1936, for dissemination to the other nations of the world prior to the convening of the conference.

At the request of the Department of State, the Federal Communications Commission began the preparatory work for the radio conference, administrative in nature, which is to be held in Cairo, Egypt, beginning February 1, 1938. The preparatory work for this conference was started by committees working under the chairmanship of the Chief Engineer of the Federal Communications Commission. These committees considered the various articles of the existing General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932. By June 30, 1936, considerable progress had been accomplished in the preparation of recommended proposals for the United States Government to make to the various nations of the world with respect to the necessary changes in the international radio regulations based upon the experience of the past few years. The evidence presented at the June 15, 1936, hearing, mentioned elsewhere in this report, was most useful in assisting the committees in their work.

The membership of the committees was open to the public and all persons interested in radio were invited to attend the meetings. The actual membership of the committees consisted of representatives of all Government departments interested in radio, as well as all of the communication organizations having radio station licenses from the Commission, and other organizations, such as the National Association of Broadcasters, the amateurs, the Associated Police Communication Officers, etc.

A number of meetings were held and it is expected that the preliminary preparatory work of this Government will be completed by September 1, 1936.

Because of growing needs for the use of radio by Government departments, the work in the International Section has greatly increased during the last year. The Interdepartment Radio Advisory Committee, which is the Government committee established for the purpose of advising the President with reference to assigning frequencies to Government radio stations under the Communications Act of 1934, was reorganized. The new Chairman selected was Judge Eugene O. Sykes, member of the Federal Communications Commission. Mr. Gerald C. Gross, of the Commission's staff, continued to serve as secretary of the committee. The committee has had frequent meetings and participated actively in the June 15, 1936, engineering hearing before the Federal Communications Commission.

MISCELLANEOUS

The International Section, in addition to the special work mentioned above, has carried on its regular work of coordinating international and interdepartmental relations in connection with wire radio and cable services. This Section maintains up-to-date visible records of the Canadian, Mexican, Cuban, and European broadcast stations. From time to time there are issued for distribution lists of these stations. The section also compiles and issues lists of the short-wave broadcast stations of the world.

During the year a large number of translations were made by this section for its own use and for other departments of the Commission.

FIELD SECTION

SHIP INSPECTIONS

During the year there were 13,578 clearances from our ports of American and foreign ships which are required to carry radio apparatus under the Ship Act of June 24, 1910, as amended July 23, 1912. During the same period 6,337 inspections were made of the radio installations on these vessels which revealed 151 cases of violation of the law. In 145 of these cases the masters were served with official penalty notices. Corrective action was taken, however, prior to departure from port. In addition, 192 discrepancy notices were served on the licensees of these vessels for failure to comply with the provisions of international treaty or regulations of the Commission.

On ships voluntarily equipped with radio apparatus 3,108 inspections were made. Of this number 658 cases revealed defects and required the radio licensees to take corrective action.

There were 1,701 detailed inspections made of ship radio installations under Section 303 of the Communications Act of 1934 to determine if they met the license requirements as to frequency of operation, frequency stability, decrement, etc.

Effective January 1, 1936, the general rules and regulations of the Department of Commerce required that radio equipment be installed on at least one of the motor lifeboats which are required on each passenger vessel of 2,500 gross tons or more which in the course of its voyage goes more than 200 miles from the nearest land. In this connection, the Commission adopted Rule 281½ governing such installations and the maintenance and operation of the equipment. In-

spections of this equipment have been made by the Field Section, cooperating with the inspectors of the Department of Commerce.

The enforcement of the provisions of the Safety of Life at Sea Convention will increase the ship inspection work at all port offices beginning in November 1936, when this convention becomes effective in the United States, due to the increased number of ships which must be equipped with radio apparatus.

AIRCRAFT INSPECTION

Nearly all transport aircraft were inspected during the year. Inspections were confined to determining that the transmitters involved complied with the laws, rules, regulations, and licenses under which they are authorized to operate radio stations. During the entire year 498 radio-equipped aircraft were inspected, as compared with 134 the previous year.

UNLICENSED STATIONS

During the year reports were received of operation of 416 unlicensed radio stations. The action taken by the Commission resulted in discontinued operation of 358, leaving 58 pending cases still under investigation at the close of the year.

INTERFERENCE COMPLAINTS

During the year 4,490 complaints of interference with radio reception were received by the Commission. In addition 401 cases were carried over from the previous year. As a result of investigations, remedial action was taken in 4,459 cases. The remaining 432 cases were still being investigated at the close of the year.

FREQUENCY OBSERVATIONS

During the year 14,557 measurements were made of the frequencies of United States broadcast stations. There were 234 deviations beyond the permitted frequency tolerance of 50 cycles (plus or minus). Of stations other than broadcast, 23,126 measurements disclosed 1,740 frequency deviations. Foreign station measurements numbered 730, with 164 deviations.

The monitoring of United States stations disclosed 2,234 discrepancies in operation, involving violations of international treaties, laws, and regulations of the Commission. In each case the licensee was required to explain the violation and take corrective action.

TRAVEL

The routine work of the field force included 448 trips, totaling 206,017 miles. The purpose of this travel was in connection with radio station inspections, operator examinations, investigations, etc.

FIELD ACTIVITIES

The following is a summary of the work performed by the field force during the past fiscal year:

District no. and location	Stations inspected							Frequency measurements					
	Ship							United States				Foreign	
								Broadcast		Other than broadcast			
	Under Act	Voluntary equipment	For license	Land	Broadcast	Amateur	Aircraft	Measurements	Deviations	Measurements	Deviations	Measurements	Deviations
1. Boston, Mass	379	295	168	62	86	7	1	1,606	9	1,593	176	20	10
2. New York, N. Y	2,894	331	242	43	77	17	86	0	0	0	0	0	0
3. Philadelphia, Pa	187	348	164	27	51	29	3	0	0	0	0	0	0
4. Baltimore, Md	292	389	211	18	19	8	3	2,720	29	905	38	23	17
5. Norfolk, Va	123	276	100	24	41	1	0	0	0	0	0	0	0
6. Atlanta, Ga	0	6	0	115	98	8	15	1,499	63	1,201	73	18	15
7. Miami, Fla	141	22	14	57	26	8	31	0	0	0	0	0	0
8. New Orleans, La	340	193	122	42	72	26	17	0	0	0	0	0	0
9. Galveston, Tex	49	234	99	31	17	8	13	0	0	0	0	0	0
10. Dallas, Tex	0	0	0	62	92	6	24	0	0	0	0	0	0
11. Los Angeles, Calif	643	365	140	84	77	11	20	1,219	19	704	131	110	99
12. San Francisco, Calif	454	307	240	50	45	7	42	0	0	0	0	0	0
13. Portland, Oreg	127	181	55	19	43	6	21	967	9	3,875	280	14	7
14. Seattle, Wash	390	81	114	80	56	1	41	0	0	0	0	0	0
15. Denver, Colo	0	0	0	21	45	0	6	0	0	0	0	0	0
16. St. Paul, Minn	0	0	0	46	76	1	24	0	0	0	0	0	0
17. Kansas City, Mo	0	3	1	72	95	9	55	0	0	0	0	0	0
18. Chicago, Ill	12	1	0	81	157	1	28	0	0	0	0	0	0
19. Detroit, Mich	31	20	4	156	103	27	51	0	0	0	0	0	0
20. Buffalo, N. Y	14	16	15	38	83	5	10	0	0	0	0	0	0
21. Honolulu, Hawaii	261	60	12	62	6	1	7	0	0	0	0	0	0
Grand Island, Nebr	0	0	0	0	0	0	0	3,463	65	12,308	911	517	0
Great Lakes, Ill	0	0	0	0	0	0	0	3,083	40	2,540	131	28	16
Total	6,337	3,108	1,701	1,190	1,365	187	498	14,557	234	23,126	1,740	730	164

Operators examined

District no. and location	Commercial								Amateur	
	Extra first	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass	0	12	85	4	116	7	344	113	222	740
2. New York, N. Y	1	37	110	14	162	29	977	155	431	1,609
3. Philadelphia, Pa	0	2	33	4	47	15	156	37	131	483
4. Baltimore, Md	0	5	32	11	36	7	70	27	34	81
5. Norfolk, Va	0	4	23	2	28	6	134	10	69	155
6. Atlanta, Ga	0	2	17	7	56	14	119	16	83	120
7. Miami, Fla	0	26	40	13	48	10	124	26	46	33
8. New Orleans, La	0	10	74	34	81	5	74	41	58	49
9. Galveston, Tex	0	0	40	18	29	2	105	37	31	59
10. Dallas, Tex	0	0	30	28	96	17	227	24	118	343
11. Los Angeles, Calif	0	21	90	11	92	15	832	74	222	632
12. San Francisco, Calif	0	23	54	19	76	45	301	80	183	411
13. Portland, Oreg	0	9	21	1	39	7	35	120	56	122
14. Seattle, Wash	0	18	40	26	50	9	254	41	72	156
15. Denver, Colo	0	0	7	1	53	14	58	10	55	94
16. St. Paul, Minn	0	0	11	6	51	12	110	10	98	176
17. Kansas City, Mo	0	0	15	11	201	30	507	273	238	414
18. Chicago, Ill	0	11	98	24	310	62	881	91	369	824
19. Detroit, Mich	0	6	56	15	129	58	459	53	336	1,233
20. Buffalo, N. Y	0	0	76	7	95	19	124	26	164	608
21. Honolulu, T. H	0	4	6	6	8	4	33	22	27	67
Total	1	190	958	262	1,803	387	5,924	1,286	3,043	8,409

Operators licensed

District no. and location	Commercial															
	Extra first	First telegraph	First with first telephone endorsement	First with second telephone endorsement	First with third telephone endorsement	Second telegraph	Second with first telephone endorsement	Second with second telephone endorsement	Second with third telephone endorsement	Third telegraph	Third with first telephone endorsement	Third with second telephone endorsement	Third with third telephone endorsement	Telephone first	Telephone second	Telephone third
1. Boston, Mass	1	89	32	1	0	70	32	0	0	2	0	0	0	102	3	348
2. New York, N. Y	7	287	85	8	1	65	59	9	0	6	2	2	−1	163	26	954
3. Philadelphia, Pa	1	54	17	2	0	22	11	0	0	3	0	0	0	50	14	145
4. Baltimore, Md	2	76	29	0	0	30	17	2	2	1	1	0	4	101	23	93
5. Norfolk, Va	0	15	7	0	0	11	8	1	1	0	1	0	0	31	1	109
6. Atlanta, Ga	0	12	4	3	0	6	22	2	0	1	2	2	2	78	15	107
7. Miami, Fla	0	36	13	3	0	32	11	2	4	8	0	0	0	32	8	103
8. New Orleans, La	2	110	30	3	2	50	33	1	2	11	4	0	11	72	8	62
9. Galveston, Tex	1	47	7	0	0	45	7	0	0	8	4	0	0	30	2	92
10. Dallas, Tex	0	6	17	2	1	20	27	2	0	19	4	0	0	119	30	224
11. Los Angeles, Calif	1	58	38	4	0	50	54	4	1	5	2	0	1	78	17	791
12. San Francisco, Calif	4	156	33	3	0	53	23	0	0	5	4	7	0	75	70	325
13. Portland, Oreg	0	16	5	0	0	6	16	1	0	0	0	0	0	45	8	39
14. Seattle, Wash	0	74	16	1	0	37	9	3	0	17	0	1	0	50	18	264
15. Denver, Colo	0	1	4	0	0	4	10	1	0	1	0	0	0	56	29	74
16. St. Paul, Minn	0	5	4	0	0	5	4	1	0	4	1	0	0	74	9	98
17. Kansas City, Mo	0	3	16	1	0	10	29	2	0	1	4	1	0	215	30	468
18. Chicago, Ill	0	11	38	1	0	38	71	9	0	6	5	1	3	239	79	770
19. Detroit, Mich	0	22	26	2	2	30	47	4	3	1	3	4	0	146	50	467
20. Buffalo, N. Y	0	5	12	0	0	35	21	2	0	−1	2	0	1	60	12	104
21. Honolulu, Territory of Hawaii	0	28	8	1	0	5	0	0	0	3	0	0	1	8	3	29
Total	19	1,111	441	35	6	624	511	46	13	101	39	18	22	1,824	455	5,666

Complaints and investigations

	Amateur	Unlicensed Broadcast	Unlicensed other than Broadcast	Miscellaneous	Total
Carried over from previous year	260	10	60	71	401
Received this year	2,802	54	362	1,272	4,490
Closed this year	2,518	39	319	1,583	4,459
Number of those cases closed requiring personal investigation	2,170	14	139	880	3,203
On hand at close of this fiscal year	284	15	43	90	432

TECHNICAL INFORMATION SECTION

The duties of the Technical Information Section are to keep the Engineering Department and the Commission informed of technical developments in communications, particularly with reference to the following:

(*a*) Inventions which should have an important bearing on efficiency of communications, or lead to reduced rates.

(*b*) Inventions which increase the number of available channels.

(*c*) Wave propagation.

(*d*) New theories.

(*e*) Development of radio frequency spectrum.

(*f*) Current good engineering practice concerning both transmission and reception.

In addition to the foregoing, the Technical Information Section will keep the master frequency records for the Engineering Department. This Section will also have charge of a technical library for the use of the Engineering Department.

The Technical Information Section will have no administrative functions with respect to the regulation of communications. However, it must keep abreast of technical progress in order to be in a position to advise the various administrative sections of the Engineering Department with respect to scientific and practical engineering matters.

At the present time the Technical Information Section has been organized but a few days.

Dr. L. P. Wheeler, an eminent physicist, will report on July 1, 1936, to take charge of this Section.

The personnel at this time is merely a nucleus, and it is expected to increase the personnel, when funds become available, in order to enable a more thorough investigation of the patents used and available for the communications industry.

Some of the work of this Section has in the past been accomplished by the administrative sections of the Engineering Department, but due to the pressure of such work and because of the intricacies involved in keeping abreast of scientific progress, it was felt essential that expert scientists and physicists, having practical knowledge of the technical and patent phases of communications, should be organized into a cohesive unit in order to produce more effective results than was possible under the past system.

In view of the fact that this Section is still in the process of organization, no information is available at this time with respect to the results accomplished.

ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT

WILLIAM J. NORFLEET, *Chief Accountant*

The close of the fiscal year 1936 marked the completion of the first full year of service of the Accounting, Statistical, and Tariff Department, the department having been organized in October 1934.

ORGANIZATION—FUNCTIONS

The organization and functions of this department are described in the first annual report of the Commission to Congress for the fiscal year 1935, which is here referred to in order to avoid undue repetition.

The organization is similar to that described in the above report, except that during the fiscal year 1936 two of the sections of the department were consolidated and a field office was established at New York, N. Y. The two sections consolidated were the Depreciation and Cost Analysis Section and the Investigation and Field Examination Section, mentioned in the previous report to Congress. The consolidated section was designated as the Field Section, the duties and functions of which are similar to those of the component sections above mentioned.

ESTABLISHMENT OF NEW YORK OFFICE

An office of the Accounting, Statistical, and Tariff Department was established in New York, N. Y., on May 16, 1936. Ten men, including clerks, were transferred from Washington, D. C., to New York on the above date.

The establishment of the New York office will result in substantial savings to the Commission in per diem and travel expense. New York is the headquarters of the telephone, telegraph, and radio industries, and much of the factual information required by the Commission in the discharge of its duties must be gathered at that point. Already the benefits from the establishment of this office are apparent.

ACTIVITIES OF THE DEPARTMENT DURING THE PAST FISCAL YEAR

There follow brief statements with reference to the more important accomplishments of the department during the fiscal year ended June 30, 1936. This narrative is arranged according to sections of the department, the sections being arranged alphabetically.

CLASSIFICATION SECTION

Injunction proceeding involving new uniform system of accounts for telephone companies.—Among the most important work performed during the year in the Classification Section was the compilation and preparation of a large portion of the relevant material used by the Law Department and the furnishing of technical advice

at the court hearing in the suit brought by American Telephone & Telegraph Co., its associated Bell System companies, and additional plaintiffs (Equity No. 81–366, U. S. D. C., S. D. N. Y.) to enjoin the Commission from enforcing certain accounting procedures required in the recently revised uniform system of accounts for telephone companies which had been ordered to become effective on January 1, 1936. The promulgation of this revised accounting system was a step forward in public-utility accounting. It is endorsed by the National Association of Public Utility Commissioners, the New York Public Service Commission, and various other State commissions.

REVISION OF PRESENT UNIFORM SYSTEM OF ACCOUNTS FOR TELEGRAPH AND CABLE CARRIERS DELAYED

The final drafting of a new uniform system of accounts for wire-telegraph and cable carriers and the drafting of a uniform system of accounts for radiotelegraph carriers have been postponed temporarily pending disposition of the injunction proceeding referred to above by the Supreme Court of the United States. It is expected, however, that both new systems of accounts will be completed and ready for promulgation by the Commission in time to be ordered effective on January 1, 1938.

In the case of wire-telegraph and cable carriers, the new system will be a revision of the uniform system of accounts now in effect for such carriers. The necessary revisions, however, are extensive in scope. In the case of radiotelegraph carriers, no uniform system of accounts has ever been prescribed for, or adopted by, such carriers, and there is a serious lack of uniformity in their accounting practices.

Notwithstanding delay occasioned by the injunction proceeding above mentioned, much progress has been made toward the formulation of a new uniform system of accounts for wire-telegraph and cable carriers, the work having been substantially finished except for certain phases, as will be occasioned by the following:

1. The decision of the Supreme Court of the United States in the telephone-accounting case referred to above;
2. Consideration of suggestions by other regulatory bodies and other interested parties after the completion of a tentative set of regulations;
3. The completion of studies now being directed to the adoption of a definite policy with reference to the proper method or plan of accounting for depreciation and amortization; and
4. Subsequent decisions and determinations of policy by the Commission.

This section has also made substantial progress in drafting a tentative set of accounting rules and regulations applicable to radiotelegraph carriers.

OTHER ACTIVITIES OF THE CLASSIFICATION SECTION

Among other activities of the Classification Section during the fiscal year 1936 were the following:

1. Canvassing, and tabulating of data contained in response of State and other regulatory bodies on the subject of uniform accounting systems for telegraph and cable and for radio carriers, and with

respect to work-order systems and perpetual records of property changes for all classes of communication carriers.

2. Attending committee meetings and hearings conducted by State and other Federal commissions and associations of regulatory bodies, and participation in ensuing oral and written discussion directed to the consistent development of uniform systems of accounts for communication carriers and other types of public utilities.

3. Drafting (in conjunction with the Engineering Department) of proposed rules governing work-order systems and perpetual records of property changes. (As these rules must be articulated with the uniform systems of accounts, their completion has similarly been delayed for the reasons hereinbefore given.)

4. Collaboration with the Law Department and the Special Investigation in drafting four orders, subsequently adopted by the Commission, partially modifying the regulations governing the destruction of records to meet the needs of the Special Investigation and other current developments.

5. Interpretation of accounting regulations, the answering of all inquiries raised by communication carriers or others relating to proper accounting for specific transactions, and the handling of notifications relative to accidental destruction of records. There was an increase of approximately 770 percent over the fiscal year 1935 in units of outgoing correspondence of this nature.

6. Drafting accounting circulars occasioned by current situations of major importance, of which two related to accounting for social-security taxes.

7. Consideration of proposed journal entries, submitted by carriers for the Commission's approval, involving acquisition of property through consolidation, merger, or purchase.

8. A request made of carriers to file identifications of the officials supervising the destruction of records, pursuant to resolutions of their boards of directors. Many of the carriers complied with this request during the fiscal year.

9. Consideration, and making of recommendations to the Commission, with respect to 20 applications of telegraph and cable carriers, and 10 applications of telephone carriers for "extension of lines", followed by the review of final and progressive completion reports required in the orders granting the applications with respect to several of the major projects, including the installation of experimental coaxial cable by American Telephone & Telegraph Co. and New York Telephone Co. between New York, N. Y., and Philadelphia, Pa.

10. Collaboration with the Engineering and Law Departments in the designing, for adoption by the Telegraph Division, of a uniform application form for use by telegraph and cable carriers in the matter of "extension of lines."

11. Studies of several specific practices of major communication carriers, involving substantial amounts of money, from the standpoint of conformity with accounting regulations. Some of these matters will necessitate further investigation before disposition by the Commission.

12. A special study of the general classes of service in which communication carriers are engaged and the extent of encroachment into

the primary fields of other carriers, with a view to determining the feasibility and most expeditious method of maintaining a perpetual record in this respect.

FIELD SECTION

The important activities performed in the Field Section during the fiscal year 1936 are divided, in general, as follows: (1) Field examinations and investigations, (2) depreciation studies and special cost analyses, and (3) special assignments. A mention of the more important accomplishments of this section follows:

COST STUDY, MANUFACTURING COMPANY

A special field examination of certain accounts and records of a manufacturing company affiliated with the telephone industry was made for the purpose of developing the cost of manufacturing certain telephone-plant units entering into the proposed construction of new interstate telephone toll lines.

EXAMINATION OF ACCOUNTS OF TELEGRAPH CARRIERS

A major accomplishment of this section was the completion of a general examination of the accounts and records of a major telegraph carrier, this being the first examination of the accounts of the carrier by public authority. This included an inquiry into intercorporate relationships, investment in facilities, existing depreciation practices, and operations. A report embodying important recommendations is being prepared as a result of this examination, which will relate to certain plant or investment accounts of that carrier and various accounting practices.

One of the important benefits from this and other examinations of the accounts of wire-telegraph carriers during the fiscal year 1936 was to obtain information necessary to an intelligent revision of the uniform system of accounts for this class of common carriers.

Somewhat similar examinations were made into the books and records of accounts of two important radiotelegraph carriers and similar examinations of the accounts of two of the larger carriers of this class were under way at the close of the fiscal year, with a particular view to the prescription of a uniform system of accounts for radiotelegraph carriers. The latter examination will include analyses of present capital facilities, traffic exchange and development, and other data required in the determination of the cost of various services rendered.

INTERCORPORATE RELATIONS

An examination of the accounts and records of the American companies in one of the large communication systems was in progress at the close of the fiscal year for the purpose of developing information with respect to the intercorporate relations of such companies.

EXAMINATION OF THE ACCOUNTS OF TELEPHONE CARRIERS

A field examination was made of certain accounts of two large telephone-operating carriers to determine the cost of maintaining toll service in the areas served by those carriers.

OTHER ACTIVITIES OF THE FIELD SECTION

Among other activities of the Field Section during the fiscal year 1936 were the following:

1. Examination and the making of recommendations, from an accounting viewpoint, with respect to 20 petitions for transfer of license or control filed by broadcasters.
2. Examination and the making of recommendations, from an accounting viewpoint, with respect to 13 petitions filed by telephone and telegraph carriers, and cost certificates filed in connection therewith, for authority to supplement existing facilities or acquire or lease circuits.
3. An inquiry into the effect of exclusive grants and other relationships between railroad and telegraph carriers upon the revenues of the telegraph carriers.
4. Preparation of a comparative history of funded debt of the Bell System.
5. Preparation of data in connection with a public hearing before an examiner relating to the question of jurisdiction of the Commission over a large telephone carrier.
6. An inquiry and report relating to the practices of telephone carriers with respect to relief and pensions and the accounting therefor through operating expenses and through reserves.
7. Preparation of data in connection with the injunction proceeding involving the revised uniform system of accounts prescribed for telephone carriers, hereinbefore mentioned.
8. Conduct of special inquiries as assigned.

DEPRECIATION

Personnel of the department was inadequate to undertake any extensive inquiry into depreciation. However, much basic work was done toward the development of information for the Commission. Typical of the activities performed during the fiscal year 1936 relating to depreciation are the following:

1. Comprehensive review and digest of depreciation proceedings conducted under prior Federal regulations and the assembling of basic statistical data with reference to depreciable plant.
2. Formulation of the theory of depreciation to be applied to data to be taken from the carriers' records.
3. Preparation of depreciation circulars recommended for issuance to carriers engaged in wire telegraphy, telephony, and radio communications.
4. Study of the relationship of depreciation reserves of large telegraph and radio carriers to plant, capital, and other accounts, and the relationship of annual depreciation charges to revenue and related accounts.
5. Field examinations at the offices of three large radio carriers to determine the classes of depreciable property peculiar to radio plant.

STATISTICAL SECTION

PUBLICATIONS

The following publications were prepared in the Statistical Section during the fiscal year 1936:

Selected Financial and Operating Data from Annual Reports of Telephone Carriers for the year ended December 31, 1934;
Selected Financial and Operating Data from Annual Reports of Telegraph, Cable, and Radiotelegraph Carriers for the year ended December 31, 1934;
A Table Showing the Intercorporate Relations of Carriers Reporting to the Federal Communications Commission and the Controlling Companies:
Salary Report of Telephone and Telegraph Carriers, 1934;
Summary of Monthly Reports of Large Telephone Carriers in the United States; and
Operating Data from Monthly Reports of Telegraph Carriers.

The above publications are widely called for and used by universities, civic organizations, State commissions, and other governmental bodies, and financial institutions throughout the United States. Plans have been made to prepare hereafter a yearbook which will contain vital information with reference to the telephone and telegraph industries.

ANNUAL REPORTS REQUIRED OF COMMUNICATION CARRIERS

Annual report forms are composed in this department and prescribed by the Commission, pursuant to section 219 of the Communications Act of 1934. The annual report forms prescribed by the Commission are also widely used by State commissions throughout the United States, some of which use the same forms in requiring reports of carriers within their respective jurisdictions.

The following changes were made in the annual reports required of telephone and telegraph companies for the calendar year 1935, which were required to be filed during the fiscal year 1936:

1. In cases where a carrier prepared a report to stockholders containing a consolidated-system balance sheet, income statement, and surplus statement, it was requested to show similar data in the annual report to the Commission.

2. A new schedule was inserted requiring carriers to give detailed information with respect to their relief and pension funds.

3. The carriers were required to show the total amount paid to each officer and director receiving $10,000 or more during the year, in addition to the data previously shown.

4. The segregation of plant and operating statistics of telephone carriers, by States or Territories, and a segregation of plant mileage and telegraph offices of telegraph carriers, by States, Territories, or foreign countries, were required, whereas aggregate returns were heretofore shown.

5. Three schedules were inserted which require telephone carriers to show data concerning private-line statistics, teletypewriters on customers' premises used in teletypewriter-exchange service, and statistics concerning other stations; and telegraph carriers were required to show data relative to service equipment furnished free to customers, telegraph printers in service on customers' premises, and leased-wire statistics.

6. The schedule for telegraph revenue messages transmitted was revised to show a detailed analysis of the messages transmitted and the amount of revenue received.

In order to enable this Commission to obtain information regarding the performance of communication services by railway carriers, the Interstate Commerce Commission inserted a new schedule entitled "Telegraph and Telephone Operating Revenues" in its report

form A required to be filed by railway carriers under its jurisdiction, for the calendar year 1935.

MONTHLY REPORTS

Monthly reports are also required to be filed by telephone and telegraph carriers. These reports constitute the source of information tabulated in the monthly releases entitled "Summary of Monthly Reports of Large Telephone Carriers in the United States" and "Operating Data from Monthly Reports of Telegraph Carriers." These monthly summaries were revised during the fiscal year 1936 to show more detailed information. Among other things, geographical groupings were made, as illustrated in the monthly summaries for April 1936, shown as tables XI and XII in the appendix of this report.

REPORTS REQUIRED OF HOLDING COMPANIES

The Commission also adopted report forms, composed in this section, required to be filed by holding companies annually, pursuant to authority contained in section 219 (a) of the Communications Act of 1934. Two such forms were prescribed, known as form H required of holding companies primarily interested in the communications industry and Statistical Circular No. 1 required of holding companies nominally interested in the communications industry.

PUBLIC REFERENCE ROOM

A public reference room is maintained in this section where the public is permitted to examine the reports filed by communication carriers. A considerable number of persons availed themselves of this privilege during the fiscal year 1936.

EXAMINATION AND CORRECTION OF REPORTS

All reports filed by communication and holding companies are carefully examined in the Statistical Section and correspondence is conducted with officials of the various companies with reference to discrepancies discovered in the reports. These examinations and the preparation of such correspondence require an intimate knowledge of the accounting regulations and practices of these companies. When changes are authorized they are inserted in the reports.

During the examination of the various accounting schedules in these reports, items of unusual interest, or apparent inconsistencies, are brought to the attention of the proper officials of the Commission. This constitutes a very important function of the Statistical Section.

OTHER ACTIVITIES OF THE STATISTICAL SECTION

The Statistical Section was called upon, during the fiscal year 1936, to prepare a large number of special statistical tabulations or reports for the Commission and answered quite a large volume of correspondence from outside the Commission with reference to statistical matters relating to the communications industry. Among other things, the section prepared forms used in connection with the returns covering telephone and telegraph frank service and compiled data concerning free and concession service of telephone carriers.

Statistical tables shown in appendix.—In appendix A will be found statistical tables nos. I to XIX, inclusive, and charts nos. 1 to 8, inclusive, relating to the communications industry.

TARIFF SECTION

FILING OF CHARGES AND REGULATIONS

The requirements contained in section 203 of the Communications Act of 1934 regarding the filing of rates and regulations by communication companies was a new requirement insofar as interstate communications service was concerned. Many rates, regulations, classifications, or practices of communication companies, affecting interstate service, were not published in any tariff and were not accessible to the public. Tariffs voluntarily published by the carriers were generally incomplete.

In order to eliminate the chaotic condition incident to the initial filing of rates by communication carriers, for interstate services, and in order to develop tariff files which would be readable and understandable by the public and which would contain information desired by the Commission, it was necessary to establish rules and regulations governing the filing of all rate schedules. To this end a tariff circular, designated Tariff Circular No. 1, showing a definite and lawful procedure for the construction, filing, and posting of schedules of charges and regulations for interstate and foreign communication by wire or radio, was completed, approved by the Commission, and over 1,000 copies mailed to telephone and telegraph carriers, or their agents, and to various State commissions. This circular, effective on September 1, 1935, included the requirement that all schedules of charges and regulations, and concurrences therein, on file with the Commission on and after January 1, 1936, should be in compliance with the provisions of its rules. Pursuant to this instruction the following tariffs, or schedules of charges and regulations, and concurrences were received from 201 carriers, and were examined and filed:

	Telephone	Telegraph	Telephone and telegraph	Total
New tariffs	432	236	28	696
Additional or revised loose-leaf pages	12,695	3,087	357	16,139
Supplements	191	304		495
Concurrences			116	116

Rule 8 (i) of Tariff Circular No. 1 was amended by Commission Order No. 12–B, previous to which carriers had filed notices for the establishment or discontinuance of service in 264 instances under the authority of this rule.

In 302 instances tariff schedules tendered for filing by carriers were rejected because of failure to give lawful notice of their effective date.

Elimination of discriminatory and other unlawful provisions or irregularities contained in tariffs.—It was necessary to examine the many thousands of pages of rates and regulations filed with the Commission by the communication companies, page by page and word by

word, in order to determine whether or not such schedules were in compliance with the provisions of the act and with the regulations promulgated by the Commission, and particularly to discover rates, regulations, practices, or other provisions which appeared to be unjustly discriminatory or otherwise unlawful. In many instances during the fiscal year 1936 the Department, through the Tariff Section, discovered and directed attention to such provisions contained in tariff schedules filed with the Commission and participated in numerous conferences with representatives of various carriers and with officials of other departments of the Commission for the purpose of bringing about the elimination or correction of such provisions.

SPECIAL APPLICATIONS

Carriers filed 115 applications for waiver of certain tariff rules and regulations, chiefly requesting special authority to effect changes in their rates, regulations, classifications, or practices on less than required notice, pursuant to section 203 of the act. In eight instances such applications were denied.

Press releases relating to changes in rates, rules, regulations, classes of service, or conditions under which services are rendered, were prepared and published in 212 instances. Letters and telegrams in the number of 887 and 62, respectively, were sent to carriers or their agents, relating to rate and tariff matters. Memoranda in the number of 336 were prepared for the Commission, or employees of other departments of the Commission, containing tariff, rate, or traffic information.

The section, through its representatives, cooperated with the other departments of the Commission in drafting various orders, such as Telegraph Division Order No. 15–A, respecting rates for Government communications by telegraph.

Special studies were constantly made of tariff rules, rate structures, and traffic arrangements with the intent of bringing about general uniformity as well as definite application of tariffs.

RATE REDUCTIONS

The department, through this section (so far as available personnel permitted) assembled data relating to telephone and telegraph rates applicable to the many classes of interstate communication service in various parts of the United States, and prepared charts, graphs, and rate exhibits. Such studies have aided in securing certain rate reductions beneficial to the public.

With respect to telegraph rates, there were numerous reductions effected by the telegraph companies between certain points in the United States, and also from many points in the United States to certain foreign countries. There were also reductions in the rates for special telegraph services, such as for the transmission of photograms. There were also established, during the fiscal year 1936, various flat rates applicable to certain new classes of telegraph service between all points in the United States such, for instance, as the flat rate of 35 cents applicable to tourate messages not exceeding 15 words. The effect of the establishment of these flat rates was to reduce the charges on certain types of messages.

With respect to telephone rates there were numerous reductions published by the telephone companies during the fiscal year 1936. These reductions were all of importance and, in the aggregate, will result in a large annual saving to the public. The following may be mentioned:

Effective on January 15, 1936.—Extension of the discount period on station-to-station calls and the introduction, for the first time, of the discount period on person-to-person calls. The estimated annual saving to the public from these changes will be $3,000,000.

Effective on February 1, 1936.—Reduction of numerous interstate toll-message rates applicable between various points in the southeastern section of the United States. These reductions will result in an estimated annual saving to the public of $125,000.

Effective on April 1, 1936.—Reduction in the interstate toll-message rates between Washington, D. C., and Alexandria, Va. These changes will result in an estimated annual saving to the public of $40,000.

Effective on July 1, 1936.—Substantial reductions in telephone toll-message rates between points in the United States and points in certain countries in Europe, Central America, and South America, and points in certain other countries. Reductions in telephone toll-message rates from Key West, Fla., to Cuban points. Reductions in telephone toll-message rates from Miami, Fla., and San Francisco, Calif., to South American and trans-Pacific points.

INTERNATIONAL RATES

Special studies have been made of the composition of international rates and the effect thereof upon American carriers and American users of international service.

The Tariff Section has actively participated in the preparatory work incident to the forthcoming meeting of the International Consultative Committee on Telegraphs scheduled to be held at Warsaw in October 1936. Such committee has before it highly important questions bearing upon the classification of international messages and coefficients to be applied in the establishment of international rates.

INFORMATION SUPPLIED MEMBERS OF THE PUBLIC AND OTHER GOVERNMENTAL AGENCIES

In addition to responding to numerous requests from other departments of the Commission for traffic, rate, and tariff information, many requests of this nature were also received from other governmental agencies and from members of the public. The latter requests were complied with so far as possible and proper. Duplicate copies of all tariffs filed with the Commission are kept available for inspection by members of the public. Many persons availed themselves of this privilege during the fiscal year 1936.

APPENDIX A

STATISTICAL DATA CONCERNING CARRIERS ENGAGED IN WIRE OR RADIO COMMUNICATIONS AND THE COMPANIES CONTROLLING THEM

The following tables and charts are assembled into three major groups. The first group relates to annual reports for the calendar year 1935; the second group refers to monthly reports; and the third group relates to the intercorporate relations of carriers reporting to the Federal Communications Commission and the controlling companies.

ANNUAL REPORTS

The data included in table I cover reports received from 108 class A telephone carriers (including operating data shown in 3 period reports filed by merged companies) and 40 class B telephone carriers (including operating data shown in 2 period reports filed by a reorganized company). The number of carriers shown in the table represent the carriers operating as of December 31, 1935, and the returns are incomplete. Approximately 82 carriers that previously filed "Annual Report Form M" will not file an annual report for 1935, due to the fact that they are subject only to the provisions of sections 201–205 of the Communications Act of 1934, although 20 of the aforementioned carriers voluntarily filed the reports for the year 1935.

In table II the returns shown for the telephone systems and lines included in the "Census of Electrical Industries, Telephones and Telegraphs", for the year 1932, are compared with the returns shown in the annual reports of carriers reporting to the Interstate Commerce Commission for 1932 and with the returns shown in the annual reports of carriers reporting to the Federal Communications Commission for 1935. The amounts applicable to the year 1932 for the latter group are also shown in the table. The difference in the number of carriers reporting in 1932 and 1935 is due to mergers and reorganizations.

The decrease in the amount of operating revenues of carriers reporting to the Commission in 1935 compared with returns for 1932 for the same group of carriers is due principally to the fact that the accounting classifications were changed in 1933, providing for the deduction of "Uncollectible operating revenues" from the gross operating revenues, whereas the amount was previously deducted in the income statement. It was also noted that several large carriers actually showed a decrease in revenues for 1935 in comparison with 1932. The decrease in the number of employees is probably due to the installation of dial (automatic) switchboards.

A summary of financial and operating data concerning telephone carriers reporting to the Commission for 1935 in comparison with 1934 is given in table III. The relative importance of the Bell System carriers in comparison with other than Bell System carriers is also indicated in this table. During the year, three Bell System carriers were merged with other Bell System carriers, as follows: (*a*) The Home Telephone & Telegraph Co. of Southern Oregon and the Home Telephone & Telegraph Co. of Spokane were purchased by the Pacific Telephone & Telegraph Co., and (*b*) the Petersburg Telephone Co. was purchased by the Chesapeake & Potomac Telephone Co. of Virginia.

TABLE I.—*Summary of financial and operating data from annual reports of telephone carriers for the year ended Dec. 31, 1935*

Item	Class A carriers	Class B carriers	Total
Number of carriers	108	40	148
Investment in telephone plant	$4,560,132,733	$12,544,907	$4,572,677,640
Other investments	2,639,874,685	1,523,995	2,641,398,680
Cash	59,510,179	442,344	59,952,523
Material and supplies	54,396,234	267,729	54,663,963
Total current assets	447,949,205	1,323,859	449,273,064
Capital stock	4,321,986,214	5,399,962	4,327,386,176
Funded debt	1,065,699,625	2,618,300	1,068,317,925
Total long-term debt	1,317,973,041	3,795,880	1,321,768,921
Total current liabilities	91,606,774	804,942	92,411,716
Depreciation reserve	1,119,385,198	3,407,768	1,122,792,966
Total surplus	415,403,137	1,144,375	416,547,512
Toll-service revenues	285,241,068	609,456	285,850,524
Total operating revenues	1,013,206,793	2,499,701	1,015,706,494
Operating expenses	712,782,533	1,890,342	714,672,875
Operating taxes:			
Other than United States Government taxes	75,983,878	161,880	76,145,758
United States Government taxes	24,429,343	47,096	24,476,439
Total	100,413,221	208,976	100,622,197
Net operating income	199,943,942	400,383	200,344,325
Interest deductions	66,066,157	233,821	66,299,978
Net income	279,234,174	207,261	279,441,435
Dividends declared	315,999,852	264,517	316,264,369
Miles of wire in cable	78,956,835	85,284	79,042,119
Miles of aerial wire	4,550,883	63,532	4,614,415
Total miles of wire	83,507,718	148,816	83,656,534
Miles of pole line	557,455	16,244	573,699
Miles of underground conduit (single duct)	127,195	101	127,296
Central offices—type of switchboard:			
Magneto, manual	5,176	215	5,391
Common-battery, manual	2,886	50	2,936
Auto, manual	30	1	31
Dial (automatic) system	1,216	14	1,230
Total	9,308	280	9,588
Total company telephones	15,195,815	76,315	15,272,130
Service telephones	319,211	7,274	326,485
Private-line telephones and other stations	97,635	13	97,648
Total telephones	15,612,661	83,602	15,696,263
Average number of calls originated per month:			
Local	2,190,315,754	9,789,868	2,200,105,622
Toll	66,644,861	321,769	66,966,630
Average number of company and service telephones	15,168,016	78,879	15,246,895
Private-line service revenues: [1]			
Commercial:			
Broadcasting	$5,692,764		$5,692,764
Miscellaneous	15,570,196		15,570,196
Government	860,311		860,311
Press	3,738,895		3,738,895
Telegraph stations:			
Private-line, Morse:			
Number	3,578		3,578
Revenue	$6,836,233	$1,070	$6,837,303
Private-line, teletypewriter:			
Number	6,636		6,636
Revenue	$9,574,668	$78	$9,574,746
Teletypewriter exchange:			
Number	7,885		7,885
Revenue	$3,812,682		$3,812,682
Telephotograph: Revenue	$459,934		$459,934
Total number of employees:			
At close of June	272,551	1,344	273,895
At close of year	271,343	1,335	272,675
Total compensation for year	$408,011,491	$1,045,024	$409,056,515

[1] Relates to interstate services furnished to customers and includes revenues for intrastate lines used in interstate communication.

TABLE II.—*Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census for 1932, and reports filed with the Interstate Commerce Commission for 1932, and the Federal Communications Commission for 1935*

Item	Census figures, 1932	Interstate Commerce Commission, 1932		Federal Communications Commission, 1935			
		Amount	Percent of census figures	1932 [1]		1935	
				Amount	Percent of census figures	Amount	Percent of census figures
Number of systems and lines	44,828	296	0.7	158	0.4	148	0.3
Investment in telephone plant	$4,791,902,525	$4,660,662,997	97.3	$4,537,651,215	94.7	$4,572,677,640	95.4
Operating revenues	$1,061,530,140	$1,049,757,095	98.9	$1,030,094,760	97.0	$1,015,706,494	95.7
Central offices	19,228	11,130	57.9	9,736	50.6	9,588	49.9
Total telephones	17,424,406	16,148,115	92.7	15,556,983	89.3	15,696,263	90.1
Number of employees at close of year	334,085	300,485	89.9	292,512	87.6	272,678	81.6
Total compensation	$458,116,677	[2]		[2]		$409,056,515	89.3

[1] Represents data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1935.
[2] Data not reported.

TABLE III.—*Summary of selected items from the annual reports of identical telephone carriers for the years 1935 and 1934*

Item	All carriers		Bell System carriers		Other than Bell System carriers	
	1935	1934	1935	1934	1935	1934
Number of carriers at close of year	148	151	40	43	108	108
Investment in telephone plant	$4,572,677,640	$4,556,141,728	$4,310,879,700	$4,293,795,042	$261,797,940	$262,346,686
Capital stock	$4,327,386,176	$4,327,339,599	$4,209,144,517	$4,208,938,117	$118,241,659	$118,401,482
Unmatured funded debt	$1,068,317,925	$1,037,259,914	$962,318,225	$933,228,723	$105,999,700	$104,031,191
Depreciation reserve	$1,122,792,966	$1,026,597,992	$1,072,964,942	$979,375,714	$49,828,024	$47,222,278
Total surplus	$416,547,512	$464,423,769	$403,122,864	$451,143,448	$13,424,648	$13,280,321
Operating revenues	$1,015,709,494	$962,245,397	$970,378,771	$919,110,633	$45,330,723	$43,134,764
Operating expenses	$714,672,875	$677,466,123	$685,029,030	$648,378,283	$29,643,845	$29,087,840
Net operating income	$200,344,325	$190,625,603	$188,619,384	$180,383,822	$11,724,941	$10,241,781
Dividend appropriations	$316,264,369	$310,357,923	$311,649,358	$305,648,765	$4,645,011	$4,709,158
Miles of wire	83,656,534	83,396,956	80,526,953	80,150,764	3,129,581	3,246,192
Total company telephones	15,272,130	14,756,001	14,060,093	13,594,140	1,212,037	1,161,861
Average number of calls originated per month:						
Local	2,200,105,622	2,127,342,661	2,029,275,997	1,949,783,247	170,829,625	177,559,414
Toll	66,966,630	64,836,285	62,693,256	60,794,052	4,273,374	4,042,233
Number of employees at close of year	272,678	275,594	254,995	257,820	17,683	17,774
Total compensation	$409,056,515	$392,641,698	$391,647,455	$375,922,163	$17,409,060	$16,719,535
PERCENT OF TOTAL						
Number of carriers at close of year	100.0	100.0	27.0	28.5	73.0	71.5
Investment in telephone plant	100.0	100.0	94.3	94.2	5.7	5.8
Capital stock	100.0	100.0	97.3	97.3	2.7	2.7
Unmatured funded debt	100.0	100.0	90.1	90.0	9.9	10.0
Depreciation reserve	100.0	100.0	95.6	95.4	4.4	4.6
Total surplus	100.0	100.0	96.8	97.1	3.2	2.9
Operating revenues	100.0	100.0	95.5	95.5	4.5	4.5
Operating expenses	100.0	100.0	95.9	95.7	4.1	4.3
Net operating income	100.0	100.0	94.1	94.6	5.9	5.4
Dividend appropriations	100.0	100.0	98.5	98.5	1.5	1.5
Miles of wire	100.0	100.0	96.3	96.1	3.7	3.9
Total company telephones	100.0	100.0	92.1	92.1	7.9	7.9
Average number of calls originated per month:						
Local	100.0	100.0	92.2	91.7	7.8	8.3
Toll	100.0	100.0	93.6	93.8	6.4	6.2
Number of employees at close of year	100.0	100.0	93.5	93.6	6.5	6.4
Total compensation	100.0	100.0	95.7	95.7	4.3	4.3

The tax accruals, by States, are shown in table IV concerning telephone carriers reporting for the year 1935.

The principal credit and debit items included in the income and surplus accounts of class A telephone carriers are shown in table V and chart no. 1. It will be noted that the total debits exceed the total credits by $56,783,741, and that dividends were appropriated from income and surplus. The amount of compensation chargeable to operating expenses is not stated in the annual reports. However, the bulk of the amount is charged to operating expenses and the remainder is charged to construction or other accounts. The total compensation is indicated in the table and chart for comparative purposes.

The data included in table VI cover the operations of 11 telegraph, 5 cable, and 20 radiotelegraph carriers for the year 1935. In addition, 3 reports were filed by radiotelegraph carriers; but as the reports were not complete, the statistical data could not be included in the table. The 3 reports were received from the Mayor and City Council of Baltimore, Md.; Pacific Communications Co.; and George Collins Warner, Jr.

A summary of financial and operating data concerning telegraph, cable, and radiotelegraph carriers reporting to the Commission for 1935 in comparison with 1934 is given in table VII. The returns cover the identical carriers for both years with the exception of the Minnesota & Manitoba Railroad, which did not file a report for the year 1934.

A list of the telephone carriers and holding companies in the hands of receivers or trustees, showing the names of the fiduciaries and dates of their appointments, is given in table VIII together with the amounts of investment and capitalization involved. There were no telegraph, cable, or radiotelegraph carriers reporting to the Commission for the year 1935 that were in the hands of receivers or trustees.

TABLE IV.—*Tax accruals by States of telephone carriers for the year ended Dec. 31, 1935*

State	Class A carriers	Class B carriers	Total
Total, United States	[1] $100,411,823	$208,976	[1] $100,620,799
Alabama	544,318	----------	544,318
Arizona	362,803	----------	362,803
Arkansas	351,860	6,185	358,045
California	6,344,740	13,433	6,358,173
Colorado	663,329	----------	663,329
Connecticut	749,841	----------	749,841
Delaware	80,191	75	80,266
Florida	665,545	----------	665,545
Georgia	628,836	----------	628,836
Idaho	284,068	----------	284,068
Illinois	6,719,502	9,902	6,729,404
Indiana	2,071,927	40,226	2,112,153
Iowa	817,734	3,872	821,606
Kansas	927,819	11,306	939,125
Kentucky	727,347	----------	727,347
Louisiana	1,047,029	5,773	1,062,802
Maine	329,483	2,350	331,833
Maryland	1,216,536	----------	1,216,536
Massachusetts	3,111,884	5,191	3,117,075
Michigan	3,072,423	----------	3,072,423
Minnesota	834,708	5,333	840,041
Mississippi	524,896	----------	524,896
Missouri	1,950,050	----------	1,950,050
Montana	217,428	6,663	224,091
Nebraska	713,289	2,800	716,089
Nevada	160,074	----------	160,074
New Hampshire	366,475	----------	366,475
New Jersey	4,206,227	----------	4,206,227
New Mexico	101,634	----------	101,634
New York	16,804,532	6,380	16,810,912
North Carolina	828,395	1,310	829,705
North Dakota	178,911	1,573	180,484
Ohio	4,312,234	6,470	4,318,704
Oklahoma	1,111,708	30	1,111,738
Oregon	926,115	----------	926,115
Pennsylvania	2,204,675	2,782	2,207,457
Rhode Island	207,334	----------	207,334
South Carolina	457,488	----------	457,488
South Dakota	265,442	----------	265,442

[1] Excludes $1,398 Canadian taxes.

TABLE IV.—*The accruals by States of telephone carriers for the year ended Dec. 31, 1935*—Continued

State	Class A carriers	Class B carriers	Total
Tennessee	$777,161		$777,161
Texas	2,449,213	$20,511	2,469,724
Utah	288,310		288,310
Vermont	108,353	1,621	109,974
Virginia	675,781	5,522	681,303
Washington	1,699,202		1,699,202
West Virginia	533,312		533,312
Wisconsin	1,779,059	2,572	1,781,631
Wyoming	127,947		127,947
District of Columbia	445,312		445,312
U. S. Government	24,429,343	47,096	24,476,439

TABLE V.—*Analysis of returns shown in income and surplus statements, class A telephone carriers, year ended Dec. 31, 1935*

CREDITS

Operating revenues		$1,013,096,326
Local service revenues	$680,266,845	
Toll service revenues	285,236,453	
Miscellaneous revenues	51,758,789	
Uncollectible revenues, debit	4,165,761	
Other income		[1] 147,723,415
Miscellaneous credits to surplus		6,160,341
Total credits		1,166,980,082

DEBITS

Operating expenses		$712,724,988
Depreciation and extraordinary retirements	$180,878,173	
All other maintenance expenses	184,132,474	
Traffic expenses	139,673,632	
Other operating expenses	208,040,709	
Operating taxes		100,400,455
Other than U. S. Government taxes	75,972,750	
U. S. Government taxes	24,427,705	
Interest deductions		66,066,157
On funded debt	51,953,285	
Other interest deductions	14,112,872	
Dividends declared		315,999,852
Appropriated from income	263,979,597	
Appropriated from surplus	52,020,255	
Other charges to income		2,439,849
Other charges to surplus		26,132,522
Total debits		1,223,763,823
Excess of debits over credits		56,783,741
Balance in surplus at beginning of year		381,895,126
Balance in surplus at end of year		325,111,385
Decrease during year		56,783,741
Total compensation for year [2]		408,011,491

[1] Consists chiefly of dividends and interest on securities.
[2] The bulk of the amount paid for salaries and wages is charged to operating expenses and the remainder is charged to construction or other accounts.

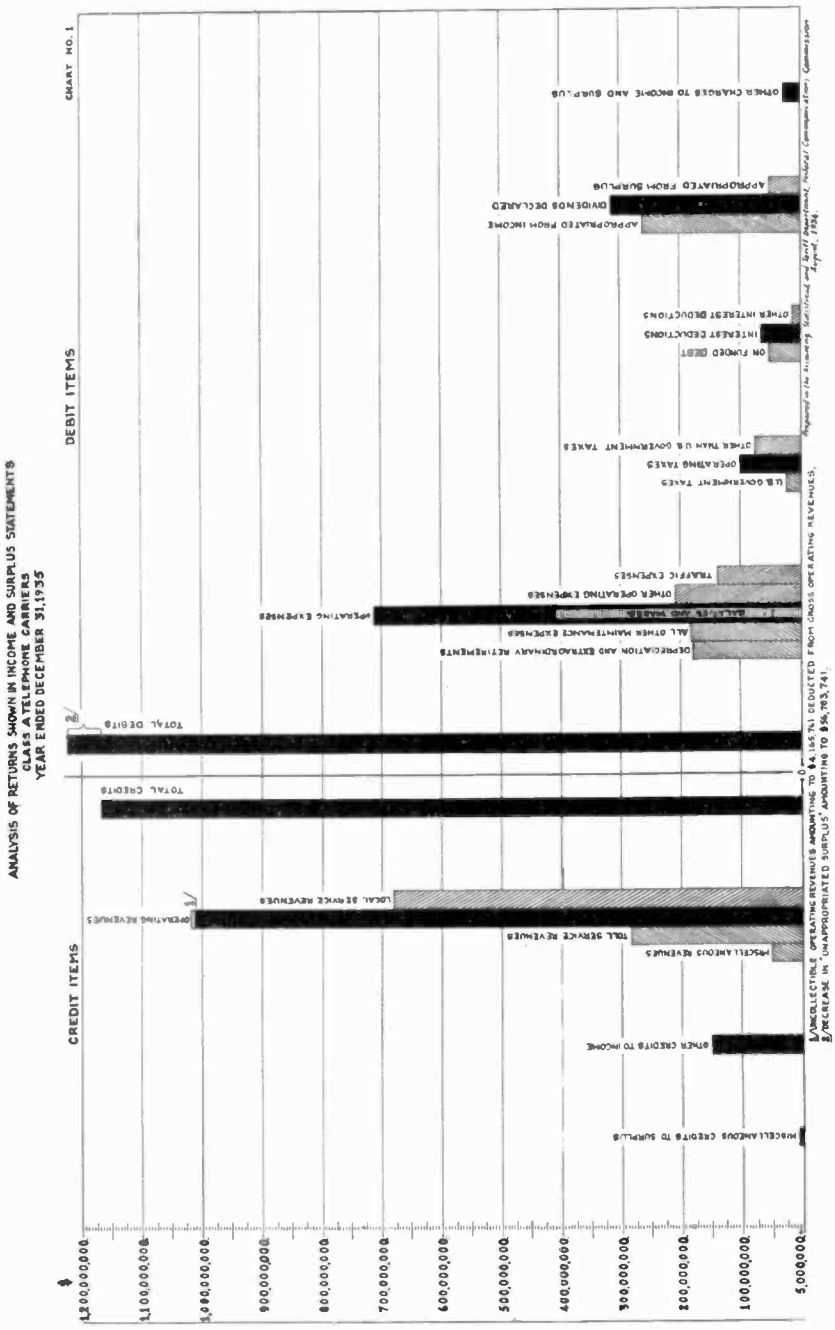

ANALYSIS OF RETURNS SHOWN IN INCOME AND SURPLUS STATEMENTS
CLASS A TELEPHONE CARRIERS
YEAR ENDED DECEMBER 31, 1935
CHART NO. 1
CREDIT ITEMS
DEBIT ITEMS
$1,200,000,000
1,100,000,000
1,000,000,000
900,000,000
800,000,000
700,000,000
600,000,000
500,000,000
400,000,000
300,000,000
200,000,000
100,000,000
0
TOTAL CREDITS
TOTAL DEBITS
OPERATING REVENUES
LOCAL SERVICE REVENUES
TOLL SERVICE REVENUES
MISCELLANEOUS REVENUES
OTHER CREDITS TO INCOME
MISCELLANEOUS CREDITS TO SURPLUS
OPERATING EXPENSES
ALL OTHER MAINTENANCE EXPENSES
DEPRECIATION AND EXTRAORDINARY RETIREMENTS
TRAFFIC EXPENSES
OTHER OPERATING EXPENSES
U.S. GOVERNMENT TAXES
OPERATING TAXES
OTHER THAN U.S. GOVERNMENT TAXES
ON FUNDED DEBT
INTEREST DEDUCTIONS
OTHER INTEREST DEDUCTIONS
APPROPRIATED FROM INCOME
DIVIDENDS DECLARED
APPROPRIATED FROM SURPLUS
OTHER CHARGES TO INCOME AND SURPLUS
1/ UNCOLLECTIBLE OPERATING REVENUES AMOUNTING TO $4,185,741 DEDUCTED FROM GROSS OPERATING REVENUES.
2/ DECREASE IN UNAPPROPRIATED SURPLUS AMOUNTING TO $56,793,741.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*

No.	Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock	Unmatured funded debt	Total long-term debt
	Grand total	$532, 561, 389	$66, 745, 768	$25, 146, 722	$9, 965, 070	$75, 179, 545	$174, 069, 065	$130, 381, 076	$182, 415, 370
	Telegraph carriers	411, 738, 539	19, 892, 024	18, 555, 680	8, 040, 819	40, 236, 912	104, 966, 768	106, 182, 000	157, 452, 833
	Cable carriers	89, 402, 831	34, 622, 185	5, 391, 651	1, 167, 273	30, 138, 005	61, 435, 540	20, 055, 036	20, 055, 036
	Radiotelegraph carriers	31, 420, 019	12, 231, 559	1, 199, 391	756, 978	4, 804, 628	7, 666, 757	4, 144, 040	4, 907, 501
	TELEGRAPH CARRIERS								
1	Canadian Pacific Railway Co. (lines in United States)	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
2	Central Idaho Telegraph & Telephone Co	104, 517				9, 694	100, 000		
3	Colorado & Wyoming Telegraph Co	38, 710		36, 904	284	39, 176	56, 300		
4	Continental Telegraph Co	299				1, 546	5, 000		
5	Great North Western Telegraph Co. of Canada [2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]
6	Interstate Telephone & Telegraph Co. [2]	25, 702				1, 960	[4] 1	50, 000	50, 000
7	Minnesota & Manitoba R. R	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
8	Mountain Telegraph Co	9, 378		255		9, 071	15, 000		
9	Northern Telegraph Co	337, 591		9, 621	4, 682	75, 135	262, 600		
10	Postal Telegraph-Cable Co. (Land Line System)	82, 359, 781	837, 188	2, 223, 112	879, 409	6, 106, 355			51, 270, 833
11	Western Union Telegraph Co	328, 862, 561	19, 054, 836	16, 285, 788	7, 156, 444	33, 993, 975	104, 527, 867	106, 132, 000	106, 132, 000
	CABLE CARRIERS								
12	All American Cables, Inc. [5]	32, 253, 882	3, 205, 437	2, 676, 883	288, 193	5, 004, 081	27, 037, 100		
13	Commercial Cable Co	30, 876, 402	29, 802, 282	1, 116, 913	418, 326	17, 054, 341	25, 000, 000	20, 000, 000	20, 000, 000
14	Commercial Pacific Cable Co	22, 966, 670		985, 667	172, 493	6, 521, 551	6, 000, 000		
15	French Telegraph Cable Co. [6]	208, 424	1, 614, 288	53, 543	276, 763	956, 212	712, 940	[7] 55, 036	[7] 55, 036
16	Mexican Telegraph Co	3, 097, 453	178	558, 615	11, 498	601, 820	2, 685, 500		

[1] No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.
[2] Lessor company.
[3] No data reported, as telegraph lines are an integral part of Canadian National Telegraph Co. and separate capital accounts are not kept.
[4] Represents book liability for 1,000 shares of common stock without par value.
[5] Figures include data for the Cuban All America Cables, Inc.
[6] The general balance sheet of this carrier has been rearranged to conform with the Uniform System of Accounts, and the data reported in French francs have been converted into dollars at the average exchange rate for the year 1935 of $0.066013.
[7] Reported as "Interest and bonds payable."

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Total working liabilities	Accrued depreciation	Total corporate surplus	Total operating revenues	Total operating expenses	Operating taxes		
							Other than U. S. Government taxes	U. S. Government taxes	Total
	Grand total	$55,102,590	$121,838,544	$107,266,043	$130,170,934	$110,419,170	(1)	(1)	$4,601,064
	Telegraph carriers	33,790,271	51,875,685	98,448,219	112,114,567	94,437,341	$3,835,412	$72,585	3,907,997
	Cable carriers	5,719,791	54,236,271	6,920,801	10,093,361	8,137,846	(1)	(1)	479,308
	Radiotelegraph carriers	15,592,528	15,726,588	1,897,023	7,963,006	7,843,983	155,736	58,028	213,764
	TELEGRAPH CARRIERS								
1	Canadian Pacific Railway Co. (lines in United States)	(2)	(2)	(2)	4,261	18,902	(2)	(2)	(2)
2	Central Idaho Telegraph & Telephone Co			14,211	1,152	561	91	5	96
3	Colorado & Wyoming Telegraph Co	3,091	11,462	7,501	15,913	8,613	981	519	1,500
4	Continental Telegraph Co	1,724			15,099	35,509	2,122	1	2,123
5	Great North Western Telegraph Co. of Canada [3]	(4)	(4)	(4)			510		510
6	Interstate Telephone & Telegraph Co.[3]	28,362	6,345	[5] *53,555*		782	500		500
7	Minnesota & Manitoba R. R	(2)	(2)	(2)	5,471	4,491			
8	Mountain Telegraph Co	597	9,378	[5] *6,526*	3,718	3,361	246		246
9	Northern Telegraph Co	3,506	31,430	117,727	54,489	42,761	962	2,060	3,022
10	Postal Telegraph-Cable Co. (Land Line System)	19,984,053	20,002,585	[5] *8,227,014*	[10] 22,145,891	20,525,243	500,000		500,000
11	Western Union Telegraph Co	13,768,938	31,814,485	106,595,875	[11] 89,868,573	73,797,118	3,330,000	70,000	3,400,000
	CABLE CARRIERS								
12	All America Cables, Inc.[6]	508,963	10,851,238	1,125,833	4,383,539	3,543,466	(12)	(12)	312,503
13	Commercial Cable Co	3,452,123	22,172,345	5,236,048	4,087,990	3,326,668	(12)	(12)	94,500
14	Commercial Pacific Cable Co	169,699	19,994,813	405,426	974,276	746,041	6,580	54,533	61,113
15	French Telegraph Cable Co.[7]	1,534,224	[13] 476,724		[14] 323,080	[14] 270,972	[14] 978	[14] 109	[14] 1,087
16	Mexican Telegraph Co	54,782	741,151	153,494	324,870	250,699	1,000	9,100	10,100

[1] No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.
[2] Lessor company.
[3] No data reported, as telegraph lines are an integral part of Canadian National Telegraph Co. and separate capital accounts are not kept.
[4] Figures include data for the Cuban All America Cables, Inc.
[5] The general balance sheet of this carrier has been rearranged to conform with the Uniform System of Accounts, and the data reported in French francs have been converted into dollars at the average exchange rate for the year 1935 of $0.066013.
[6] Insufficient data.
[7] Deficit or other reverse item.
[10] Includes $649,117 revenues from telephone operations.
[11] Includes $5,961,349, "Revenues from transmission—cable."
[12] Data not reported on accrual basis.
[13] Reported as "Reserve for repairs and emergencies."
[14] Figures cover operations of New York City office.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Operating income	Total interest deductions	Net income	Dividends declared		Miles of wire in cable	Miles of aerial wire	Total miles of wire
					Amount	Rate percent			
	Grand total	$14,150,956	$9,614,663	$3,610,028	$6,216,031		[15] 546,901	1,853,723	[16] 2,400,624
	Telegraph carriers	13,004,422	7,884,699	3,527,065	2,105,820		471,151	1,845,326	2,316,477
	Cable carriers	1,421,912	916,768	724,264	2,710,211		[16] 75,750	8,397	[16] 84,147
	Radiotelegraph carriers	[9] *275,378*	813,196	[9] *641,301*	1,400,000				
	TELEGRAPH CARRIERS								
1	Canadian Pacific Railway Co. (lines in United States)	(1)	(1)	(1)			24	5,177	5,201
2	Central Idaho Telegraph & Telephone Co	495		495				90	90
3	Colorado & Wyoming Telegraph Co	5,800		2,876			16	641	657
4	Continental Telegraph Co	[9] *22,615*					242	14,437	14,679
5	Great North Western Telegraph Co. of Canada [2]	[9] *510*		17,990					
6	Interstate Telephone & Telegraph Co.[2]	[9] *1,282*	3,045	[9] *5,586*					
7	Minnesota & Manitoba R. R	980		980				613	613
8	Mountain Telegraph Co	111		[9] *666*				251	251
9	Northern Telegraph Co	8,420		10,602	15,756	6.00	8	2,893	2,901
10	Postal Telegraph-Cable Co. (Land Line System)	970,648	2,534,136	[9] *1,759,704*			56,260	329,966	386,226
11	Western Union Telegraph Co	12,042,375	5,347,518	5,258,078	2,090,064	2.00	414,601	1,491,258	1,905,859
	CABLE CARRIERS								
12	All America Cables, Inc.[3]	497,570		678,880	1,622,226	6.00	[16] 27,192	5,138	[16] 32,330
13	Commercial Cable Co	612,428	911,743	[9] *318,584*			[17] 23,667		[17] 23,667
14	Commercial Pacific Cable Co	167,122		286,618	900,000	15.00	[17] 10,253		[17] 10,253
15	French Telegraph Cable Co	[14] 51,021	[14] 5,025	[14] 47,496			[18] 12,763	1,937	[18] 14,700
16	Mexican Telegraph Co	63,771		29,794	187,985	7.00	1,875	1,322	3,197

[1] No data reported, as telegraph lines are an integral part of respondent's railway system and separate capital accounts are not kept.
[2] Lessor company.
[3] Figures include data for the Cuban All America Cables, Inc.
[9] Deficit or other reverse item.
[14] Figures cover operations of New York City office.
[15] Includes 59,358 nautical miles of wire.
[16] Includes 25,438 nautical miles of wire.
[17] Represents nautical miles of wire.
[18] Includes 3,705 miles of wire not in service at the end of the year 1935.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Miles of pole line	Miles of underground conduit (single duct)	Telegraph offices			Telegraph revenue messages transmitted			
				United States [19]	Foreign	Total	Domestic	Foreign	Mobile	Total
	Grand total	253,375	5,987	25,793	211	26,004	176,884,250	13,126,427	635,020	190,645,697
	Telegraph carriers	251,345	5,827	25,657	49	25,706	174,517,441	4,095,793		178,613,234
	Cable carriers	2,030	160	8	136	144		5,156,489		5,156,489
	Radiotelegraph carriers			128	26	154	2,366,809	3,874,145	635,020	6,875,974
	TELEGRAPH CARRIERS									
1	Canadian Pacific Railway Co. (lines in United States)	227		13	([20])	13	15,624	([20])		15,624
2	Central Idaho Telegraph & Telephone Co.	60		5		5	2,030			2,030
3	Colorado & Wyoming Telegraph Co.	44		14		14	[21] 20,016			[21] 20,016
4	Continental Telegraph Co.	2,776	6	155		155	149,538			149,538
5	Great North Western Telegraph Co. of Canada [3]									
6	Interstate Telephone & Telegraph Co. [3]									
7	Minnesota & Manitoba R. R.	44		5		5	9,867	7		9,874
8	Mountain Telegraph Co.	6		5		5	6,717			6,717
9	Northern Telegraph Co.	631		68		68	[22] 128,815	[22] 319		[22] 129,134
10	Postal Telegraph-Cable Co. (Land Line System)	32,018	885	4,477		4,477	[21] 37,002,960			[21] 37,002,960
11	Western Union Telegraph Co.	215,539	4,936	20,915	49	20,964	137,181,874	4,095,467		141,277,341
	CABLE CARRIERS									
12	All America Cables, Inc. [4]	1,577	62	1	83	84		1,854,210		1,854,210
13	Commercial Cable Co.		[23] 54	1	38	39		2,547,918		2,547,918
14	Commercial Pacific Cable Co.		[23] 31	4	3	7		279,893		279,893
15	French Telegraph Cable Co.	7		1	7	8		[14] 201,730		[14] 201,730
16	Mexican Telegraph Co.	446	13	1	5	6		[24] 272,738		272,738

[3] Lessor company.
[4] Figures include data for the Cuban All America Cables, Inc.
[14] Figures cover operations of New York City office.
[19] Includes Territories and possessions of the United States except the Philippine Islands.
[20] Data not reported.
[21] Estimated on the basis of the number of messages transmitted during the month of January.
[22] Estimated on the basis of the number of messages transmitted on the 15th and 16th day of each month of the year 1935.
[23] Represents nautical miles of single duct.
[24] Includes 194,455 international messages transmitted in accordance with respondent's rules governing domestic messages.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Leased-wire revenues				Number of employees at end of June	Total compensation for year
		Commercial		Government	Press		
		Broadcasting	Miscellaneous				
	Grand total	[3]	[3]	[3]	[3]	68,987	$76,376,532
	Telegraph carriers	[3]	[3]	[3]	[3]	62,408	67,640,191
	Cable carriers					3,764	4,530,884
	Radiotelegraph carriers					2,815	4,205,457
	TELEGRAPH CARRIERS						
1	Canadian Pacific Railway Co. (lines in United States)					8	8,825
2	Central Idaho Telegraph & Telephone Co.					[25]	[25]
3	Colorado & Wyoming Telegraph Co.		$5,400			[26] 23	7,016
4	Continental Telegraph Co.					[27] 37	10,546
5	Great North Western Telegraph Co. of Canada [2]						
6	Interstate Telephone & Telegraph Co. [2]						
7	Minnesota & Manitoba R. R.					1	976
8	Mountain Telegraph Co.					[28] 9	3,000
9	Northern Telegraph Co.					[29] 50	32,819
10	Postal Telegraph-Cable Co. (Land Line System)	$5,722	30,686		$9,766	[30] 15,792	[31] 12,730,759
11	Western Union Telegraph Co.	[32] 1,826	[32] 54,323	[32] $151	[32] 47,972	46,488	54,846,250
	CABLE CARRIERS						
12	All America Cables, Inc. [4]					1,715	1,845,639
13	Commercial Cable Co.					1,571	2,003,402
14	Commercial Pacific Cable Co.					282	399,335
15	French Telegraph Cable Co.					[14] 98	[14] 151,512
16	Mexican Telegraph Co.					[29] 98	130,996

[2] Lessor company.
[4] Figures include data for the Cuban All America Cables, Inc.
[3] Insufficient data.
[14] Figures cover operations of New York City office.
[25] No employees or compensation reported; employees are carried on pay roll of the Pacific & Idaho Northern Ry. Co.
[26] Includes 14 persons who received no compensation from respondent.
[27] Includes 10 persons who received no compensation from respondent.
[28] Includes 5 persons who received no compensation from respondent.
[29] Includes 4 persons who received no compensation from respondent.
[30] Includes 6 persons who received no compensation from respondent.
[31] This figure represents the total compensation paid, whereas during 1934 the estimated aggregate monthly rates of compensation based on the month of June were reported.
[32] Data cover revenues reported for month of December only.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Investment in plant and equipment	Other investments	Cash	Material and supplies	Total working assets	Capital stock	Unmatured funded debt	Total long-term debt
	RADIOTELEGRAPH CARRIERS								
17	Central Radio Telegraph Co	$12,181		$826		$2,158	$12,000		
18	City of Seattle, harbor department	1,214				3,979			
19	Globe Wireless Ltd	950,006	$176,590	43,723	$9,650	114,479	[32] 683,700		
20	Hearst Radio, Inc	237,282	755,871	10,812	8,792	157,174	1,000	$494,583	$494,583
21	Mackay Radio & Telegraph Co. (California)	3,183,670	82,271	28,255	32,521	149,959	1,000,500		
22	Mackay Radio & Telegraph Co. (Delaware)	2,859,246	2,054,096	45,932	304,121	701,470	[34] 4,000		
23	Magnolia Radio Corporation	12,475				1,295	5,000		
24	Michigan Wireless Telegraph Co	5,865		2,456	98	2,744	7,000		
25	Olympic Radio Co	3,482		97		254	25,000		
26	Pere Marquette Radio Corporation	6,756		1,173		1,812	5,000		1,800
27	Press Wireless, Inc	397,137		5,562		46,588	350,900	26,457	26,457
28	RCA Communications, Inc	20,189,704	9,075,206	964,733	110,635	2,278,886	[33] 5,000,000	3,623,000	3,623,000
29	Radiomarine Corporation of America	1,662,655		70,247	269,710	763,607	500,000		
30	Southern Radio Corporation	161,294	7,241	15,706	15,459	46,461	1,500		521,181
31	South Porto Rico Sugar Co. (of Puerto Rico)	(36)	(36)	(36)	(36)	(36)	(36)	(36)	(36)
32	Tidewater Wireless Telegraph Co	10,000		262		559	5,500		
33	Tropical Radio Telegraph Co	1,646,700	60,055	8,601	5,992	509,303	10,000		240,480
34	United States-Liberia Radio Corporation	22,165		777		21,387	[37] 5,000		
35	Wabash Radio Corporation	25,000				2,284	[38] 25,000		
36	Western Radio Telegraph Co	33,187	10,329	229		229	[39] 25,657		

[32] Represents book liability for 6,837 shares of common stock without par value.
[34] Represents book liability for 12,000 shares of common stock without par value.
[33] Represents book liability for 50,000 shares of common stock without par value.
[36] Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.
[37] Represents book liability for 50 shares of common stock without par value.
[38] Represents book liability for 40,000 shares of common stock without par value.
[39] Represents book liability for 5,000 shares of common stock without par value.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Total working liabilities	Accrued depreciation	Total corporate surplus	Total operating revenues	Total operating expenses	Operating taxes		
							Other than U. S. Government taxes	U. S. Government taxes	Total
	RADIOTELEGRAPH CARRIERS								
17	Central Radio Telegraph Co	$4,151	$9,211	[1] $8,965	$7,296	$6,310	$32	$263	$295
18	City of Seattle, harbor department	2,081		3,112	4,959	9,672			
19	Globe Wireless Ltd	21,832	80,646	422,241	378,791	313,338	1,611	9,602	11,213
20	Hearst Radio, Inc	1,358,987	256,425	[1] 932,322	4,101	148,388	2,574	9	2,583
21	Mackay Radio & Telegraph Co. (California)	2,970,840	397,367	[1] 1,023,097	983,439	907,195	13,000		13,000
22	Mackay Radio & Telegraph Co. (Delaware)	7,252,000	379,342	[1] 2,095,270	836,521	1,089,732	5,000		5,000
23	Magnolia Radio Corporation	2,831	10,699	[1] 4,760	3,252	3,633	109		109
24	Michigan Wireless Telegraph Co	2,457	2,566	[1] 3,414	5,297	4,116	18	184	202
25	Olympic Radio Co	1,725		[1] 164	2,071	2,109			
26	Pere Marquette Radio Corporation	193	1,282	567	9,985	9,896	14	75	89
27	Press Wireless, Inc	45,532	123,258	[1] 108,082	374,580	356,832	4,076	1,000	5,076
28	RCA Communications, Inc	1,878,465	12,393,184	6,080,913	4,161,195	3,847,416	107,258	31,851	139,109
29	Radiomarine Corporation of America	127,770	1,126,666	659,473	431,884	397,975	12,229	14,793	27,022
30	Southern Radio Corporation	12,557	85,958	[1] 364,913	46,105	69,707	522		522
31	South Porto Rico Sugar Co. (of Puerto Rico)	[36]	[36]	[36]	7,127	8,812	142		142
32	Tidewater Wireless Telegraph Co		10,000	[1] 4,941	4,311	4,507	34	80	114
33	Tropical Radio Telegraph Co	1,896,582	841,961	[1] 765,643	611,261	586,402	7,865		7,865
34	United States-Liberia Radio Corporation	102		38,450	65,929	56,338	1,209	76	1,285
35	Wabash Radio Corporation	67		2,217	12,606	12,117		71	71
36	Western Radio Telegraph Co	14,356	8,023	[1] 4,578	12,296	9,488	43	24	67

[1] Deficit or other reverse item.
[36] Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Operating income	Interest deductions	Net income	Dividends declared		Telegraph offices		
					Amount	Rate percent	United States [10]	Foreign	Total
	RADIOTELEGRAPH CARRIERS								
17	Central Radio Telegraph Co.	[9] $2,479		[9] $603					
18	City of Seattle, harbor department	[9] 4,713		[9] 4,713			1		1
19	Globe Wireless Ltd.	50,640	$653	50,365			1		1
20	Hearst Radio Inc.	[9] 531,629	17,952	[9] 549,891			13		13
21	Mackay Radio & Telegraph Co. (California)	62,228	172,858	[9] 106,672			12		12
22	Mackay Radio & Telegraph Co. (Delaware)	[9] 254,230	386,445	[9] 626,687			10	1	11
23	Magnolia Radio Corporation	[9] 490		[9] 479			8		8
24	Michigan Wireless Telegraph Co.	979		979			1		1
25	Olympic Radio Co.	[9] 38		[9] 38			2		2
26	Pere Marquette Radio Corporation						(20)		(20)
27	Press Wireless, Inc.	12,672		12,672			1		[40] 1
28	RCA Communications, Inc.	86,068	220,784	229,429	$1,000,000	(41)	4		4
29	Radiomarine Corporation of America	107,115		114,946	400,000	80.00	25	4	29
30	Southern Radio Corporation	[9] 24,124	75	[9] 17,730			29		29
31	South Porto Rico Sugar Co. (of Puerto Rico)	[9] 1,827		[9] 1,827	(20)	(20)		2	2
32	Tidewater Wireless Telegraph Co.	[9] 310		[9] 310			1		1
33	Tropical Radio Telegraph Co.	13,276	14,429	48,438			1		1
34	United States-Liberia Radio Corporation	8,306		8,306			9	16	[42] 25
35	Wabash Radio Corporation	417		417			1	3	4
36	Western Radio Telegraph Co.	2,741		2,097			4		4
							5		5

[9] Deficit or other reverse item.
[10] Includes Territories and possessions of the United States except the Philippine Islands.
[20] Data not reported.
[36] Data not shown, as radiotelegraph operations are an integral part of respondent's business and separate capital accounts are not kept.
[40] Excludes 9 ship stations.
[41] Represents $20 per share on 50,000 shares of common stock without par value.
[42] Excludes 61 ship stations.

TABLE VI.—*Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended Dec. 31, 1935*—Continued

No.	Name of carrier	Telegraph revenue messages transmitted				Number of employees at end of June	Total compensation for year
		Domestic	Foreign	Mobile	Total		
	RADIOTELEGRAPH CARRIERS						
17	Central Radio Telegraph Co	[20]		[20]	[20]	3	$4,671
18	City of Seattle, harbor department			9,976	9,976	5	8,770
19	Globe Wireless Ltd		94,623	4,009	98,632	[43] 99	160,920
20	Hearst Radio, Inc	157,170			157,170	[44] 12	[44] 41,469
21	Mackay Radio & Telegraph Co. (California)	[21] 834,348	[21] 146,160	[21] 46,680	[21] 1,027,188	[45] 304	426,720
22	Mackay Radio & Telegraph Co. (Delaware)	[21] 676,884	[21] 172,584	[21] 87,756	[21] 937,224	[27] 269	434,862
23	Magnolia Radio Corporation			2,821	2,821	[29] 5	2,495
24	Michigan Wireless Telegraph Co	378		3,912	4,290	[43] 5	3,326
25	Olympic Radio Co	[20]	[20]	[20]	[20]	1	1,610
26	Pere Marquette Radio Corporation	1,951		7,991	9,942	[28] 10	9,053
27	Press Wireless, Inc		228,155	2,635	230,790	59	129,855
28	RCA Communications, Inc	643,890	3,010,413	8,130	3,662,433	[43] 1,515	2,282,711
29	Radiomarine Corporation of America			368,320	368,320	145	340,913
30	Southern Radio Corporation		14,717		14,717	[46] 2	[46] 5,192
31	South Porto Rico Sugar Co. (of Puerto Rico)	858	1,373	5,576	7,807	[44] 6	[44] 6,497
32	Tidewater Wireless Telegraph Co			4,489	4,489	2	3,196
33	Tropical Radio Telegraph Co	12,778	198,817	75,689	287,284	[47] 340	325,283
34	United States-Liberia Radio Corporation		7,303		7,303	[28] 9	5,240
35	Wabash Radio Corporation	15,318		7,036	22,354	[30] 12	9,774
36	Western Radio Telegraph Co	23,234			23,234	12	[48] 2,900

[20] Data not reported.
[21] Estimated on the basis of the number of messages transmitted during the month of January.
[27] Includes 10 persons who received no compensation from respondent.
[28] Includes 5 persons who received no compensation from respondent.
[29] Includes 4 persons who received no compensation from respondent.
[30] Includes 6 persons who received no compensation from respondent.
[43] Includes 3 persons who received no compensation from respondent.
[44] Data cover radiotelegraph department only.
[45] Includes 9 persons who received no compensation from respondent.
[46] Data cover radiotelegraph operators in the United States only.
[47] Includes 94 persons who received no compensation from respondent.
[48] Represents only the portion of compensation paid by respondent.

TABLE VII.—*Selected items from the annual reports of telegraph, cable, and radiotelegraph carriers for the years 1935 and 1934*

Item	Total all carriers		Telegraph carriers		Cable carriers		Radiotelegraph carriers	
	1935[1]	1934	1935[1]	1934	1935	1934	1935	1934
Number of carriers	36	35	11	10	5	5	20	20
Investment in plant and equipment	$532,561,389	$532,659,535	$411,738,539	$411,426,002	$89,402,831	$90,327,558	$31,420,019	$30,905,975
Capital stock	$174,069,065	$173,864,680	$104,966,768	$104,966,793	$61,435,540	$61,432,030	$7,666,757	$7,465,857
Unmatured funded debt	$130,381,076	$130,353,000	$106,182,000	$106,564,000	$20,055,036	$20,000,000	$4,144,040	$3,789,000
Accrued depreciation	$121,838,544	$120,831,566	$51,875,685	$52,341,015	$54,236,271	$53,695,067	$15,726,588	$14,795,484
Total corporate surplus	$107,266,043	$111,256,833	$98,448,219	$97,159,633	$6,920,801	$10,018,789	$1,897,023	$4,078,411
Operating revenues	$130,170,934	$126,481,408	$112,114,567	$108,342,087	$10,093,361	$10,710,991	$7,963,006	$7,428,330
Operating expenses	$110,410,170	$109,825,695	$94,437,341	$94,521,930	$8,137,146	$8,280,520	$7,843,983	$7,023,326
Operating income	$14,150,956	$11,189,969	$13,004,422	$9,134,295	$1,421,912	$1,889,825	*$275,378*	$165,849
Dividends declared	$6,216,031	$2,096,498	$2,105,820	$15,756	$2,710,211	$1,780,742	$1,400,000	300,000
Total miles of wire	[2] 2,400,624	[2] 2,399,039	2,316,477	2,311,613	[3] 84,147	[3] 87,426		
Revenue messages transmitted	190,645,697	165,786,459	178,613,234	155,250,224	5,156,489	5,449,805	6,875,974	5,086,430
Number of employees at end of June	68,987	70,983	62,408	64,871	3,764	3,750	2,815	2,362
Total compensation for year	$76,376,532	$77,170,766	$67,640,191	$68,458,639	$4,530,884	$4,670,589	$4,205,457	$4,041,538
PERCENT OF TOTAL								
Number of carriers	100.0	100.0	30.6	28.6	13.9	14.3	55.5	57.1
Investment in plant and equipment	100.0	100.0	77.3	77.2	16.8	17.0	5.9	5.8
Capital stock	100.0	100.0	60.3	60.4	35.3	35.3	4.4	4.3
Unmatured funded debt	100.0	100.0	81.4	81.8	15.4	15.3	3.2	2.9
Accrued depreciation	100.0	100.0	42.6	43.3	44.5	44.4	12.9	12.3
Total corporate surplus	100.0	100.0	91.8	87.3	6.4	9.0	1.8	3.7
Operating revenues	100.0	100.0	86.1	85.6	7.8	8.5	6.1	5.9
Operating expenses	100.0	100.0	85.5	86.1	7.4	7.5	7.1	6.4
Operating income	100.0	100.0	91.9	81.6	10.0	16.9	*1.9*	1.5
Dividends declared	100.0	100.0	33.9	0.8	43.6	84.9	22.5	14.3
Total miles of wire	100.0	100.0	96.5	96.4	3.5	3.6		
Revenue messages transmitted	100.0	100.0	93.7	93.6	2.7	3.3	3.6	3.1
Number of employees at end of June	100.0	100.0	90.5	91.4	5.4	5.3	4.1	3.3
Total compensation for year	100.0	100.0	88.6	88.7	5.9	6.1	5.5	5.2

[1] Includes data for the Minnesota & Manitoba R. R., which did not report for 1934; the amounts included for 1935 are relatively small.
[2] Includes 59,358 nautical miles of wire.
[3] Includes 59,977 nautical miles of wire.

TABLE VIII.—*Communication companies in the hands of receivers and trustees*

[Year ended Dec. 31, 1935]

Name of company	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
TELEPHONE CARRIERS							
CLASS A							
Central West Public Service Co.[1]	Arthur B. Darling and E. Ennals Berl..	Trustees....	June 8, 1934	[2] $7,528,142	[3] $8,852,757	$8,837,000	$3,966,500
Kansas Telephone Co., The	M. B. Gourley and M. F. Cosgrove.....	Receivers...	Feb. 27, 1932	855,073	[4] 5,000	620,500	----------
Southwest Telephone Co., The (Dallas, Tex.)	William H. Heald and Chester H. Loveland.	Trustees....	Oct. 18, 1935 [5]	4,407,344	[6] 540,500	2,852,400	650,000
Southwestern States Telephone Co	----do----------	Receivers...	Nov. 9, 1932	3,773,169	[7] 500,000	2,300,000	800,000
Total telephone carriers				16,563,728	9,898,257	14,609,900	5,416,500
HOLDING COMPANIES							
American Union Telephone Co	Fred E. Hummel	Trustee.....	Aug. 1, 1934	----------	25,000	----------	403,500
Ann Arbor Railroad Co., The	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers...	Dec. 4, 1931 [8]	----------	7,250,000	9,217,041	----------
Indiana Central Telephone Co	Christopher L. Ward, Jr	Trustee.....	June 25, 1935 [9]	----------	[10] 1,000,000	1,700,000	----------
Postal Telegraph & Cable Corporation	Alfred E. Smith and George S. Gibbs...	Trustees....	Dec. 24, 1935 [11]	----------	[12] 55,970,750	50,670,210	----------
Standard Telephone Co. of Delaware	Clement A. Nance	Trustee.....	Sept. 25, 1934 [13]	----------	[14] 1,936,360	4,780,000	----------
Total holding companies				----------	66,182,110	66,367,251	403,500
Grand total				16,563,728	76,080,367	80,977,151	5,820,000

[1] Owns and operates electric, gas, ice, and water utilities; segregation of capitalization, etc., not available.
[2] Represents return for telephone business only.
[3] Includes $6,653,402 book liability for 288,896 shares of common stock without par value.
[4] Represents book liability for 1,000 shares of common stock without par value.
[5] William H. Heald and Chester H. Loveland were appointed receivers, Nov. 9, 1932.
[6] Includes $12,500 book liability for 25,000 shares of common stock without par value.
[7] Includes $100,000 book liability for 25,000 shares of common stock without par value.
[8] Norman B. Pitcairn appointed receiver, Oct. 20, 1933, to succeed Walter S. Franklin, resigned.
[9] Christopher L. Ward, Jr. and Wm. J. Wardall were appointed receivers, Jan. 1, 1935. Christopher L. Ward, Jr., was appointed temporary trustee, June 25, 1935, which appointment was made permanent, July 22, 1935.
[10] Represents book liability for 10,000 shares of common stock without par value.
[11] Date of temporary appointment.
[12] Includes $25,441,250 book liability for 1,017,650 shares of common stock without par value.
[13] Date of temporary appointment, made permanent Oct. 25, 1934.
[14] Represents book liability for 17,735 shares of preferred stock and 30,000 shares of common stock both without par value.

The amount of revenues from telegraph and telephone operations received by class I steam railways during 1935 is shown in table IX. The returns are included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission.

TABLE IX.—*Revenues received by class I steam railways included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission for the year ended Dec. 31, 1935*

Name of railway	Amount of revenue		
	Telegraph	Telephone	Total
Akron, Canton & Youngstown Ry. Co	$159		$159
Ann Arbor R. R. Co	1,879		1,879
Atchison, Topeka & Santa Fe Ry. Co	323,248		323,248
Atlanta & West Point R. R. Co	114		114
Baltimore & Ohio R. R. Co	60,140		60,140
Boston & Maine R. R. Co	2,647	$12,025	14,672
Central R. R. Co. of New Jersey	6,045	495	6,540
Central Vermont Ry. Inc	244		244
Chesapeake & Ohio Ry. Co	7,426		7,426
Chicago, Burlington & Quincy R. R. Co	140,762	370	141,132
Chicago Great Western R. R. Co	466		466
Chicago & Illinois Midland Ry. Co	394		394
Chicago, Indianapolis & Louisville Ry. Co	1,199		1,199
Chicago, Milwaukee, St. Paul & Pacific R. R. Co	39,574		39,574
Chicago, Rock Island & Gulf Ry. Co	759		759
Chicago, Rock Island & Pacific Ry. Co	13,190		13,190
Clinchfield R. R. Co	4,062		4,062
Colorado & Southern Ry. Co	863		863
Delaware & Hudson R. R. Corporation	15,099		15,099
Delaware, Lackawanna & Western R. R. Co	6,179		6,179
Denver & Rio Grande Western R. R. Co	3,044		3,044
Denver & Salt Lake Ry. Co	6,409		6,409
Detroit & Mackinac Ry. Co	295		295
Detroit, Toledo & Ironton R. R. Co	620		620
Duluth, Missabe & Northern Ry. Co	2,504	70,949	73,453
Duluth, South Shore & Atlantic Ry. Co	308		308
Duluth, Winnipeg & Pacific Ry. Co	1,246		1,246
Erie R. R. Co	5,891		5,891
Fort Worth & Denver City Ry. Co	1,038		1,038
Georgia R. R. (lessee organization)	317		317
Grand Trunk Western R. R. Co	8,471		8,471
Great Northern Ry. Co	115,396		115,396
Gulf, Mobile & Northern R. R. Co	7,761		7,761
Lake Superior & Ishpeming R. R. Co	157	1,804	1,961
Lehigh & Hudson River Ry. Co	568		568
Lehigh Valley R. R. Co	11,703		11,703
Long Island R. R. Co	5,179		5,179
Los Angeles & Salt Lake R. R. Co	19,251		19,251
Louisville & Nashville R. R. Co	44,468		44,468
Maine Central R. R. Co	392	177	569
Midland Valley R. R. Co	641		641
Minneapolis & St. Louis R. R. Co	700		700
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co	50,652		50,652
Mississippi Central R. R. Co	399		399
Missouri and Arkansas Ry. Co.[1]	274		274
Missouri-Illinois R. R. Co	271		271
Missouri & North Arkansas Ry. Co.[1]	(2)	(2)	67
Missouri Pacific R. R. Co	9,631		9,631
Nashville, Chattanooga & St. Louis Ry	10,309		10,309
Nevada Northern Ry. Co	(2)	(2)	8,753
New Jersey & New York R. R. Co	65		65
New York Central R. R. Co	7,379	11	7,390
New York, Chicago & St. Louis R. R. Co	2,144		2,144
New York, New Haven & Hartford R. R. Co	31,665		31,665
New York, Ontario & Western Ry. Co	3,285		3,285
New York, Susquehanna & Western R. R. Co	195		195
Norfolk Southern R. R. Co	6,613		6,613
Norfolk & Western Ry. Co		450	450
Northern Pacific Ry. Co	83,500		83,500
Northwestern Pacific R. R. Co	580		580
Oklahoma City-Ada-Atoka Ry. Co	587		587
Oregon Short Line R. R. Co	58,435		58,435
Oregon-Washington R. R. & Navigation Co	566		566
Pennsylvania R. R. Co	119,303		119,303
Pennsylvania-Reading Seashore Lines	5,397		5,397
Pere Marquette Ry. Co	4,500		4,500
Pittsburgh & Lake Erie R. R. Co	19		19
Pittsburg & Shawmut R. R. Co		449	449
Pittsburg & Shawmut & Northern R. R. Co	296	1,071	1,367
Reading Co	5,942		5,942

[1] The Missouri & North Arkansas Ry. Co. changed its name to Missouri and Arkansas Ry. Co. on Apr. 15, 1935.

[2] Revenue not segregated.

TABLE IX.—*Revenues received by class I steam railways included in account 138, "Telegraph and telephone", in the annual reports filed by railways with the Interstate Commerce Commission for the year ended Dec. 31, 1935*—Continued

Name of railway	Amount of revenue		
	Telegraph	Telephone	Total
Rutland R. R. Co.	$429	----------	$429
St. Joseph & Grand Island Ry. Co.	3,013	----------	3,013
St. Louis, San Francisco & Texas Ry. Co.	507	----------	507
San Antonio, Uvalde & Gulf R. R. Co.	2,275	----------	2,275
San Diego & Arizona Eastern Ry. Co.	2,911	----------	2,911
Southern Pacific Co.	45,385	----------	45,385
Spokane International Ry. Co.	96	----------	96
Spokane, Portland & Seattle Ry. Co.	7,460	----------	7,460
Texas Mexican Ry. Co.	4,575	----------	4,575
Texas & New Orleans R. R. Co.	11,026	----------	11,026
Texas & Pacific Ry. Co.	3,102	----------	3,102
Toledo, Peoria & Western R. R.	1,927	----------	1,927
Union Pacific R. R. Co.	94,977	----------	94,977
Virginian Ry. Co.	2,222	----------	2,222
Western Ry. of Alabama	34	----------	34
Wichita Falls & Southern R. R. Co.	54	----------	54
Yazoo & Mississippi Valley R. R. Co.	3,495	----------	3,495
Total for United States	1,446,195	$87,801	1,542,816
Copper River & Northwestern Ry. Co. (located in Alaska)	(1)	(1)	1,975
Grand total	1,446,195	87,801	1,544,791

[1] Revenue not segregated.

In the accompanying chart no. 2 the total operating revenues, total operation expenses, and net operating income of all communication carriers are indicated. The relative amounts applicable to telephone, and to telegraph, cable, and radiotelegraph carriers are shown separately. The uniform system of accounts used by telephone carriers differs from that prescribed for telegraph, cable, and radiotelegraph carriers. In the former classification, the amount of "Uncollectible operating revenues" is deducted from the gross operating revenues when transferred to the income statement, whereas in the latter classification it is handled as an income account and deducted subsequently. The "Uncollectible operating revenues" applicable to telegraph, cable, and radiotelegraph carriers, which were deducted from the gross operating revenues during 1935, amounted to $875,873.

MONTHLY REPORTS

The list of the 62 large telephone carriers reporting on a monthly basis is shown in table X, and the carriers marked with an asterisk are included in the Bell System. The Home Telephone & Telegraph Co. of Spokane discontinued filing reports because it was merged with the Pacific Telephone & Telegraph Co., and the Petersburg Telephone Co. discontinued filing reports because it was merged with the Chesapeake & Potomac Telephone Co. of Virginia during the year. Several carriers which are subject only to the provisions of section 201–205 of the Communications Act of 1934 resumed filing monthly reports for statistical purposes, including the following: Kittanning Telephone Co., Lorain Telephone Co., Peninsular Telephone Co., Union Telephone Co., and Upstate Telephone Corporation of New York.

TABLE X.—*List of 62 large telephone carriers reporting on a monthly basis to the Federal Communications Commission showing territorial groups to which the carriers have been assigned for statistical purposes*

Name of carrier	Geographical region
American Telephone Co.	South Central.
*American Telephone & Telegraph Co.	Middle Atlantic.
*Bell Telephone Co. of Nevada	Mountain.
*Bell Telephone Co. of Pennsylvania	Middle Atlantic.
Bluefield Telephone Co.	Chesapeake.
Carolina Telephone & Telegraph Co.	Southeastern.
*Chesapeake & Potomac Telephone Co.	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	Do.

* Represents carriers included in the Bell System.

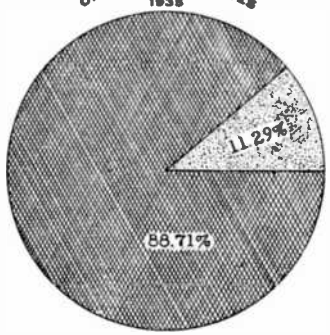
OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING REVENUES FOR THE YEAR, 1935, OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION

CHART NO. 2

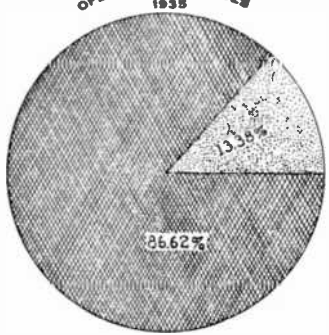
KEY

TELEGRAPH, CABLE, & RADIOTELEGRAPH

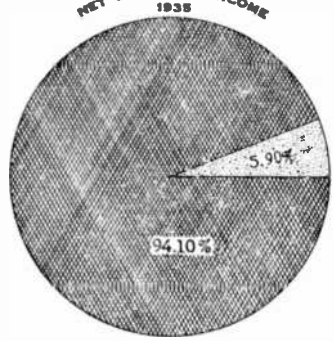
TELEPHONE



TELEPHONE CARRIERS		$1,015,709,494
TELEGRAPH & CABLE	$121,374,180	
RADIOTELEGRAPH	7,920,981	
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS		129,295,161
TOTAL ALL REPORTING CARRIERS		1,145,004,655



TELEPHONE CARRIERS		$714,672,675
TELEGRAPH & CABLE	$102,575,187	
RADIOTELEGRAPH	7,843,983	
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS		110,419,170
TOTAL ALL REPORTING CARRIERS		825,092,045



TELEPHONE CARRIERS		$301,036,819
TELEGRAPH & CABLE	$18,798,993	
RADIOTELEGRAPH	76,998	
TOTAL TELEGRAPH, CABLE, & RADIOTELEGRAPH CARRIERS		18,875,991
TOTAL ALL REPORTING CARRIERS		319,912,810

AUGUST 1936

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

TABLE X.—*List of 62 large telephone carriers reporting on a monthly basis to the Federal Communications Commission showing territorial groups to which the carriers have been assigned for statistical purposes*—Continued

Name of carrier	Geographical region
*Chesapeake & Potomac Telephone Co. of Virginia	Chesapeake
*Chesapeake & Potomac Telephone Co. of West Virginia	Do.
*Cincinnati & Suburban Bell Telephone Co	Great Lakes.
Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
*Dakota Central Telephone Co	North Central.
DeKalb-Ogle Telephone Co	Great Lakes.
*Diamond State Telephone Co	Middle Atlantic.
*Illinois Bell Telephone Co	Great Lakes.
Indiana Associated Telephone Corporation	Do.
*Indiana Bell Telephone Co	Do.
Inter-Mountain Telephone Co	Southeastern.
Interstate Telephone Co	Pacific.
Jamestown Telephone Corporation	Middle Atlantic.
Keystone Telephone Co. of Philadelphia	Do.
Kittanning Telephone Co	Do.
Lincoln Telephone & Telegraph Co	North Central.
Lorain Telephone Co	Great Lakes.
Michigan Associated Telephone Co	Do.
*Michigan Bell Telephone Co	Do.
Middle States Telephone Co. of Illinois	Do.
*Mountain States Telephone & Telegraph Co	Mountain.
Nebraska Continental Telephone Co	North Central.
*New England Telephone & Telegraph Co	New England.
*New Jersey Bell Telephone Co	Middle Atlantic.
*New York Telephone Co	Do.
*Northwestern Bell Telephone Co	North Central.
Ohio Associated Telephone Co	Great Lakes.
*Ohio Bell Telephone Co	Do.
*Pacific Telephone & Telegraph Co	Pacific.
Peninsular Telephone Co	Southeastern.
Portsmouth Home Telephone Co	Great Lakes.
*Rio Grande Valley Telephone Co	South Central.
Rochester Telephone Corporation	Middle Atlantic.
San Angelo Telephone Co	South Central.
Southeast Missouri Telephone Co	Do.
*Southern Bell Telephone & Telegraph Co	Southeastern.
*Southern California Telephone Co	Pacific.
*Southern New England Telephone Co	New England.
Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co	Do.
*Southwestern Bell Telephone Co	Do.
Southwestern States Telephone Co	Do.
Star Telephone Co	Great Lakes.
*Tri-State Telephone & Telegraph Co	North Central.
Two States Telephone Co	South Central.
Union Telephone Co	Great Lakes.
*United Telephone Co. (Kansas)	South Central.
United Telephone Co. (Missouri)	Do.
United Telephone Cos., Inc	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlantic.
Upstate Telephone Corporation of New York	Do.
West Coast Telephone Co	Pacific.
Western Telephone Corporation of Missouri	South Central.
*Wisconsin Telephone Co	Great Lakes.

* Represents carriers included in the Bell System.

Table XI represents the Summary of Monthly Reports of Large Telephone Carriers in the United States and table XII the Operating Data from Monthly Reports of Telegraph Carriers, which are issued on a monthly basis by the Commission and distributed to a wide range of organizations. They show data for the month of April 1936 and cumulative figures for the period from January to April 1936, inclusive, together with data for the same period in 1935.

Table XIII shows operating revenues, operating expenses, and net operating income of large telephone carriers reporting on a monthly basis from January 1933 to April 1936, inclusive, and chart no. 3 indicates the trend during this period. Similar data showing the amounts applicable to the Bell System are shown in chart no. 4. Refunds, amounting to approximately $16,000,000, to coin-box subscribers in Chicago covering an 11-year period were deducted in June 1934 by the Illinois Bell Telephone Co., but have been restored in chart no. 3 to preserve the consistency of the trend.

The amount of "Message tolls", by months, is shown in table XIV as reported by large telephone carriers from January 1933 to June 1936, inclusive. The revenues received from "Toll private line services" and "Other toll service revenues" are not included in this table.

TABLE XIII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to April 1936, inclusive*

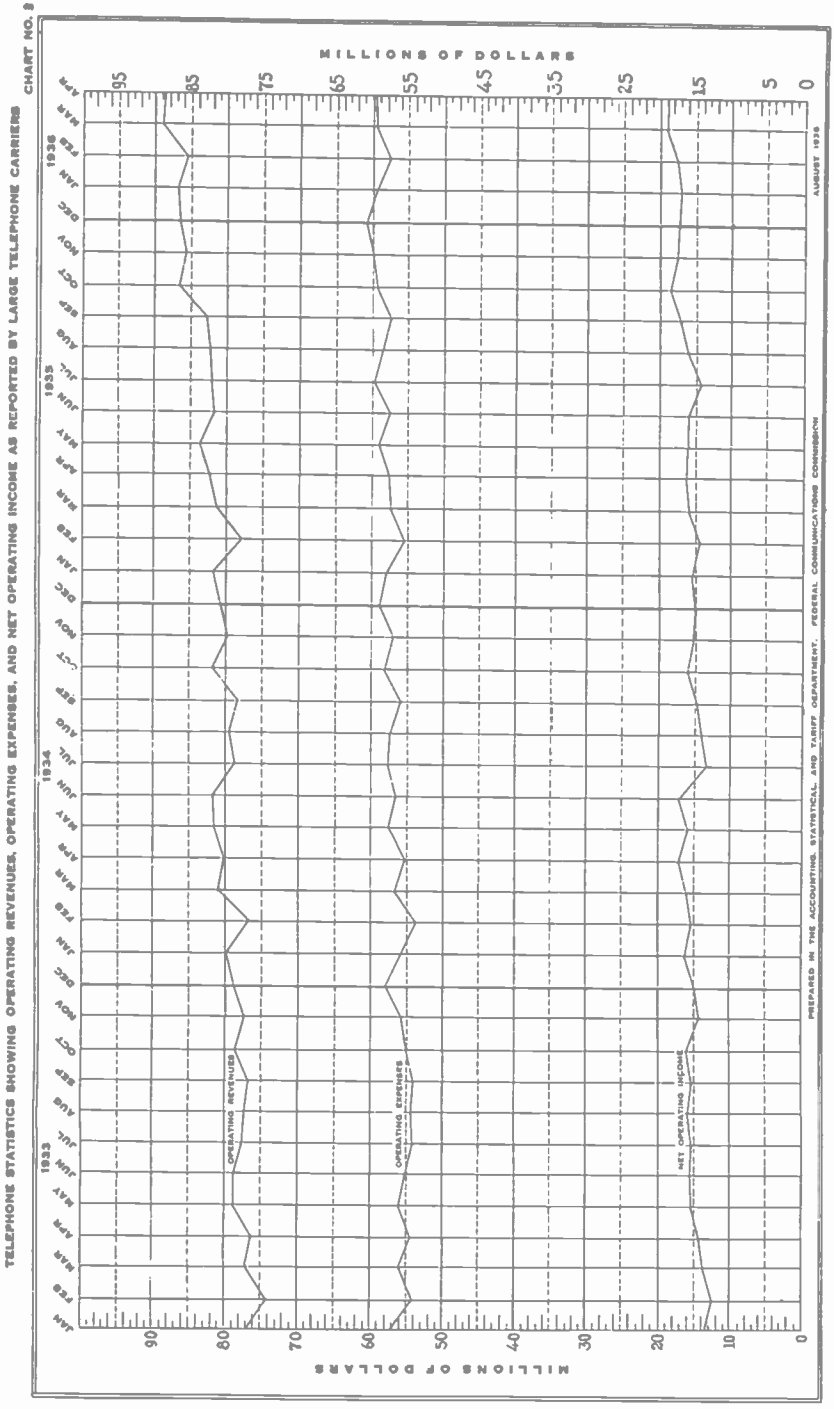
Month	Operating revenues	Operating expenses	Net operating income
1933			
January	$78,005,471	$57,086,284	$13,571,757
February	74,377,100	54,475,302	12,644,150
March	77,259,222	56,284,500	13,829,550
April	76,397,373	54,603,833	14,431,895
May	79,110,353	56,233,645	15,514,307
June	79,007,025	55,127,751	15,708,146
July	77,734,097	54,420,541	15,460,287
August	77,659,171	54,632,705	15,896,255
September	76,913,729	54,226,799	15,326,957
October	78,723,379	55,131,325	18,121,002
November	77,565,331	55,701,172	14,546,993
December	78,999,802	57,911,518	14,950,286
Total	931,752,053	665,835,375	178,001,585
1934			
January	79,941,399	55,762,222	16,277,592
February	76,914,462	53,770,491	15,334,651
March	80,993,311	56,737,772	16,165,482
April	80,143,511	55,378,910	16,947,987
May	81,694,834	57,514,431	15,759,920
June	[1] 64,915,267	[1] 40,278,641	[1] 16,991,766
July	78,862,489	57,710,576	13,340,748
August	79,553,849	57,535,980	14,205,618
September	78,345,197	55,905,810	14,720,477
October	81,924,797	58,237,607	16,287,278
November	79,895,074	57,234,642	15,219,477
December	[1] 80,707,097	[1] 58,931,320	[1] 15,041,409
Total	[1] 943,891,287	[1] 664,998,402	[1] 186,292,405
1935			
January	81,778,419	58,002,517	15,466,521
February	[1] 78,142,098	[1] 55,594,968	[1] 14,315,710
March	81,513,963	57,478,375	15,881,983
April	82,438,922	57,692,609	16,300,908
May	83,705,567	59,256,546	16,131,465
June	82,063,346	57,628,126	16,106,289
July	82,357,197	59,878,442	14,477,228
August	82,657,615	58,438,209	16,121,937
September	82,959,823	57,578,847	17,058,186
October	86,630,789	59,504,510	18,616,993
November	[1] 85,650,454	[1] 59,937,648	[1] 17,479,457
December	[1] 86,445,073	[1] 60,904,627	[1] 17,437,607
Total	[1] 996,343,266	[1] 701,895,424	[1] 195,394,284
1936			
January	86,782,563	59,498,366	17,290,640
February	85,362,701	57,648,790	17,746,261
March	88,909,429	59,582,258	19,165,275
April	88,753,917	59,542,933	18,817,699
Total	349,809,610	236,272,347	73,019,875

[1] These returns reflect adjustments covering estimated refunds.

TABLE XIV.—*Summary showing the monthly message tolls reported by large telephone carriers from January 1933 to June 1936, inclusive*

MESSAGE TOLLS

Month	1933	1934	1935	1936
January	$16,762,755	$19,384,212	$19,861,763	$21,894,589
February	15,270,002	18,070,612	18,005,199	21,271,176
March	17,914,803	20,236,760	20,131,160	23,458,540
April	17,207,146	19,551,237	20,646,260	23,297,797
May	19,225,143	20,511,799	21,323,003	23,485,712
June	19,559,018	20,036,058	20,647,873	24,116,276
July	19,879,806	19,874,953	21,593,399	----------
August	20,001,212	20,694,537	22,260,679	----------
September	18,913,841	19,272,110	21,480,791	----------
October	18,956,323	20,339,385	22,708,350	----------
November	18,153,978	19,076,100	21,300,187	----------
December	19,542,399	19,995,325	22,408,399	----------
Total	221,386,428	237,043,068	252,367,063	137,524,090


TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS
CHART NO. 2
MILLIONS OF DOLLARS
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
1933
1934
1935
1936
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION
AUGUST 1936

TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS

A COMPARISON OF BELL SYSTEM CARRIERS WITH OTHERS

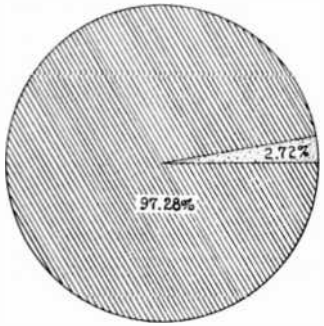
CHART NO. 4

KEY

BELL SYSTEM CARRIERS

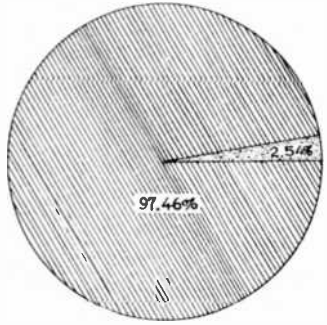
OTHER THAN BELL SYSTEM CARRIERS

OPERATING REVENUES
1935



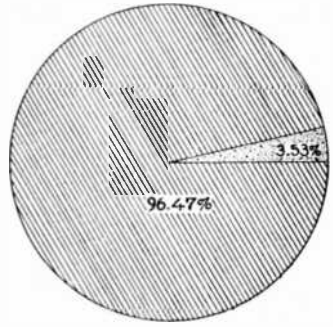
ALL LARGE TELEPHONE CARRIERS	$996,343,266
BELL SYSTEM CARRIERS	969,198,852
OTHER THAN BELL SYSTEM CARRIERS	27,144,414

OPERATING EXPENSES
1935



ALL LARGE TELEPHONE CARRIERS	$701,835,424
BELL SYSTEM CARRIERS	684,078,941
OTHER THAN BELL SYSTEM CARRIERS	17,816,483

NET OPERATING INCOME
1935



ALL LARGE TELEPHONE CARRIERS	$195,394,284
BELL SYSTEM CARRIERS	188,494,140
OTHER THAN BELL SYSTEM CARRIERS	6,900,144

PREPARED IN THE
ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT
FEDERAL COMMUNICATIONS COMMISSION

AUGUST 1936

A summary showing the number of telephones in service, compiled from monthly reports of large telephone carriers from October 1915 to April 1936, inclusive, is given in table XV, and chart no. 5 indicates the trend during this period. The fluctuations in the number of carriers shown are due to mergers or consolidations and the expansion of service rendered by small telephone carriers, placing them in the reporting class. The reduction from 102 carriers reporting monthly to the Interstate Commerce Commission to 64 carriers reporting monthly to the Federal Communications Commission is due to the fact that certain of the carriers are subject only to the provisions of sections 201–205 of the Communications Act of 1934. These carriers have been requested to resume filing monthly reports for statistical purposes.

The following statement shows the volume of business done by telephone carriers reporting to the Commission on a monthly basis in comparison with the total telephone carriers operating in the United States:

Item	Total operating revenues Dec. 31, 1932	Number of telephones
Census of electrical industries: 44,828 system lines	$1,061,530,140	17,424,406
104 carriers reporting to the Interstate Commerce Commission	$1,031,429,879	15,142,489
Percent of census total	97.16	86.90
62 carriers reporting to the Federal Communications Commission	$1,009,197,293	14,553,756
Percent of census total	95.07	83.53
Percent of Interstate Commerce Commission total	97.84	96.11

TABLE XV.—*Summary showing number of telephones in service*

[Compilations, subject to revision, from summaries of monthly reports of large telephone carriers, as reported to the Interstate Commerce Commission from October 1915 to May 1934, inclusive, and as reported to the Federal Communications Commission from June 1934 to April 1936, inclusive]

Month	1915 [1]		1916 [1]		1917		1918	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January			6,606,056	60	7,288,134	60	7,704,469	61
February			6,603,777	60	7,340,257	60	7,737,013	61
March			6,679,930	60	7,495,470	60	7,825,698	61
April			6,743,132	60	7,448,965	60	7,864,255	61
May			6,792,694	60	7,404,968	60	7,892,465	61
June			6,847,146	60	7,437,578	60	7,910,717	61
July			6,869,458	61	7,576,963	61	7,918,432	61
August			6,904,870	61	7,586,962	61	7,904,884	60
September			6,964,312	61	7,607,468	61	7,892,160	60
October	6,470,497	59	7,080,314	59	7,637,027	61	7,834,724	60
November	6,524,529	60	7,137,887	60	7,674,389	61	7,827,249	60
December	6,559,807	59	7,192,510	59	7,707,294	61	7,858,772	61

Month	1919		1920		1921		1922	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	7,988,869	65	8,671,382	70	9,331,127	68	9,836,074	68
February	8,046,394	65	8,741,012	70	9,376,382	68	9,876,694	68
March	8,113,019	65	8,812,092	70	9,439,648	68	9,927,397	68
April	8,173,645	65	8,867,170	70	9,649,647	68	10,004,799	71
May	8,213,020	65	8,903,516	70	9,526,900	68	10,054,746	70
June	8,250,252	65	8,954,846	70	9,580,787	69	10,100,164	70
July	8,253,072	64	8,995,707	66	9,594,631	68	10,140,484	71
August	8,266,670	64	9,025,229	66	9,552,938	67	10,183,767	71
September	8,314,394	64	9,067,714	65	9,638,489	67	10,223,813	71
October	8,383,188	64	9,111,315	65	9,672,948	67	10,306,584	71
November	8,462,053	64	9,161,657	65	9,727,895	67	10,380,708	71
December	8,544,079	64	9,224,524	64	9,777,331	67	10,456,648	71

[1] The figures for the months of October 1915 to September 1916, inclusive, are the comparative figures taken from the reports submitted for the months of October 1916 to September 1917, inclusive.

TABLE XV.—*Summary showing number of telephones in service*—Continued

Month	1923		1924		1925		1926	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	10,546,838	72	11,421,398	70	12,297,910	70	13,085,746	69
February	10,674,723	72	11,522,814	72	12,386,460	70	13,151,587	69
March	10,716,156	71	11,609,924	72	12,464,368	70	13,262,935	70
April	10,790,975	70	11,690,262	72	12,537,788	70	13,347,561	71
May	10,869,666	71	11,752,382	72	12,601,106	70	13,420,748	71
June	10,939,446	72	11,801,659	72	12,644,082	70	13,471,105	71
July	10,978,660	72	11,821,584	72	12,674,333	70	13,493,960	71
August	11,026,380	71	11,856,544	72	12,705,554	70	13,532,914	71
September	11,086,005	70	11,954,489	70	12,762,822	70	13,611,229	71
October	11,158,859	70	12,046,477	71	12,843,000	69	13,701,431	70
November	11,248,719	70	12,124,247	71	12,935,295	68	13,784,674	70
December	11,337,320	70	12,216,977	71	13,008,315	68	13,870,287	70

Month	1927		1928		1929		1930	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	13,954,460	69	14,822,782	83	15,891,373	97	16,907,056	101
February	14,021,053	69	14,884,329	82	15,979,662	97	16,973,939	106
March	14,179,658	77	15,022,265	88	16,089,712	98	17,018,588	106
April	14,246,756	76	15,090,028	89	16,169,656	98	17,071,003	105
May	14,302,426	75	15,171,028	88	16,296,719	100	17,111,679	103
June	14,386,739	79	15,204,342	87	16,332,476	99	17,129,989	104
July	14,400,040	79	15,236,610	87	16,378,856	99	17,185,618	103
August	14,421,483	79	15,285,055	87	16,433,110	98	17,159,425	103
September	14,509,865	80	15,376,685	87	16,571,581	98	17,106,253	103
October	14,589,504	80	15,530,770	91	16,650,877	98	17,116,487	103
November	14,694,937	80	15,658,268	93	16,739,138	98	17,123,716	103
December	14,740,452	78	15,759,152	94	16,801,102	97	17,114,851	103

Month	1931		1932		1933		1934	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	17,134,820	103	16,783,133	102	15,015,173	103	14,453,197	102
February	17,125,628	104	16,692,918	99	14,902,464	103	14,522,628	102
March	17,134,310	105	16,640,154	101	14,779,316	103	14,580,807	102
April	17,151,726	106	16,525,239	102	14,676,449	103	14,634,789	102
May	17,165,900	103	16,372,916	104	14,588,925	103	14,684,725	102
June	17,094,402	103	16,108,700	104	14,483,329	103	14,098,272	64
July	17,018,182	103	15,815,226	104	14,398,531	103	14,061,771	64
August	16,977,374	103	15,592,322	103	14,368,127	103	14,070,919	64
September	16,992,251	103	15,497,569	104	14,427,335	103	14,129,025	64
October	16,941,225	103	15,379,327	104	14,443,576	103	14,175,352	64
November	16,928,645	104	15,261,248	104	14,448,272	103	14,194,567	64
December	16,887,120	104	15,142,489	104	14,448,585	103	14,215,733	64

Month	1935		1936	
	Number of telephones	Number of reporting carriers	Number of telephones	Number of reporting carriers
January	14,245,571	64	14,770,292	62
February	14,284,757	64	14,839,188	62
March	14,334,334	64	14,921,045	62
April	14,386,643	64	15,004,403	62
May	14,438,372	64	----------	----------
June	14,418,856	64	----------	----------
July	14,406,236	64	----------	----------
August	14,433,816	64	----------	----------
September	14,530,097	64	----------	----------
October	14,596,946	63	----------	----------
November	14,654,089	63	----------	----------
December	14,708,248	62	----------	----------

The average operating revenues and expenses per telephone per day of large telephone carriers are shown in table XVI by geographical regions, and the amounts applicable to Bell System and other than Bell System carriers are indicated in chart no. 6. Since the operations of the long-lines department of the American Telephone & Telegraph Co. cover the entire country, the returns have been excluded from the averages for the geographical regions, but are included in a separate total for the United States as indicated in table XVI. The gross operating revenues and expenses have been used in computing these averages similar to the methods used by other organizations. During 1935 the Bell System carriers reported gross operating revenues amounting to $969,198,852. Of this amount, $20,918,098, or 2.16 percent, was reported as revenues from telegraph operations. The averages are computed on the basis of 325 days to the year as used by the Bureau of the Census in similar computations.

TABLE XVI.—*Averages showing operating revenues and operating expenses per telephone per day of large telephone carriers in the United States*

ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Operating revenues	Operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$83,442,708	$60,336,895	1,426,713	$0.1800	$0.1301
Middle Atlantic region [1]	302,600,243	217,424,318	4,188,136	.2223	.1597
Great Lakes region	184,780,033	126,918,074	3,093,005	.1838	.1263
Eastern district [1]	570,822,984	404,679,287	8,707,854	.2017	.1430
Chesapeake region	37,324,533	25,720,183	667,433	.1721	.1186
Southeastern region	56,283,889	37,435,692	979,020	.1769	.1177
Southern district	93,608,422	63,155,875	1,646,453	.1749	.1180
North Central region	39,478,997	28,654,220	789,650	.1538	.1117
South Central region	79,976,690	53,020,404	1,369,808	.1796	.1191
Mountain region	21,290,880	15,223,639	409,810	.1599	.1143
Pacific region	96,915,850	64,654,714	1,529,589	.1950	.1301
Western district	237,662,417	161,552,977	4,098,857	.1784	.1213
United States [1]	902,093,823	629,388,139	14,453,164	.1920	.1340
United States [2]	996,343,266	701,895,424	14,453,164	.2121	.1494

BELL SYSTEM CARRIERS

New England region	$83,442,708	$60,336,895	1,426,713	$0.1800	$0.1301
Middle Atlantic region [1]	293,972,657	211,486,715	3,999,952	.2261	.1627
Great Lakes region	179,560,986	123,820,626	2,941,164	.1870	.1295
Eastern district [1]	556,996,351	395,644,236	8,367,829	.2048	.1455
Chesapeake region	36,934,221	25,439,651	659,828	.1722	.1186
Southeastern region	52,526,409	35,188,248	893,234	.1809	.1212
Southern district	89,460,630	60,627,899	1,553,062	.1772	.1201
North Central region	36,581,270	26,667,296	714,389	.1576	.1149
South Central region	75,609,496	49,990,914	1,256,354	.1852	.1224
Mountain region	21,290,880	15,223,639	409,810	.1599	.1142
Pacific region	95,010,782	63,417,672	1,485,582	.1968	.1314
Western district	228,492,428	155,299,521	3,866,135	.1818	.1236
United States [1]	874,949,409	611,571,656	13,787,026	.1953	.1365
United States [2]	969,198,852	684,078,941	13,787,026	.2163	.1527

[1] Excludes figures for American Telephone & Telegraph Co., inasmuch as its operations are not confined to one geographical region.
[2] Includes figures for American Telephone & Telegraph Co.

TABLE XVI.—*Averages showing operating revenues and operating expenses per telephone per day of large telephone carriers in the United States*—Continued

OTHER THAN BELL SYSTEM CARRIERS

Geographical groupings	Operating revenues	Operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England Region	$8,627,586	$5,937,603	188,184	$0.1411	$0.0971
Middle Atlantic region	5,199,047	3,097,448	151,841	.1054	.0628
Great Lakes region					
Eastern district	13,826,633	9,035,051	340,025	.1251	.0818
Chesapeake region	390,312	280,532	7,605	.1579	.1135
Southeastern region	3,757,480	2,247,444	85,786	.1348	.0806
Southern district	4,147,792	2,527,976	93,391	.1367	.0833
North Central region	2,897,727	1,986,924	75,281	.1185	.0812
South Central region	4,367,194	3,029,490	113,454	.1184	.0822
Mountain region					
Pacific region	1,905,068	1,237,042	44,007	.1332	.0865
Western district	9,169,989	6,253,456	232,722	.1212	.0827
United States	27,144,414	17,816,483	666,138	.1254	.0823

Table XVII shows the monthly operating revenues, operating expenses, operating income, and net income of large telegraph, cable, and radiotelegraph carriers from July 1934 to April 1936, inclusive, and chart no. 7 indicates the trend during this period. The names of the telegraph carriers reporting on a monthly basis are shown in table XII.

TABLE XVII.—*Monthly operating statistics, showing revenues, expenses, operating income, and net income as reported by large telegraph, cable, and radiotelegraph carriers from July 1934 to April 1936, inclusive*

[Italics denote red figures]

Month	Operating revenues	Operating expenses	Operating income	Net income
1934				
July	$10,288,243	$9,275,142	$527,309	*$252,781*
August	10,886,673	9,326,337	1,074,209	244,478
September	10,178,062	9,028,709	668,071	*169,840*
October	10,725,812	9,225,020	1,075,143	318,698
November	9,933,054	9,019,603	438,859	*396,241*
December	11,004,971	9,458,110	1,330,026	*207,065*
Total	63,016,815	55,332,921	5,113,617	*442,751*
1935				
January	10,362,033	9,126,390	778,067	*60,911*
February	9,611,350	8,686,579	470,181	*463,886*
March	10,729,707	9,153,476	1,115,485	206,972
April	10,878,367	9,130,371	1,280,193	433,001
May	11,408,433	9,360,849	1,550,097	646,541
June	10,795,656	9,162,486	1,174,642	246,799
July	10,710,994	9,287,008	969,467	129,271
August	11,086,596	9,315,832	1,313,224	390,030
September	10,897,977	9,027,066	1,418,777	523,989
October	11,533,962	9,392,086	1,683,762	828,808
November	10,666,677	9,179,024	1,040,010	85,637
December	11,925,569	9,831,214	1,617,587	875,994
Total	130,607,321	110,652,381	14,411,492	3,812,245
1936				
January	10,911,897	9,420,527	981,459	131,091
February	10,585,700	9,161,369	918,017	*26,036*
March	11,726,246	9,651,369	1,562,929	623,123
April	11,542,789	9,531,459	1,503,698	691,179
Total	44,766,632	37,767,724	4,966,103	1,419,357

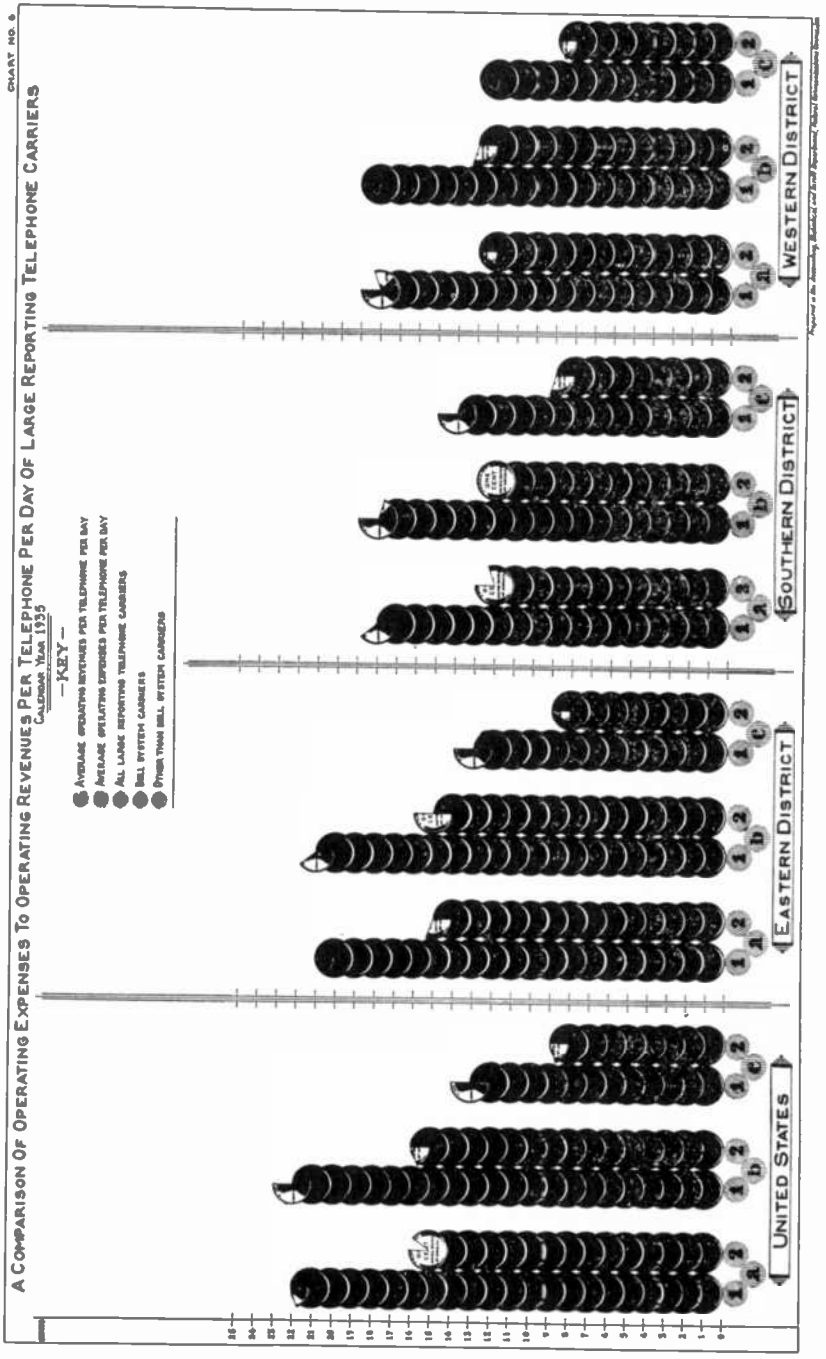
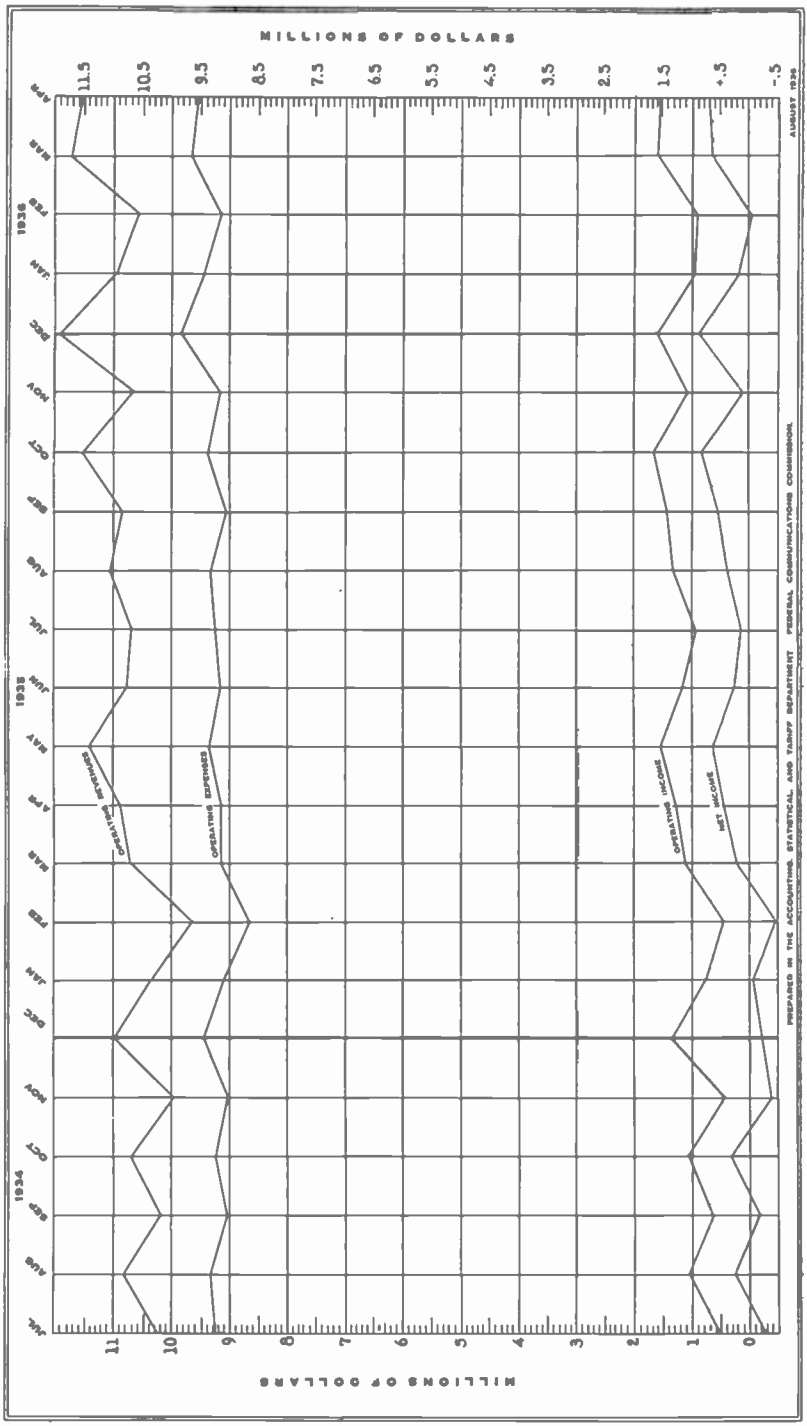


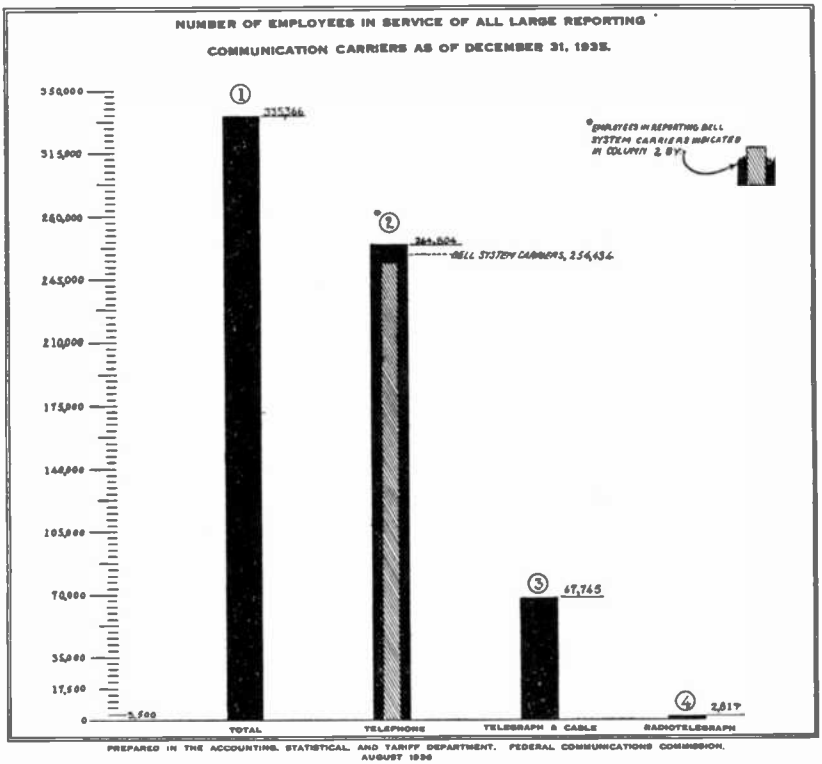
CHART NO. 6
A Comparison Of Operating Expenses To Operating Revenues Per Telephone Per Day Of Large Reporting Telephone Carriers
Calendar Year 1935
—KEY—
Average operating revenues per telephone per day
Average operating expenses per telephone per day
All large reporting telephone carriers
Bell system carriers
Other than Bell system carriers
United States
Eastern District
Southern District
Western District


OPERATING REVENUES, OPERATING EXPENSES, OPERATING INCOME, AND NET INCOME OF LARGE TELEGRAPH, CABLE, AND RADIOTELEGRAPH CARRIERS
CHART NO. 7
MILLIONS OF DOLLARS
11.5
10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
+.5
-.5
1934
1935
1936
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
OPERATING REVENUES
OPERATING EXPENSES
OPERATING INCOME
NET INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION
AUGUST 1936

The data shown in table XVIII concerning the number of employees and the amounts of compensation pertaining to telephone, telegraph, cable, and radiotelegraph carriers which report on a monthly basis, were taken from the annual reports filed by the carriers. The returns cover the period from January 1934 to December 1935, inclusive, and show the amounts applicable to the Bell System carriers and other than Bell System carriers. Telegraph, cable, and radiotelegraph carriers, during 1934, were not required to show the number of employees at the close of the year. Accordingly, the number of employees in service as of June 30 are shown in the table. The data for telephone carriers represent the number of employees in service at the close of the year.

Employees of large communication carriers, as of December 31, 1935, are shown in chart no. 8, which indicates the number of employees in the Bell System and the total number of telephone employees, in contrast to the number of telegraph, cable, and radiotelegraph employees.

CHART NO. 8



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION, AUGUST 1936

TABLE XVIII.—*Monthly compensation of employees as reported by large telephone, telegraph, cable, and radiotelegraph carriers for the years 1934 and 1935, and number of employees in service*

Month	Telegraph carriers				Telephone carriers			Grand total
	Telegraph	Cable	Radio-telegraph	Total	Bell System	Other than Bell System	Total	
1934								
January	$5,592,963	$387,374	$272,631	$6,252,968	$31,084,784	$822,017	$31,906,801	$38,159,769
February	5,285,001	391,004	270,563	5,946,568	28,803,467	781,966	29,585,433	35,532,001
March	5,719,022	393,369	283,764	6,396,155	30,710,360	825,355	31,535,715	37,931,870
April	5,643,867	392,862	283,019	6,319,748	29,790,153	818,324	30,608,477	36,928,225
May	6,012,823	395,643	302,183	6,710,649	32,034,994	851,774	32,886,768	39,597,417
June	5,962,567	386,268	308,100	6,656,935	31,084,351	849,306	31,933,657	38,590,592
July	5,800,882	390,341	319,194	6,510,417	32,199,552	863,474	33,063,026	39,573,443
August	5,837,207	382,058	324,258	6,543,523	32,462,181	871,281	33,333,462	39,876,985
September	5,538,007	389,842	315,356	6,243,205	31,089,083	842,907	31,931,990	38,175,195
October	5,742,965	384,213	325,637	6,452,815	32,468,060	867,740	33,335,800	39,788,615
November	5,500,135	381,486	326,222	6,207,843	31,690,722	855,980	32,546,702	38,754,545
December	5,797,578	396,129	328,205	6,521,912	31,990,826	864,180	32,855,006	39,376,918
Total	68,433,017	4,670,589	3,659,132	76,762,738	375,408,533	10,114,304	385,522,837	462,285,575
Number of employees in service [1]	64,784	4,633	2,317	71,734	257,137	10,432	267,569	339,303
1935								
January	$5,584,184	$381,068	$330,776	$6,296,028	$32,828,658	$871,348	$33,700,006	$39,996,034
February	5,177,774	380,339	324,172	5,882,285	30,132,676	822,765	30,955,441	36,837,726
March	5,552,495	383,126	334,506	6,270,127	31,663,211	859,052	32,522,263	38,792,390
April	5,563,922	382,121	339,400	6,285,443	31,896,383	866,332	32,762,715	39,048,158
May	5,732,341	378,168	349,059	6,459,568	33,480,362	889,975	34,370,337	40,829,905
June	5,584,818	379,324	341,402	6,305,544	31,460,986	881,330	32,342,316	38,647,860
July	5,726,054	377,819	351,608	6,455,481	34,015,043	917,490	34,932,533	41,388,014
August	5,775,926	372,908	349,732	6,498,566	33,070,415	902,972	33,973,387	40,471,953
September	5,528,900	368,333	343,815	6,241,048	32,510,123	890,085	33,400,208	39,641,256
October	5,764,265	369,277	347,785	6,481,327	33,648,710	905,182	34,553,892	41,035,219
November	5,547,895	375,963	347,586	6,271,444	32,818,968	879,875	33,698,843	39,970,287
December	6,071,254	382,438	351,855	6,805,547	33,610,412	911,049	34,521,461	41,327,008
Total	67,600,828	4,530,884	4,111,696	76,252,408	391,135,947	10,597,455	401,733,402	477,985,810
Number of employees in service as of Dec. 31, 1935	64,020	3,725	2,817	70,562	254,434	10,370	264,804	335,366

[1] Represents number of employees in service as of June 30, 1934, for telegraph carriers, and as of Dec. 31, 1934, for telephone carriers.

INTERCORPORATE RELATIONS OF CARRIERS AND THE CONTROLLING COMPANIES

Table XIX includes the telephone, telegraph, cable, and radiotelegraph carriers reporting to the Commission for the year 1935, and shows the intercorporate relations between these carriers and the controlling companies. They are arranged in alphabetical order by independent companies and their subsidiaries. The independent companies are shown flush, and the subsidiaries indented to indicate the intercorporate relations. The returns were incomplete at the date of the preparation of this report.

An index of the names of all companies appears at the end of this table and is arranged in alphabetical order for reference purposes. The number opposite the name of the company in the first column corresponds with the number following the name in the index. The following is a key to the symbols used in the third column:

M–A—Annual Report Form M for class A telephone carriers.
M–B—Annual Report Form M for class B telephone carriers.
O—Annual Report Form O for telegraph, cable, and radiotelegraph carriers.
H—Annual Report Form H for holding companies having large interests in communication carriers.
Cir.—Statistical Circular No. 1 for holding companies having nominal interests in communication carriers.

The operating revenues of the carriers, for the year 1935, are shown in the fourth column.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*

No.	Name of company	Form of annual report	Operating revenues
1	Alleghany Corporation	Cir.[1]	
2	Chesapeake Corporation	Cir.[1]	
3	Chesapeake & Ohio Ry. Co	Cir.[1]	
4	Pere Marquette Ry. Co	Cir.	
5	Central Land Co	Cir.[1]	
6	Pere Marquette Radio Corporation	O	$9,985
7	American Newspapers, Inc	Cir.	
8	Hearst Radio, Inc	O	4,101
9	American Telephone & Telegraph Co	M–A	94,249,444
10	Bell Telephone Co. of Pennsylvania	M–A	60,907,995
11	Chesapeake & Potomac Telephone Co. (New York)	M–A	10,066,522
12	Chesapeake & Potomac Telephone Co. of Baltimore City	M–A	13,249,974
13	Chesapeake & Potomac Telephone Co. of Virginia	M–A	8,068,250
14	Petersburg Telephone Co.[2]	M–A	172,103
15	Chesapeake & Potomac Telephone Co. of West Virginia	M–A	5,377,372
16	Cincinnati & Suburban Bell Telephone Co.[3]	M–A	8,877,939
17	Diamond State Telephone Co	M–A	1,925,378
18	Illinois Bell Telephone Co	M–A	76,134,796
19	Crown Point Telephone Co	M–B	52,107
20	Indiana Bell Telephone Co	M–A	10,750,498
21	Lebanon Telephone Co	M–B	45,323
22	Michigan Bell Telephone Co	M–A	32,753,727
23	Mountain States Telephone & Telegraph Co	M–A	20,356,679
24	New England Telephone & Telegraph Co	M–A	67,787,349
25	Eastern Telephone & Telegraph Co. (Maine)	M–A	124,380
26	Moosehead Telephone & Telegraph Co	M–B	86,786
27	Westerly Automatic Telephone Co	M–A	139,778
28	Western New England Telephone Co	M–B	83,131
29	White River Valley Telephone Co	M–B	47,936
30	New Jersey Bell Telephone Co	M–A	42,323,690
31	New York Telephone Co	M–A	188,815,593
32	Northwestern Bell Telephone Co	M–A	30,141,782
33	Tri-State Telephone & Telegraph Co	M–A	5,233,823
34	Dakota Central Telephone Co	M–A	1,205,666
35	Fulda Telephone Co	M–B	35,454
36	Nicollet County Telephone & Telegraph Co	M–B	49,705
37	Peoples Telephone Co., (St. Paul, Minn.)	M–B	44,537

See footnotes at end of Table.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*—Continued

No.	Name of company	Form of annual report	Operating revenues
38	Ohio Bell Telephone Co.	M-A	$35,762,333
39	Pacific Telephone & Telegraph Co.	M-A	56,809,136
40	Bell Telephone Co. of Nevada	M-A	934,201
41	Home Telephone & Telegraph Co. of Southern Oregon [4]	M-A	97,798
42	Home Telephone & Telegraph Co. of Spokane [4]	M-A	1,282,255
43	Southern California Telephone Co.	M-A	36,859,392
44	Southern Bell Telephone & Telegraph Co.	M-A	52,526,408
45	Christian-Todd Telephone Co.	M-A	190,069
46	Southern New England Telephone Co.[3]	M-A	15,655,359
47	Southwestern Bell Telephone Co.	M-A	73,594,577
48	Emporia Telephone Co.	M-A	182,911
49	Rio Grande Valley Telephone Co.	M-A	412,067
50	United Telephone Co. (Abilene, Kans.)	M-A	1,602,852
51	Wisconsin Telephone Co.	M-A	15,301,696
	Bell System, total		970,378,771
52	American Utilities Service Corporation	Cir.	
53	Bluefield Telephone Co.	M-A	390,310
54	Northwestern Illinois Utilities	M-B	55,312
	System, total		445,622
55	Ashtahula Telephone Co. [4]	M-A	153,851
56	Bangor & Aroostook R. R. Co.	Cir.	
57	Northern Telegraph Co.	O	54,489
58	Buffalo Valley Telephone Co.[3]	M-B	50,450
59	Byllesby Corporation	Cir.[1]	
60	Byllesby, H. M., & Co.	Cir.[1]	
61	Standard Power & Light Corporation [6]	Cir.[1]	
62	Standard Gas & Electric Co.	Cir.[1]	
63	Mountain States Power Co.[3]	M-B	72,579
64	Northern States Power Co. (Delaware)	Cir.[1]	
65	Northern States Power Co. (Minnesota) [3]	M-A	110,467
66	Western Continental Utilities, Inc. (In receivership)	Cir.[1]	
67	Southwest Telephone Co. (Texas). (In receivership)	M-A	659,623
68	Southwestern States Telephone Co.[3] (In receivership)	M-A	457,867
69	Louisiana Telephone Co.[3]	M-B	53,763
	System total		1,354,299
70	Canadian Northern Ry. Co.	Cir.	
71	Canadian National Telegraph Co.	Cir.[1]	
72	Great North Western Telegraph Co. of Canada	O	(7)
72a	Minnesota & Manitoba R. R.	O	5,471
73	Canadian Pacific Ry. Co. (lines in United States)	O	4,261
74	Capital City Telephone Co.	M-A	161,946
75	Carolina Telephone & Telegraph Co.	M-A	1,284,333
76	Home Telephone & Telegraph Co. of Virginia	M-B	56,040
	System total		1,340,373
77	Central West Public Service Co. (In trusteeship)	M-A	534,415
78	Central West Public Service Co. of North Dakota	M-A	111,367
79	South East Public Service Co.	M-A	210,614
80	South East Public Service Corporation of Virginia	M-A	328,643
	System total		1,185,039
81	Central West Utilities Corporation	Cir.	
82	Midwest Telephone & Utilities Co., Inc.	M-B	45,078
83	Champaign Telephone Co.	M-B	69,584
84	Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	Cir.	
85	Continental Telegraph Co.	O	15,099
86	Chillicothe Telephone Co.	M-A	157,639
87	Citizens Utilities Co.[3]	Cir.	
88	Public Utilities California Corporation	M-A	138,540
89	City of Seattle, harbor department	O	4,959
90	Citizens Telephone Co. (Decatur, Ind.)[3]	M-B	71,595
91	Citizens Telephone Co. of Clay County	M-B	67,809
92	Colorado Fuel & Iron Co. (In trusteeship)	Cir.[1]	
93	Colorado & Wyoming Telegraph Co.	O	15,913
94	Colusa County Telephone Co.	M-B	52,447
95	Consolidated Utilities Co. (Georgia)	H	
96	Mississippi Valley Telephone Co.[3]	M-B	63,265
97	DeKalb-Ogle Telephone Co.	M-A	248,801

See footnotes at end of Table.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*—Continued

No.	Name of company	Form of annual report	Operating revenues
98	Del Rio & Winter Garden Telephone Co	M-A	$196, 903
99	Dollar, Robert, Co	Cir	
100	Globe Wireless Ltd	O	378, 791
101	First-Chicago Corporation	Cir	
102	North-Western Indiana Telephone Co	M-A	133, 397
103	Firestone Plantations Co	Cir	
104	United States-Liberia Radio Corporation	O	65, 929
105	Florida Telephone Corporation	M-A	209, 298
106	French Telegraph Cable Co	O	323, 080
107	General Telephone Corporation [9]	H	
108	Associated Telephone Co., Ltd	M-A	2, 837, 784
109	Central Telephone Co. (Delaware).[10] (In trusteeship)	H [1]	
110	Indiana Central Telephone Co. (In trusteeship)	H	
111	Interstate Telephone Co. (Spokane, Wash.)	M-A	725, 228
112	Michigan Associated Telephone Co	M-A	969, 590
113	Southwestern Associated Telephone Co	M-A	853, 430
114	Haskell Telephone Co	M-A	144, 016
115	Commonwealth Telephone Co. (Wisconsin)	M-A	1, 005, 135
116	Illinois Commercial Telephone Co	M-A	1, 806, 806
117	Indiana Telephone Utilities Co	H	
118	Indiana Associated Telephone Corporation	M-A	1, 120, 583
119	Ohio Associated Telephone Co	M-A	633, 392
120	Pennsylvania Telephone Corporation	M-A	2, 049, 520
121	Standard Telephone Co. of Delaware. (In trusteeship)	H	
122	Platte Valley Telephone Corporation	M-A	190, 822
123	United Telephone Co. (Delaware)	H	
124	Tri-State Associated Telephone Corporation	M-B	89, 482
125	Upstate Telephone Corporation of New York	M-A	747, 046
	System total		13, 172, 834
126	General & Telephone Investments, Inc	H	
127	Gary, Theodore, & Co	H	
128	Midland Electric Co	(11)	
129	Community Telephone Co	Cir	
130	Inland Telephone Co	Cir	
131	Ohio Community Telephone Co.[3]	M-B	86, 399
132	Telephone Bond & Share Co	H	
133	Continental Telephone Co	H	
134	Nebraska Continental Telephone Co	M-A	321, 399
135	Citizens Independent Telephone Co	M-A	558, 102
136	Home Telephone & Telegraph Co., (Ft. Wayne, Ind.)	M-A	1, 172, 549
137	Missouri Telephone Co.[12]	M-A	258, 932
138	Portsmouth Home Telephone Co	M-A	314, 167
139	Texas Long Distance Telephone Co.[3]	M-A	187, 560
140	Wabash Telephone Co	M-A	458, 731
141	Imperial Securities Co	H	
142	Telephone Securities, Inc	H	
143	Keystone Telephone Co. of Philadelphia	M-A	1, 765, 974
144	Eastern Telephone & Telegraph Co. (Pennsylvania)	M-A	138, 558
	System total		5, 262, 371
145	Greenville Telephone Co	M-B	84, 653
146	Gulf Radio Service (George Collins Warner, Jr.) [13]	O	
147	Gulf States Telephone Co.[13]	M-A	324, 151
148	Home Telephone Co. of Ridgway	M-A	147, 929
149	Inter County Telephone & Telegraph Co.[3]	M-A	167, 403
150	Inter-Mountain Telephone Co	M-A	554, 862
151	International Telephone & Telegraph Corporation	H	
152	All America Cables, Inc	O	4, 383, 539
153	Postal Telegraph & Cable Corporation. (In trusteeship)	H	
154	Mackay Companies	H	
155	Commercial Cable Co	O	4, 087, 596
156	Commercial Pacific Cable Co.[14]	O	974, 276
157	Mackay Radio & Telegraph Co. (California)	O	983, 439
158	Postal Telegraph-Cable Co. (Land Line System)	O	22, 145, 891
159	Interstate Telephone & Telegraph Co. (Portland, Oreg.)[15]	O	[7]
160	Radio Communication Co., Inc.[16]		
161	Mackay Radio & Telegraph Co. (Delaware)	O	836, 521
	System total		33, 411, 262
162	Intra State Telephone Co	M-A	254, 069
163	Investment Bond & Share Corporation	(11)	
164	Kansas State Telephone Co.[17]	M-B	41, 730
165	Jamestown Telephone Corporation	M-A	441, 614

See footnotes at end of Table.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*—Continued

No.	Name of company	Form of annual report	Operating revenues
166	Kittanning Telephone Co	M-A	$218,093
167	Lee Telephone Co	M-B	101,513
168	Lincoln Telephone Securities Co	H [1]	
169	Lincoln Telephone & Telegraph Co	M-A	2,576,328
170	Loveland & Co., Ltd	H	
171	West Coast Utilities Corporation	H	
172	West Coast Telephone Co	M-A	1,179,841
173	Mayor and City Council of Baltimore, Md.[13]	O	3,972
174	Meadville Telephone Co	M-A	170,179
175	Michigan Alkali Co	Cir.[1]	
176	Wyandotte Transportation Co., 50 percent	Cir	
177	Michigan Wireless Telegraph Co	O	5,297
178	Huron Portland Cement Co	Cir.[1]	
179	Huron Transportation Co., 50 percent	Cir	
180	Middle Western Telephone Co. (In trusteeship)	H	
181	La Crosse Telephone Corporation	M-A	294,862
182	Middle States Telephone Co. of Illinois	M-A	367,120
	System total		661,982
183	Mid-West States Utilities Co. (In trusteeship) [5]	M-A [1]	
184	American Union Telephone Co. (In trusteeship) [16]	Cir	
185	Kansas Telephone Co. (In receivership) [5]	M-A	137,351
186	Nevada-California Electric Corporation	Cir	
187	Interstate Telegraph Co	M-A	133,540
188	Norfolk & Carolina Telephone & Telegraph Co	M-A	119,869
189	North-West Telephone Co	M-A	168,094
190	Northwestern Telephone Co	M-A	306,035
191	Olympic Radio Co	O	2,071
192	Oregon-Washington Telephone Co	M-A	155,457
193	Oxnard Home Telephone Co	M-B	56,669
194	Ozark Central Telephone Co	M-A	141,360
195	Pacific Communication Co.[19]	O	518
196	Palestine Telephone Co	M-B	65,506
197	Peninsular Telephone Co.[5]	M-A	1,918,285
198	Phillips Petroleum Co	Cir	
199	Western Radio Telegraph Co	O	12,296
200	Pike County Telephone Co	M-B	77,373
201	Press Wireless, Inc	O	374,580
202	Princeton Telephone Co	M-B	67,552
203	Public Service of Pennsylvania, Inc.[10]	Cir	
204	Radio Corporation of America	H	
205	R. C. A. Communications, Inc	O	4,161,195
206	Radiomarine Corporation of America	O	431,884
	System total		4,593,079
207	Red River Valley Telephone Co	M-B	39,203
208	Rochester Telephone Corporation	M-A	4,549,007
209	San Angelo Telephone Co	M-A	439,745
210	Santa Barbara Telephone Co	M-A	572,068
211	Santa Paula Home Telephone Co	M-B	47,339
212	Socony-Vacuum Oil Co., Inc	Cir	
213	Magnolia Petroleum Co	Cir	
214	Magnolia Radio Corporation	O	3,252
215	South Porto Rico Sugar Co. (New Jersey)	Cir	
216	South Porto Rico Sugar Co. (of Puerto Rico)	O	7,127
217	Southeast Missouri Telephone Co	M-A	653,392
218	Southwest Telephone Co. (Kansas)	M-A	168,031
219	Standard Oil Co. (New Jersey)	Cir	
220	Southern Radio Corporation	O	46,105
221	Standard Telephone & Telegraph Co. (Alabama)	M-A	143,542
222	Sullivan Telephone Co	M-B	36,601
223	Telephone Utility & Investment Co	Cir.[1]	
224	Eastern Kansas Telephone Co.[21]	M-B	41,155
225	Tidewater Wireless Telegraph Co	O	4,311
226	Two States Telephone Co	M-A	263,257
227	United Fruit Co	Cir	
228	Tropical Radio Telegraph Co	O	611,261
229	United States Rubber Co	Cir.[1]	
230	Meyer Rubber Co	Cir	
231	Central Idaho Telegraph & Telephone Co	O	1,152
232	United States Steel Corporation: [22]		
233	Federal Steel Co.[22]		
234	Michigan Limestone & Chemical Co	Cir	
235	Central Radio Telegraph Co	O	7,296
236	United Telephone Co. (Llano, Tex.)	M-B	79,079
237	United Telephone Co. (Monroe, Wis.)	M-B	80,373

See footnotes at end of Table.

TABLE XIX.—*Summary showing the intercorporate relations of carriers and the controlling companies reporting to the Federal Communications Commission for the year 1935*—Continued

No.	Name of company	Form of annual report	Operating revenues
238	United Telephone & Electric Co	H	
239	Claar Telephone Co	M-B	$52,191
240	New Jersey Telephone Co	M-A	135,779
241	United Telephone Co. of Pennsylvania	M-A	578,101
242	United Telephone & Telegraph Corporation	H	
243	Interstate Telephone & Telegraph Co. (Indiana)	H	
244	Ohio Telephone Service Co	M-A	196,409
245	United Corporation	M-B	80,854
246	United Telephone Cos., Inc	M-A	520,489
247	United Telephone Investment Corporation	H	
248	Union Telephone Co. (Greenfield, Ind.)	M-A	137,461
249	United Utilities Securities Co	H	
250	United Telephone & Telegraph Co	H	
251	American Telephone Co	M-A	426,317
252	United Telephone Co. (Missouri)	M-A	352,607
	System total		2,480,208
253	Utilities Holding Corporation	H	
254	Middle States Utilities Co. (Delaware)	H	
255	Middle States Utilities Co. of Iowa	M-B	80,763
256	Middle States Utilities Co. of Missouri	M-A	142,890
	System total		223,658
257	Victor-American Fuel Co	Cir	
258	Mountain Telegraph Co	O	3,718
259	Wabash Ry. Co. (in receivership) [23]	Cir	
260	Ann Arbor R. R. Co. (in receivership)	Cir	
261	Wabash Radio Corporation	O	12,606
262	Western Arkansas Telephone Co	M-B	66,930
263	Western Light & Telephone Co.[24]	Cir	
264	Kansas Home Telephone Co. (in receivership) [25]	M-B	29,241
265	Western Telephone Corporation (Kansas)	M-A	208,583
266	Western Telephone Corporation of Iowa	M-A	125,876
267	Western Telephone Corporation of Missouri	M-A	260,501
268	Western Telephone Corporation of Nebraska	M-B	52,381
269	Western Telephone Corporation of Oklahoma	M-A	134,098
270	Western Telephone Corporation of Texas	M-B	39,808
	System total		850,488
271	Western Union Telegraph Co	O	89,868,573
272	Great North Western Telegraph Co. of Canada [26]	O	(7)
273	Mexican Telegraph Co	O	324,870
	System total		90,193,443

[1] Report for 1935 not received.
[2] Merged with Chesapeake & Potomac Telephone Co. of Virginia Oct. 1, 1935.
[3] American Telephone & Telegraph Co. owns only a minority of the capital stock but company is customarily considered a part of the Bell System.
[4] Merged with Pacific Telephone & Telegraph Co. Dec. 1, 1935.
[5] Subject only to secs. 201-205 of the act.
[6] Controlled jointly by H. M. Byllesby & Co. and the United States Electric Power Corporation through ownership of majority of voting capital stock.
[7] None reported, lessor company.
[8] Formerly Public Utilities Consolidated Corporation which was reorganized Nov. 30, 1935.
[9] Formerly Associated Telephone Utilities Co., which was reorganized June 17, 1935.
[10] Dissolved Apr. 1, 1935.
[11] Report for 1935 not received and classification cannot be determined from the information available.
[12] Filed too late for data to be included in the other tables in this report.
[13] Not included in the tabulations, as returns were incomplete.
[14] The Mackay companies own only a minority of the capital stock but company is operated as part of their system.
[15] Independent. Leased by the Postal Telegraph-Cable Co. (Land Line System).
[16] Inactive company, files no report; inserted to show corporate relation of subsidiary carrier.
[17] Controlled by the General Telephone Corporation until October 1935, when the entire voting capital stock was purchased by present controlling company.
[18] Controls the Iowa Union Telephone Co., which is subject only to secs. 201-205 of the act and which did not file a report for 1935.
[19] Not included in the tabulations, as the returns were incomplete.
[20] Controls the Commonwealth Telephone Co. (Pennsylvania), which is subject only to secs. 201-205 of the act and which did not file a report for 1935.
[21] Subject only to secs. 201-205 of the act. Formerly Kansas Home Telephone Co., whose assets were acquired June 1, 1935.
[22] Files no report. Inserted to show corporate relation of subsidiary carriers.
[23] Filed too late for data to be included in table VIII.
[24] Formerly Western Power, Light & Telephone Co., which was reorganized June 1, 1935.
[25] Assets acquired by Eastern Kansas Telephone Co., June 1, 1935.
[26] Lines in the United States, in New England, and northern New York State, leased by the Western Union Telegraph Co. For control see no. 72.

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GENERAL INDEX

○

THIRD ANNUAL REPORT

OF THE

Federal Communications Commission

FOR THE

FISCAL YEAR ENDED JUNE 30

1937

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON: 1937

FEDERAL COMMUNICATIONS COMMISSION

Federal Communications Commissioners—1934–37

Name	State from which appointed	Period of service
Anning S. Prall	New York	Jan. 17, 1935–
George Henry Payne	New York	July 11, 1934–
Eugene O. Sykes	Mississippi	July 11, 1934–
Thad H. Brown	Ohio	July 11, 1934–
Paul A. Walker	Oklahoma	July 11, 1934–
Norman S. Case	Rhode Island	July 11, 1934–
Irvin Stewart	Texas	July 11, 1934–June 30, 1937.
Hampson Gary	Texas	July 11, 1934–Jan. 1, 1935.

PRINCIPAL OFFICE

Washington, D. C.

FIELD OFFICES

Atlanta, Ga.	Detroit, Mich.	New York, N. Y.
Baltimore, Md.	Galveston, Tex.	Norfolk, Va.
Boston, Mass.	Honolulu, Hawaii	Philadelphia, Pa.
Buffalo, N. Y.	Kansas City, Mo.	Portland, Oreg.
Chicago, Ill.	Los Angeles, Calif.	St. Paul, Minn.
Dallas, Tex.	Miami, Fla.	San Francisco, Calif.
Denver, Colo.	New Orleans, La.	Seattle, Wash.

CENTRAL MONITORING STATION

Grand Island, Nebr.

OTHER MONITORING STATIONS

Baltimore, Md.	Portland, Oreg.	San Pedro, Calif.
Great Lakes, Ill.	Hingham, Mass.	Marietta, Ga.

LETTER OF TRANSMITTAL

WASHINGTON, D. C., *January 4, 1938.*

To the Congress of the United States:

There is transmitted herewith the third annual report of the Federal Communications Commission, covering the fiscal year ended June 30, 1937.

This report is presented in four parts. The matters covered by each part are summarized in the following paragraphs:

Part I deals with matters which cannot be properly allocated to any one of the three major industries that are under the jurisdiction of the Commission. Specifically, part I covers the historical background of regulation; existing legislation and treaties; organization and procedure of the Commission; international conferences; experiment, research, and technical investigation by the Commission; summary of litigation; summary of hearings; field inspections and investigations; Great Lakes and Inland Waterways Radio Survey; the Commission's participation in the Interdepartment Radio Advisory Committee; fiscal affairs; and publications.

Part II deals with the activities of the Commission which have particularly concerned the broadcast industry and which were carried on primarily by the Broadcast Division of the Commission. Specifically, part II covers the organization and jurisdiction of the Broadcast Division, the facilities under the jurisdiction of the Broadcast Division, broadcast complaints and investigations, technical developments in the broadcast art, and the Federal Radio Education Committee.

Part III deals with the activities of the Commission which have particularly concerned the telegraph industry and which were carried on primarily by the Telegraph Division of the Commission. Specifically, part III covers the organization and jurisdiction of the Telegraph Division, telegraph rates and tariffs, supervision of telegraph accounts, wire facilities under the jurisdiction of the Telegraph Division, radio facilities under the jurisdiction of the Telegraph Division, telegraph complaints and investigations, financial and other statistical data, and technical developments in the telegraph art.

Part IV deals with the activities of the Commission which have particularly concerned the telephone industry and which were carried on primarily by the Telephone Division of the Commission. Specifically, part IV covers the organization and jurisdiction of the Telephone Division, telephone rates and tariffs, supervision of telephone accounts, wire facilities under the jurisdiction of the Telephone Division, radio facilities under the jurisdiction of the Telephone Division, telephone complaints and investigations, financial and other statistical data, and technical developments in the telephone art.

Since this report covers only events occurring prior to June 30, 1937, changes in the membership of the Commission subsequent to June 30, 1937, have not been noted. Two such changes have occurred during the time that has expired since the close of the fiscal year. The undersigned has been appointed chairman to fill the vacancy occasioned by the death of Hon. Anning S. Prall. Hon. T. A. M. Craven has been appointed to fill the vacancy occasioned by the expiration of the term of Hon. Irvin Stewart.

By order of the Commission:

FRANK R. MCNINCH, *Chairman.*

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PART I
THE COMMISSION

MEMBERS OF THE COMMISSION

AS OF JUNE 30, 1937

ANNING S. PRALL, *Chairman.*
IRVIN STEWART, *Vice Chairman.*
GEORGE HENRY PAYNE.
EUGENE O. SYKES.
THAD H. BROWN.
PAUL A. WALKER.
NORMAN S. CASE.

HISTORICAL BACKGROUND OF REGULATION

As an introduction to this report it has seemed desirable to summarize briefly the historical background of Federal regulation of wire and radio communication.

Wire communication.—Prior to the enactment by Congress of the Communications Act of 1934, approved June 19, 1934, the regulation of wire-telegraph companies was under the jurisdiction of (1) the Post Office Department, (2) the Department of State, and (3) the Interstate Commerce Commission; and the regulation of wire-telephone companies was under the jurisdiction of the Interstate Commerce Commission.

The Postmaster General was authorized under the Post Roads Act of 1866 (14 Stat. 221) to fix rates on July 1 of each year for Government telegrams for the ensuing fiscal year. This authority was exercised continuously from July 1, 1871, to July 1, 1934. In general, the rates for Government telegrams in effect when the Federal Communications Commission was organized were 40 percent of the rates for commercial telegrams of the same length between the same points.

General regulatory powers over wire-communication carriers were vested in the Interstate Commerce Commission by the act of June 18, 1910 (36 Stat. 539). That Commission established uniform systems of accounts for telegraph and telephone carriers, made valuation studies of the properties of certain domestic wire-telegraph carriers, and required them to report extensions and improvements to the plants in order to keep the valuation studies up to date. Telegraph and telephone carriers were required to file with the Interstate Commerce Commission (1) monthly reports of operating revenues and expenses and (2) annual reports showing financial and operating statistics.

For the period from August 1, 1918, to July 31, 1919, the Federal Government took over the control of telephone and telegraph companies as a war measure.

The Department of State was authorized by Executive Order No. 3513, July 9, 1921, to receive all applications to land or operate submarine cables in the United States and to advise the President with respect to the granting or revocation of such licenses. This order was issued pursuant to an act (Public Law No. 8, 67th Cong.) which required that a license for each cable to be landed or operated in the United States be first obtained from the President. Prior to the passage of this act relating to the landing and operation of submarine cables, the Presidents since 1869 had exercised such control under their broad Executive powers. On June 30, 1934, the President issued Executive Order No. 6779, amending Executive Order No.

3513 and authorizing and directing the Federal Communications Commission to receive all applications for licenses to land or operate submarine cables in the United States, and, after obtaining approval of the Secretary of State and such assistance from any executive department or establishment of the Government as it may require, to advise the President with respect to the granting or revocation of such licenses.

Radio communication.—Under the act of June 18, 1910, certain regulatory powers over radiotelegraph carriers were vested in the Interstate Commerce Commission. Aside from this act the first Federal statute relating to radiotelegraph was the Wireless Ship Act of June 24, 1910 (36 Stat. 629), as amended July 23, 1912. This act required radio apparatus on certain steamers. Regulation was delegated to the Secretary of Commerce and Labor. The first treaty on radio was ratified by the United States April 3, 1912. The first law regulating the use of radio except for the control of the Interstate Commerce Commission over carriers and other than to protect life and property at sea, was enacted August 13, 1912 (37 Stat. 302). This act provided for the granting of station and operator licenses by the Secretary of Commerce and Labor. During the World War the President was authorized to take possession of any radio system for purposes of national defense (Public Res. No. 38, 65th Cong.). Pursuant thereto he issued an Executive order, reading in part as follows:

> * * * that such radio stations within the jurisdiction of the United States as are required by the Naval Communications shall be taken over by the Government of the United States and actually controlled by it to the exclusion of any other control or use and futhermore, that all radio stations not necessary to the Government of the United States for naval communications may be closed for radiocommunication and all radio apparatus may be removed therefrom.

By Public Resolution No. 48, Sixty-sixth Congress, approved June 5, 1920 (41 Stat. 1061), the Secretary of the Navy was authorized, at reasonable rates subject to review by the Interstate Commerce Commission, to use Government-owned radio stations for the transmission of press messages and private commercial messages between ships and between ships and shore. Public Resolution No. 47, Sixty-ninth Congress, approved December 8, 1926 (44 Stat. 917), limited the time for which radio licenses were granted to 90 days for broadcast stations and 2 years for other stations, and required the execution of a waiver of a claim to any wave lengths. As a result of an opinion rendered by the Attorney General on July 8, 1926, to the effect that under the act of 1912 the Secretary of Commerce had no power to determine or restrict the frequency, power, or hours of operation, or to withhold a radio license, regulatory control of radio communication by the Secretary of Commerce became ineffective.

The Radio Act of 1927 (44 Stat. 1162) established the Federal Radio Commission and gave that organization broad powers with respect to the issuance and refusal of licenses, the establishment of radio facilities, and the regulation thereof. No authority was given the Radio Commission over rates or over the fiscal affairs of radio operating agencies.

PRINCIPAL LEGISLATION AND TREATIES PURSUANT TO WHICH THE COMMISSION ACTS

Legislation.—The Federal Communications Commission derives certain duties, powers, and functions from the following acts of Congress:

(1) The Interstate Commerce Act of August 7, 1888 (25 Stat. 382), insofar as it relates to the operation of telegraph lines by railroad and telegraph companies that have been granted Government aid in the construction of their lines.

(2) The Ship Act, June 24, 1910 (36 Stat. 629), as amended, insofar as it relates to vessels navigating the Great Lakes.

(3) All the duties, powers, and functions vested by law in the Postmaster General prior to the Communications Act of 1934, insofar as such duties, powers, and functions relate to telegraph companies and telegraph lines.

(4) The act to supplement existing laws against unlawful restraints and monopolies, and for other purposes (38 Stat. 730), approved October 15, 1914, as amended, insofar as such law is applicable to common carriers engaged in wire or radio communication for transmission of energy.

(5) The Communications Act of 1934 (48 Stat. 1064), as amended,[1] hereinafter referred to as "the act."

Treaties.—In addition to the above-mentioned acts of Congress, the Commission derives certain duties, powers, and functions from the following treaties between the United States and foreign countries:

(1) The International Telecommunication Convention and the General Radio Regulations Annexed Thereto, Madrid, 1932, ratified by the Senate May 1, 1934, approved by the President May 19, 1934, and proclaimed by the President June 27, 1934.

(2) The International Convention for the Safety of Life at Sea, London, 1929 (hereinafter referred to as the "Safety Convention"), ratified by the Senate June 19, 1936, approved by the President July 7, 1936, deposited with the British Government August 7, 1936, and proclaimed by the President September 30, 1936.

New legislation in the fiscal year 1937.—During the past fiscal year two acts of Congress were passed amending the Communications Act of 1934. The first was the act approved March 29, 1937 (Public Law No. 26, 75th Cong.), and the second was the act approved May 20, 1937 (Public Law No. 97, 75th Cong.). The nature and effect of these amendments are summarized on page 54 of this report.

ORGANIZATION AND PROCEDURE

The Divisions of the Commission.—Pursuant to the authority granted by section 5 of the act, the Commission, on July 17, 1934, adopted General Order No. 1, which provided for the organization of the members of the Commission in three divisions, namely, Broadcast, Telegraph, and Telephone. The jurisdictional provisions of the aforesaid order are as follows:

The Broadcast Division shall have and exercise jurisdiction over all matters relating to or connected with broadcasting.

The Telegraph Division shall have and exercise jurisdiction over all matters relating to or connected with record-communication by wire, radio, or cable, and all forms and classes of fixed and mobile radiotelegraph services and amateur services.

The Telephone Division shall have and exercise jurisdiction over all matters relating to or connected with telephone communication (other than broadcasting) by wire, radio, or cable, including all forms of fixed and mobile radiotelephone service except as otherwise herein specifically provided for.

[1] Amendments: 49 Stat. 43, 795, 1098, 1475, and 1922; Public Laws Nos. 26 and 97, 75th Cong.

The whole Commission shall have and exercise jurisdiction over all matters not herein otherwise specifically allocated to a division; over all matters which fall within the jurisdiction of two or more of the divisions established by this order; and over the assignment of bands of frequencies to the various radio services. In any case where a conflict arises as to the jurisdiction of any division or where jurisdiction of any matter or service is not allocated to a division, the Commission shall determine whether the whole Commission or a division thereof shall have and exercise jurisdiction, and if a division, the one which shall have and exercise such jurisdiction.

As of June 30, 1937, the members of the respective Divisions were as follows:

Division No. 1—Broadcast:
Commissioners—Eugene O. Sykes, *Chairman.*
Norman S. Case, *Vice-Chairman.*
Anning S. Prall.[2]

Division No. 2—Telegraph:
Commissioners—Irvin Stewart, *Chairman.*
George Henry Payne, *Vice-Chairman.*
Anning S. Prall.[2]

Division No. 3—Telephone:
Commissioners—Paul A. Walker, *Chairman.*
Thad H. Brown, *Vice-Chairman.*
Anning S. Prall.[2]

Departments of the Commission.—In addition to the above-described division of the members of the Commission, the Commission staff has been organized in the following departments for administrative purposes: The Accounting, Statistical, and Tariff Department; the Engineering Department; the Examining Department; the Law Department; and the Secretary's Office.

Subjects covered in part I.—For the purpose of this report the various matters presented in part I have been divided into the following sections: International Conferences; Experiment, Research, and Technical Investigations; Litigation; Hearings; Field Inspections and Investigations; Great Lakes and Inland Waterways Survey; Interdepartment Radio Advisory Committee; Fiscal Affairs; and Publications.

[2] Chairman of the Commission.

INTERNATIONAL CONFERENCES

The Commission has assisted this Government in carrying on its international relations with respect to radio, wire, and cable services by supplying experts to the United States delegations attending the various international conferences, and by constant study of the many problems arising in those relations. Further, the Commission, in the last fiscal year, adjusted 368 radio-station complaints involving international aspects and reported to various foreign administrations 848 frequency measurements, involving 170 deviations, of foreign radio stations.

A number of important conferences were held during the year and in addition preparatory work was done looking to participation in others to take place during the next 12 months.

FIFTH MEETING OF THE INTERNATIONAL CONSULTING COMMITTEE ON TELEGRAPH (C. C. I. T.)

Warsaw conference.—The International Consulting Committee on Telegraph is a technical committee set up under the telegraph regulations annexed to the International Telecommunication Convention, Madrid, 1932. It meets for the purpose of considering progress and development in telegraphy and of discussing questions relating to international telegraph regulations. This Government had not participated in such meetings in the past. However, as a part of its study of the classification of international telegraph messages, rate coefficients, and related subjects and as a part of its preparation for the forthcoming Cairo International Conference, the United States sent a delegation including two representatives of the Commission to attend the meeting of the C. C. I. T. at Warsaw, Poland, October 19–26, 1936, as observers.

In preparation for this meeting international rate and traffic data were prepared. Among other things, a study was made of all international telegraph traffic between the continental United States and foreign countries during a selected 7-day period in the month of March 1936. Data relative to volume, classification, length, and routing of messages, grouped according to countries and carriers, were summarized and made available to the delegation and to other interested parties. The Commission subsequently furnished this summary on request to other governmental agencies, to libraries and other institutions, and to interested individuals.

It is felt that participation by the United States in the Warsaw conference was useful and was in the interest of the Government and the public. The conference adopted no positive recommendations for the Cairo conference, but published a table [8] containing a statement of position of various governments which will be considered and finally voted upon at the Cairo conference.

[8] See appendix B.

THE HABANA PRELIMINARY RADIO CONFERENCE

A preliminary regional radio conference was held in Habana, Cuba, from March 15 to March 29, 1937, and was attended by technical delegates from Canada, Cuba, Mexico, and the United States. This conference was called for the purpose of discussing pending radio problems directly affecting the four countries named and also for the purpose of establishing the foundation for a general conference of the countries of the Western Hemisphere to be held in Habana, Cuba, beginning November 1, 1937.

The agenda for the conference will be found in appendix C.

The conference adopted resolutions concerning broadcasting, services other than broadcasting, and engineering standards, and made arrangements concerning the holding of the Inter-American Conference in Habana beginning November 1, 1937.

In addition, the conference gave very careful consideration to a proposal made by the Cuban Government looking toward the establishment of a Regional Radio Consulting Committee for the Americas, whose principal functions would be supervisory. Such a committee would also act as the distribution-center for the exchange of information concerning statistical data relative to the technical characteristics of stations that have been authorized by the American nations under the terms of the November agreement. This idea was unanimously supported because it was felt that through such an organization an effective means could be secured for gradually raising the standards of engineering employed in practice by the various nations that would become parties to the forthcoming November agreement. It is also essential that information with respect to the location and technical characteristics of stations authorized by each nation become known quickly.

FOURTH MEETING OF THE INTERNATIONAL CONSULTING COMMITTEE ON RADIO (C. C. I. R.)

Nature and purpose of committee.—The International Consulting Committee on Radio is a technical committee originally set up under the provisions of the Radiotelegraph Convention of Washington, 1927, and subsequently carried into the provisions of the International Telecommunication Convention of Madrid, 1932, and the General Radio Regulations annexed thereto, for the purpose of keeping in touch with the rapidly developing radio art during the periods between administrative conferences. The Committee meets at periodic intervals and draws up sets of recommendations in the form of opinions, which represent at the time of their adoption an appraisal of the then existing conditions in radio.

Bucharest conference.—The fourth meeting of the International Consulting Committee on Radio (C. C. I. R.) was held in Bucharest, Rumania, from May 21 to June 8, 1937. Two representatives of the Commission were among the six delegates representing the Government of the United States. In preparation for the conference a number of meetings were held, in which tentative opinions representing the views of the United States for presentation at the conference were formulated. Twenty technical questions were on the agenda of the conference, which was attended by the representatives of 29 governments and a number of international organizations and private operating companies.

The technical opinions adopted by the C. C. I. R. will serve as a valuable foundation for the administrative work which must be done in the revision of the International Radio Regulations at the Cairo Conference of 1938, and they are also of value as reflecting technical progress in the radio art.

CAIRO INTERNATIONAL TELEGRAPH AND TELEPHONE CONFERENCE

The United States is a party to the International Telecommunication Convention of Madrid, 1932, although not a party to the Annexed International Telegraph Regulations. As these regulations have an effect on the nature of and the rates for international telegraph service, the Commission determined to give serious consideration to the question whether means might be found for participation in the telegraph conference under conditions meeting the situation in the United States.

As a part of the preparatory work, observers were sent to the Warsaw C. C. I. T. Conference, discussed above, and rate and traffic studies were undertaken. Following the submission of a proposal in principle which has been included in the book of proposals for the Telegraph Conference, the study of the detailed provisions of the International Telegraph Regulations was undertaken with a view to determining what the attitude of the United States Government should be with regard to them. Following public announcements, meetings were held in which carriers, representatives of user groups, and other interested parties participated, so that all possible points of view might be reflected in these studies.

EXPERIMENT, RESEARCH, AND TECHNICAL INVESTIGATIONS

Information on technical advances and developments in the communications art is essential to the proper exercise of the Commission's regulatory powers. With reference to engineering information, the Commission has organized, in the Engineering Department, a technical information section, whose work is primarily to keep the Commission informed as to developments due to technical research. The great mass of technical data necessary to the proper functioning of the Commission demands a classification system that will make them easily available and accessible. After considerable study of classification systems in use, both in this country and abroad, and after visiting various institutions maintaining such systems, the Commission has developed a scheme of classification of technical information in the fields of telegraphy, telephony, and radio which it is believed will meet adequately the needs of the Commission. The system that has been adopted is a modification and extension of the Dewey Decimal System.

Research in the use of frequencies.—Information as to the use being made of frequencies for transmission and reception by the various radio services, and as to their suitability for service in the case of new assignments, must be kept constantly available. Special problems in this regard have required considerable study and time. Such is always the case when the higher frequencies, capable of causing international or regional interference, are involved. Then careful consideration must be given to the skip distances of the frequencies, to the virtual heights of the various layers of the ionosphere under seasonal, diurnal, and sun-spot-cycle variations, and to the commitments of international treaties, regional agreements, and interdepartmental regulations. A discussion of the research in the characteristics of the ionosphere will be found in the Telegraph Division report on page 81.

A major project along this line has been the correlation of the data on the present occupancy of the high-frequency channels obtained from observations made by several organizations in cooperation with the Commission's monitoring station at Grand Island, Nebr. The project is to be completed in the near future for the use of the United States delegation to the Cairo Conference in 1938.

Routine problems involving technical research.—Routine problems involving technical considerations are in general of two classes: (1) Those which, through new scientific or technical developments, bear directly on the Commission's duties under the law, and therefore necessitate special studies and investigations, and (2) those which are indirectly related to such duties of the Commission. During the course of the year, the most important routine problems of the former class, in connection with which special studies have been made, have related to such matters as the potential possibilities of interference caused by diathermy apparatus, the advantages and disadvantages

of frequency- versus amplitude-modulation in ultra-high-frequency circuits, the measurement and suppression of man-made or electrical noise, carrier-current systems, picture and facsimile systems, coaxial-cable developments, the speed of average telephone conversations, the engineering requirements of the certificates of public convenience and necessity, and the historical development of the radio spectrum.

The subject matters of the latter class of problem mentioned above have been well diversified, such as, for example, geophysics, radioactivity, radioprospecting, methods of locating outlaw radio stations, improvements in electrical communication, developments in the telegraph and cable arts, methods of noise-reduction in various types of receiver, direction finding, hazards from storage batteries on board ship, the location of electrical interference, the ionosphere, and various phases of television.

Commission participation in technical conferences and meetings.—In order to keep informed on new developments and improvements in the art, arrangements have been made whenever possible for the attendance of one or more of the members of the Commission's technical staff at all important meetings or conferences at which technical matters relating to communications were under discussion.

Active work on various technical committees has also assisted materially in this direction. Through one or more of its staff members, the Commisssion is represented on the following technical committees:

1. Sectional Committee on Radio Electrical Coordination, American Standards Association.
2. Standards Committee, Institute of Radio Engineers.
3. Technical Committee on Transmitters and Antennas, Institute of Radio Engineers.
4. Technical Committee on Wave Propagation, Institute of Radio Engineers.
5. Subcommittee No. 5, Main Committee on Aeronautics, Studying the Ultra-High Frequencies.
6. Technical Committees, American Group, Preparing for the Fourth Meeting of the C. C. I. R., Bucharest.
7. Committee No. 1, American Group, Preparing for the Cairo Conference.
8. Technical Committees of the U. R. S. I.
9. Committee on Electrical Insulation, National Research Council.

Information obtained from the communications industry.—Whenever feasible and deemed necessary, the experts of the Commission have also visited the laboratories or consulted the engineers of commercial manufacturing and communication companies known to be engaged in important research work. Much of the information obtained in this way is of a confidential nature, is voluntarily offered, and is intended for the use of the Commission only. On account of the competitive conditions existing in American enterprise and business, every precaution is taken to insure that such information is not disclosed to the general public or to competing companies. Without advance knowledge of the trend of technical developments, however, the Commisssion would be severely handicapped in the full exercise of its regulatory powers in the public interest.

Information obtained from the Broadcast Allocation survey.—A great amount of technical study was carried on in connection with the Broadcast Allocation survey, which is more fully discussed under "Broadcast Allocation hearing" in part II of this report, page 40. Much of the material resulting from the study of these data is now

being incorporated in the engineering standards of the Commission, and was used as a basis for technical discussion at the regional conference held in Habana, Cuba, March 15–29, 1937.

The information to be obtained from the data of the allocation survey was not exhausted by the material presented at the Broadcast Allocation hearing (see p. 41), but it will require at least another year, in addition to the time already spent during the past year, to extract from the very large mass of available material all that can be of use to the Commission. The results so far published relate mainly to average conditions and must be used with considerable factors of safety when applied to any particular case. The data of the survey, however, when properly weighted, seem to be sufficient to fix with considerable accuracy the previously undetermined constants in the formulas expressing the radiation from antenna systems and the propagation over the earth, provided an adequately comprehensive theory on which such formulas are based can be developed. When this has been accomplished, a much more substantial engineering foundation for the solution of allocation problems and much more reliable engineering standards will have been attained.

To this end much effort has been devoted during the past year. As a result of this work and the comprehensive studies in this field made by others, it may be stated that the theory of ground-wave propagation from antenna systems on the ground or elevated above the ground appears to be now on a firm basis. Some of the results obtained have already been described in the technical press, and the rest—including an adequate formula for calculating the sky-wave propagation—will appear during the coming year.

In addition to this work, which grew out of the necessity for an adequate analysis of experimental facts, the Commission's technical staff has begun an analysis of the question of the frequency-stability of oscillators operating in the ultra-high-frequency portion of the radio spectrum. This problem has an important bearing on the feasible channel-widths available in this portion of the spectrum. It is being attacked from two angles: first, a statistical analysis of available transmitter performance, and second, an investigation of the practical limit of stability as set by unavoidable fluctuations in power supply, shot effect, and so forth. While still incomplete, the investigation has proceeded far enough to make it certain that the final results will be of value to the Commission in the solution of allocation problems in this part of the spectrum, which is of rapidly growing importance.

Research in interference from nonradio equipment.—Finally, considerable work has been done during the year as the result of complaints of interference received by the Commission. This interference has its origin in a great variety of nonradio equipment, such as automobile ignition systems, electric-power distribution systems, devices using high-frequency current for other than communication purposes, etc. A study of these complaints and of their sources indicates that there are two separate and distinct types of device responsible for the interference. One type generates and utilizes radio-frequency energy as an essential function to its operation. This class includes diathermy machines, induction furnaces, tube bombarders, high-frequency carrier-current intercommunicating systems, high-frequency devices for energizing gaseous lamps, etc.

Such devices by their frequency, power, and circuits can radiate a signal of sufficient strength to be of serious interference to interstate commerce, and their radiations frequently cross State lines; hence the correction of the interference is in general a problem of interstate regulation.

Most electrical devices that are a source of local interference are distinctly different from the class discussed above, in that the generation of radio-frequency energy is entirely incidental and nonessential to the proper functioning of the device. The interference so caused is usually limited to a relatively small area, and the energy is so distributed throughout the radio-frequency spectrum that the level on any single frequency is not sufficient to cause interference at any great distance from the source.

Research in interference from diathermy machines.—Of the devices of the first type, two have been the subject of intensive investigation during the past year. The first was in connection with diathermy interference. As pointed out in the second annual report of the Commission, there has been, since approximately 1933, a rapid increase in the number of the high-frequency generators usually known as diathermy machines in use at clinics and by individual practitioners throughout the United States. In some cases serious interference to radio reception began to be encountered by communication companies and by radio-operating agencies of the Government during 1934 and 1935. This interference was traced in the latter months of 1935 to these electro-medical devices, and the Commission has since continued to receive reports concerning the matter.

To determine the cause and extent of the interference and the best means of correcting it, the Commission authorized the construction of a special field car equipped with the most modern devices for determining the signal strength, direction, etc., of these interfering signals. When the car was completed, members of the Engineering Department's staff conducted an investigation of the various phases of this interference problem.

Arrangements were made with a manufacturer of these devices to operate a test instrument under normal conditions such as would be encountered in the office of a doctor situated in a small urban community. The location of this instrument was several hundred miles from Washington, D. C., and the signals from the machine were heard and observed at Washington and at several of the Commission's monitoring stations at widely separated points throughout the United States. These tests, when coordinated with observations made by private commercial agencies and by other branches of the Federal Government, confirmed beyond the slightest doubt the fact that under certain conditions a diathermy machine when normally operated may cause extensive interference to radio communication at distances of 1,000 miles or more from the instrument.

To determine the best means of correcting the interference and to ascertain whether certain types of machine are less susceptible than others to the radiation of a strong interfering signal, the Commission compiled all available information concerning previous tests and then requested each of eight manufacturers of representative devices to supply a machine typical of its product that could be used in connection with an investigation of the best means of suppressing the interference.

To prevent interference, the radiation of energy from the machine must be controlled, and it has been found that this can be accomplished by the proper location and shielding of the room or space where the device is located and by the use of a properly designed filter in the power-supply circuit. The cost and impracticability of shielding in many cases make this solution very difficult of accomplishment by cooperation.

Research in interference from interoffice communication systems.—Another problem of this general character which has occupied the attention of the Commission during the past year is that of the interference caused by the equipment of a carrier-current system of interoffice communication. This entailed an experimental investigation of the interference value of such equipment carried out with the assistance of the staff of the monitoring stations of the Commission and the manufacturers of the apparatus the radiation from which prompted the complaints. As a result, it was determined that proper filtering sufficed to reduce the interference to a level below that caused by an average good superheterodyne radio-receiver.

LITIGATION

Judicial review.—Review of the orders and decisions of the Commission is provided for by section 402 of the act in cases arising under title II of the act by application to the United States district courts to enforce, enjoin, set aside, annul, or suspend any order of the Commission, and in cases arising under title III of the act by appeal to the United States Court of Appeals for the District of Columbia.

Litigation in fiscal year.—During the past fiscal year six cases pending in the United States Court of Appeals for the District of Columbia were dismissed by that court on motion of the appellant prior to argument; and seven cases in which the Commission was a party or was interested were decided by the Federal courts, the Commission being sustained in each case. At the close of the fiscal year there were 13 cases pending in the Federal courts in which the Commission was a party or was interested.

Court decisions in fiscal year.—The following cases in which the Commission was a party or was interested were decided by the Federal courts during the last fiscal year:

(1) *American Telephone and Telegraph Co. et al.* v. *U. S. and F. C. C.*, United States District Court for the Southern District of New York, 14 Fed. S. 121, United States Supreme Court, 299 U. S. 232.[4]

(2) *The Monocacy Broadcasting Co.* v. *F. C. C.*, United States Court of Appeals for the District of Columbia, Appeal No. 6816, not reported.[5]

(3) *The Eastland Co.* v. *F. C. C.*, United States Court of Appeals for the District of Columbia, Appeal No. 6772, not reported.[6]

(4) *Congress Square Hotel Co.* v. *F. C. C.*, United States Court of Appeals for the District of Columbia, Appeal No. 6773, not reported.[6]

(5) *U. S. ex rel. David R. Crow.* v. *U. S. Civil Service Commission and F. C. C.*, United States District Court for the District of Columbia, affirmed, United States Court of Appeals, Appeal No. 6835, 89 Fed. (2d) 805.

(6) *William Randolph Hearst* v. *Prall et al.*, United States District Court for the District of Columbia, Equity No. 60937, not reported.

(7) *U. S.* v. *Norman Baker, E. R. Rood, and Roy Richardson*, United States District Court for the Southern District of Texas, Laredo Division, 18 Fed. Supp. 48.[7]

Cases dismissed during fiscal year.—The following cases in which the Commission was a party were dismissed before argument at the request of the appellant by the United States Court of Appeals for the District of Columbia:

(1) *Paul R. Heitmeyer* (Salt Lake City, Utah) v. *F. C. C.*, Appeal No. 6763.
(2) *KGBZ Broadcasting Co.* v. *F. C. C.*, Appeal No. 6770.
(3) *Palmer Broadcasting Syndicate, Inc.*, v. *F. C. C.*, Appeal No. 6771.
(4) *G. E. Wilkinson Broadcasting Co., Inc.*, v. *F. C. C.*, Appeal No. 6803.
(5) *W. H. Kindig* v. *F. C. C.*, Appeal No. 6884.
(6) *A. H. Belo Corp.* v. *F. C. C.*, Appeal No. 6870.

[4] For discussion, see p. 92.
[5] For discussion, see p. 31.
[6] For discussion, see p. 32.
[7] Criminal case. For discussion, see p. 33.

Court cases pending as of June 30, 1937.—At the close of the fiscal year there were 12 cases in which the Commission is a party pending in the United States Court of Appeals for the District of Columbia and one case pending in the United States District Court for the District of Columbia.

IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

(1) *Paul R. Heitmeyer* (Cheyenne, Wyo.) v. *F. C. C.*, Appeal No. 6762.
(2) *Great Western Broadcasting Association, Inc.* (Logan, Utah), v. *F. C. C.*, Appeal No. 6852.
(3) *Great Western Broadcasting Association, Inc.* (Provo, Utah), v. *F. C. C.*, Appeal No. 6853.
(4) *Intermountain Broadcasting Corp.* v. *F. C. C.*, Appeal No. 6854.
(5) *Pulitzer Publishing Co.* v. *F. C. C.*, Appeal No. 6866.
(6) *Missouri Broadcasting Co.* v. *F. C. C.*, Appeal No. 6869.
(7) *Red River Broadcasting Co.* v. *F. C. C.*, Appeal No. 6906.
(8) *Continental Radio Co.* v. *F. C. C.*, Appeal No. 6911.
(9) *Tri-State Broadcasting Co.* v. *F. C. C.*, Appeal No. 6931.
(10) *Mackay Radio and Telegraph Co.* v. *F. C. C.*, Appeal No. 6970.*
(11) *Saginaw Broadcasting Co.* v. *F. C. C.*, Appeal No. 6990.
(12) *Woodmen of the World Life Insurance Association* v. *F. C. C.*, Appeal No. 6994.

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

(1) *Black River Valley Broadcasts* v. *Prall et al.*, Equity No. 64232.

* For discussion, see p. 66.

HEARINGS

The following table summarizes the hearing activities of the Commission during the fiscal year:

	Commission en banc	Broadcast Division	Telegraph Division	Telephone Division	Total
Matters [1] designated for hearing	7	664	61	10	742
Matters [1] heard before Commission or Division	18	2	5	1	26
Matters [1] heard before an Examiner		259	18	12	289
Oral arguments before Commission or Division	26	86		5	117
Matters [1] dismissed		178	10	3	191
Applications denied, as in cases of default		31		1	32
Applications reconsidered and granted without hearing		42	31		73
Final orders adopted after hearing	186	239	7	38	470
Petitions and motions acted upon	65	787	9	18	879

[1] The term "matters" includes not only applications for facilities and certificates, but also complaints and investigations. It includes the special telephone investigation, on which hearings, with intermissions, were held throughout the year (see pp. 103 and 104).

APPLICATIONS FOR AUTHORITY TO HOLD POSITIONS WITH MORE THAN ONE CARRIER

Under section 212 of the act it is unlawful for any person to hold the position of officer or director of more than one carrier subject to the act, unless such holding shall have been authorized by order of the Commission, upon due showing in form and manner prescribed by the Commission that neither public nor private interest will be adversely affected thereby. During the past fiscal year the Commission disposed of 174 applications filed under this section. Of the total, hearings were had upon 152 cases, while 22 were disposed of without hearing. Four applications were denied, 80 dismissed, 61 granted, and 29 granted in part and denied in part.

FIELD INSPECTIONS AND INVESTIGATIONS

In order to assure compliance by licensees and operators of radio stations with laws, rules, and regulations, the Commission maintains 21 inspection offices and 7 monitoring stations (5 of which are associated with inspection offices). The staffs of these offices and monitoring stations carry on this important regulatory activity with reference to all classes of stations and operators, as well as the investigation of unlicensed operation of radio stations and interference complaints. In the last fiscal year this work necessitated 414 trips by the field force, totaling 198,939 miles of travel.

Ship inspections.—There were 8,803 inspections of radio installation on American and foreign ships during the fiscal year. The more thorough and extended method of inspection made necessary by the safety convention which became effective on November 7, 1936, was reflected in the number of discrepancies found, and led to the serving of 3,466 notices requiring repairs, additions, or alterations in equipment, or adjustment of personnel discrepancies. As a result of these intensive inspections there has been marked improvement in the efficiency of radio installations, particularly on ships that were voluntarily equipped prior to the ratification of the safety convention.

In order to obtain a more nearly precise measurement of frequency of ship transmitters than is possible with the absorption type of frequency meter, port offices were equipped with heterodyne-frequency meters of the crystal-calibrator type, permitting measurements in the low-, intermediate-, and high-frequency bands.

Land inspections.—There were 3,207 inspections of stations situated on land. These inspections developed 914 discrepancies, which necessitated the serving of official notices requiring the licensee to explain to the Commission the circumstances causing the violation and the corrective action taken or proposed to be taken.

Aircraft and aeronautical inspections.—There are 701 aircraft and 389 aeronautical stations licensed in the United States exclusive of Alaska. In Alaska there are 33 aircraft and 42 aeronautical stations licensed. During the fiscal year 522 aircraft inspections and 387 aeronautical inspections were made.

Frequency measurements.—During the fiscal year 15,333 measurements were made of the frequencies of United States broadcast stations. There were 104 deviations beyond the permitted frequency-tolerance of 50 cycles (plus or minus). Of stations other than broadcast stations 31,613 measurements disclosed 1,492 frequency deviations beyond the tolerance permitted. Foreign station measurements numbered 848, with 170 deviations.

All field offices are equipped with ultra-high-frequency receivers of the super-regenerative type, thereby permitting the monitoring of stations operating on frequencies as high as 300 megacycles. These receivers aided considerably in the detection of unlicensed amateur stations operating in the 56-to-60-megacycle band.

Unlicensed radio stations.—During the fiscal year reports were received of the operation of 477 unlicensed radio stations. The action taken by the Commission resulted in the discontinued operation of 357 stations, leaving 120 stations under investigation at the close of the fiscal year.

Interference complaints.—During the fiscal year 3,796 complaints of interference with radio reception were received by the Commission. In addition, 430 cases were carried over from the previous fiscal year. As a result of investigations, remedial action was taken in 3,995 cases. The remaining 231 cases were under investigation at the close of the fiscal year.

Table I, appendix D, shows the number of ship stations inspected by each field office. Table II, appendix D, shows the same information with reference to land stations and frequency measurements.

GREAT LAKES AND INLAND WATERWAYS RADIO SURVEY

The Commission at its "en banc" session on May 26, 1937, designated Commissioner Thad H. Brown to have charge of organizing and carrying forward the work incident to the "special study of the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and the inland waters of the United States" provided for in section 15 of Public Law No. 97, approved May 20, 1937.

Section 15 of Public Law No. 97 states as follows:

Section 602 of the Communications Act of 1934 is hereby amended by adding at the end thereof a new subsection to read as follows:

"(e) Such part or parts of the Act entitled 'An Act to require apparatus and operators for radio communication on certain ocean steamers,' approved June 24, 1910, as amended, as relate to the ocean and to steamers navigating thereon, are hereby repealed. In all other respects said Act shall continue in full force and effect. The Commission is requested and directed to make a special study of the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and the inland waters of the United States, and to report its recommendations, and the reasons therefor, to the Congress not later than December 31, 1939."

This law amends the act for the purpose of promoting safety of life and property at sea through the use of wire and radio communication to make more effective "the international conference for safety of life at sea, and for other purposes." Intensive study of the preliminary plans for carrying out the purposes of the amendment has already been started by Commissioner Brown, and the work of selecting competent personnel is now under way. It is planned to have only a small staff, headed by a chief administrative officer, for the purpose of carrying on this special study.

The duties of this chief administrative officer will involve making a special study of the unique transportation and communication problems of the Great Lakes; studying the comparative advantages of radiotelephony and radiotelegraphy; making a study of the radio-frequency-allocation problems with a view to the selection of suitable frequencies for the distances involved on the Great Lakes; formulating plans for coordinating radio tests between ship and shore and between ship and ship; making a study of radio-interference conditions on the Great Lakes, particularly with respect to the separation required between maritime frequencies and those of other services; collecting data and doing liaison work between the Federal Communications Commission and the Department of Transport, Dominion of Canada, pertaining to Great Lakes maritime affairs; assisting in the preparation for and conduct of special public hearings to be held in the principal cities surrounding the Great Lakes, including Buffalo, Cleveland, Detroit, Chicago, and Duluth; coordinating the study of the communication needs of the Federal Government departments, including the United States Coast Guard, the United States Bureau of Lighthouses, the Bureau of Air Commerce,

and the United States Weather Bureau; investigating problems incident to the use of automatic distress-alarm apparatus and direction-finding equipment for safety purposes; investigating the availability of wire facilities at remote points along the Great Lakes, from the standpoint of locating shore radio stations at points where rapid and efficient communication may be carried on; surveying the transportation lanes and the nature of both freight and passenger traffic; making special studies with reference to radio needs during the navigation season, as distinguished from such needs during winter operations, when shipping is greatly curtailed; investigating radio needs from the standpoint of dangers to navigation; making special studies with reference to the history of past disasters on the Great Lakes to determine whether radio would have played an important part as a means of preventing such disasters; preparing regulations applicable to ships bearing tonnage to determine whether the provisions of Public Law No. 97 should also be made applicable on the Great Lakes; making special studies with respect to the type of equipment for operation of ship work, including the present installed transmitting and receiving apparatus, as well as the improved type of apparatus that might be made available on the market; determining what qualifications should apply to radio operators on the Great Lakes, depending upon class of ship (passenger or cargo), tonnage, nature of voyage, and type of emission; and preparing the final report and recommendations to the Commission preliminary to the submission of the Commission's report to Congress pursuant to section 602 of the act. The special study, together with the report of the Commission's recommendation and the reasons therefor, will be submitted to the Congress not later than December 31, 1939.

THE COMMISSION'S PARTICIPATION IN THE INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The Commission has devoted a great deal of time and effort during the fiscal year to the work of the Interdepartment Radio Advisory Committee. This Committee is the Government Committee established for the purpose of advising the President with reference to the assignment of frequencies to Government radio stations under the Communications Act of 1934, as amended. The Committee has had frequent meetings and has approved the assignment of 318 frequencies for Government radio stations during the past year. At the present time there are 2,913 active assignments to the Government radio stations, all of which have been recommended by the Committee since its establishment. The minutes of these meetings and all records of the Committee are made and maintained in the Commission.

The Committee participated actively in the hearing in the offices of the Commission from June 15 to 26, 1936, with particular reference to determining the present and future needs of the Government for radio services in the frequencies above 30 megacycles. Since the time of this hearing the Committee has been actively engaged in the allocation to the Government services of frequencies in the radio spectrum from 25 to 300 megacycles. Definite recommendations for these allocations are being made.

Due to the greatly increased volume of work during the past year and the constantly increasing requirements for Government radio service, it has been necessary to revise completely the files of the Committee and to provide a comprehensive history of all radio frequencies assigned to Government operation. This work has been accomplished during the past fiscal year.

FISCAL AFFAIRS

Appropriations.—The Independent Offices Appropriation Act, 1937 (Public Law No. 479), approved March 19, 1936, provides funds for the fiscal year 1937 for the Federal Communications Commission as follows:

For seven commissioners, and for all other authorized expenditures of the Federal Communications Commission in performing its duties, including personal services, contract stenographic reporting services, rental of quarters, newspapers, periodicals, reference books, law books, special counsel fees, supplies and equipment, including purchase and exchange of instruments, which may be purchased without regard to section 3709 of the Revised Statutes (U. S. C., title 41, sec. 5) when the aggregate amount involved does not exceed $25, improvement and care of grounds and repairs to building, not to exceed $5,000, traveling expenses, including expenses of attendance at meetings which in the discretion of the Commission are necessary for the efficient discharge of its responsibilities, and other necessary expenses, $1,450,000, of which amount not to exceed $1,030,000 may be expended for personal services in the District of Columbia.

For all printing and binding for the Federal Communications Commission, $24,000.

The Second Deficiency Appropriation Act, fiscal year 1937 (Public Law No. 121, 75th Cong.), approved May 28, 1937, provides as follows:

Salaries and expenses: For an additional amount for salaries and expenses of the Federal Communications Commission, fiscal year 1937, including the same objects specified under this head in the Independent Offices Appropriation Act, 1937, $60,000.

Salaries and expenses, F. C. C., fiscal year 1937

	Allotments	Expended and obligated	Unobligated
Personal services (D. C.)	$1,005,000	$1,003,996.21	$1,003.79
Personal services (field)	340,000	339,098.58	901.42
Supplies and materials	23,200	20,766.16	2,433.84
Gasoline and oil	3,000	2,610.51	389.49
Storage and care of vehicles	5,000	3,571.04	1,428.96
Communication services	16,700	15,657.62	1,042.38
Travel expenses	25,700	23,610.62	2,089.38
Transportation of things	1,500	1,209.74	290.26
Carfare	1,000	775.37	224.63
Stenographic reporting	5,300	4,491.50	808.50
Heat, light, power, and water	4,000	3,993.34	6.66
Rents	13,500	11,627.79	1,872.21
Repairs and alterations	3,300	3,061.28	238.72
Special and miscellaneous	2,800	1,381.64	1,418.36
Furniture, fixtures, and equipment	60,000	54,537.07	5,462.93
Total	1,510,000	1,490,388.47	19,611.53
Printing and binding	24,000	22,739.03	1,260.97

PUBLICATIONS

The following material has been printed and placed on sale by the Government Printing Office:

Federal Communications Act of 1934 with Amendments and Index Thereto (Revised June 5, 1936).

First Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1935.

Second Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1936.

Federal Communications Commission Practice and Procedure Promulgated Pursuant to the Communications Act of 1934.

Federal Communications Commission Reports—Volume I: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1934 to July 1935.

Federal Communications Commission Reports—Volume II: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1, 1935, to June 30, 1936.

Uniform System of Accounts for Telephone Companies, Issue of June 19, 1935, Effective January 1, 1936.

Tariff Circular No. 1, Issue of July 31, 1935—Rules Governing the Construction, Filing, and Posting of Tariffs Relating to Interstate and Foreign Wire or Radio Communications, by Carriers Subject to the Communications Act of 1934, Excepting Connecting Carriers as Defined in Section 3 (u) of the Act and Excepting Carriers Operating in Alaska.

Mimeographed material.—The following material has been prepared in mimeographed form and is available at the offices of the Commission:

Rules and Regulations of the Federal Communications Commission governing the various radio services.

Radio Station Lists, arranged by services (not all services included).

Radio Service Bulletin.

Descriptive list of Berne Publications (World lists of radio stations are published by the Bureau of the International Telecommunication Union, Berne, Switzerland).

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1935.

Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1935.

Salary report of telephone and telegraph carriers, 1935.

Summary of monthly reports of large telephone carriers.

Selected financial and operating data from monthly reports of telegraph carriers.

Public reference rooms.—The Commission maintains public reference rooms for the purpose of opening to public inspection such records and material as are made public under the act and under the regulations of the Commission. This service to the public includes the annual and monthly reports and the schedules of charges filed by telephone and telegraph carriers; the annual reports filed by holding companies; formal dockets; and applications for radio or wire facilities.

Information of interest is made available to the public by means of frequent press releases.

PART II

THE COMMISSION
BROADCAST DIVISION

MEMBERS OF THE BROADCAST DIVISION

AS OF JUNE 30, 1937

EUGENE O. SYKES, *Chairman.*
NORMAN S. CASE, *Vice Chairman.*
ANNING S. PRALL.

BROADCAST DIVISION

In the fiscal year 1937 the continued growth of the broadcast industry was evidenced by the fact that the Commission received 295 applications for new broadcast stations and granted authority for the construction of 51 new stations. During the same period 7 existing stations were deleted. At the close of the fiscal year 704 regular broadcast stations held licenses granted by the Commission, representing an increase of 44 over the number of such stations at the close of the previous fiscal year.

With the view of continuing to progress toward the solution of allocation problems, the Commission proceeded with its intensive study of information gathered through the broadcast-allocation surveys and hearings. In order to better fit itself to pass judgment on the comparative needs of various communities for broadcast facilities, the Division conducted a study in the distribution of broadcast facilities to cities and towns of various populations and to the States.

The year witnessed improvement in television picture detail transmission. Likewise progress has been made in the advancement of facsimile transmission of news flashes, market reports, weather maps, etc.

ORGANIZATION AND JURISDICTION OF THE BROADCAST DIVISION

By virtue of General Order No. 1, adopted by the Commission on July 17, 1934, the Broadcast Division of the Commission has jurisdiction over all matters relating to or connected with broadcasting.

During the year formal hearings were held upon 261 applications, of which 86 were the subject of oral argument before the Broadcast Division. Hearings in a number of the more important cases were conducted in the first instance by the Division.

Subjects covered by this report.—For the purpose of this report the material is presented under the following topics: Facilities Under the Jurisdiction of the Broadcast Division, Complaints and Investigations, and Technical Developments in the Broadcast Art. The report of the Federal Radio Education Committee is added at the close of this Division's report. (See p. 45.)

FACILITIES UNDER THE JURISDICTION OF THE BROADCAST DIVISION

The facilities under the jurisdiction of the Broadcast Division have been classified under six different services, as follows: regular broadcast, international broadcast, relay broadcast, visual broadcast, high-frequency broadcast, and experimental broadcast. These various services are treated separately in the following sections of this report.

REGULAR BROADCAST SERVICE

Allocation plan.—The basic plan of allocation of regular broadcast facilities in the band between 550 and 1600 kilocycles has continued unchanged insofar as the general plan of allocation of stations by frequency, power, and hours of operation is concerned. Individual changes in assignments have occurred, however, as a result of the granting of applications, in the majority of cases after a hearing.

In accordance with the allocation of frequencies under rule 229, the band between 1510 and 1600 kilocycles is now treated as a part of the regular broadcast band, and special broadcast stations operating on frequencies of 1530, 1550, and 1570 kilocycles are considered as regular broadcast stations. The rules governing these stations are now included in the regular broadcast rules as well as in the rules governing broadcast stations other than those of the regular class. Frequencies other than those of 1530, 1550, and 1570 kilocycles in the band between 1510 and 1600 kilocycles have not been actually assigned to any broadcast station. (Certain of these frequencies have been used temporarily for short periods of time for test purposes.)

Amendment to the act.—Section 307 (b) of the Communications Act of 1934, as amended June 5, 1936, has permitted the granting of new and additional facilities where interference would not result and when the need therefor has been established.

Number of stations.—As of June 30, 1937, there were 704 broadcast stations licensed or under construction in the United States. Chart 1 of appendix E shows the total number of regular broadcast stations licensed or under construction, as well as the total number operating simultaneously during night-time hours, at the close of each of the fiscal years 1927 to 1937, inclusive.

Distribution of broadcast facilities.—Considering the broadcast assignments as they existed on June 8, 1937, the Engineering Department made a study for the purpose of determining the distribution of broadcast facilities to cities of various populations and to the various States. According to the 1930 census of the United States, there are 16,598 cities and towns in this country. Of this total, 982 have a population in excess of 10,000 and 376 have a population in excess of 25,000. Many of the towns and cities of 10,000 or more inhabitants are in the metropolitan districts, as described by the Bureau of the Census, or are adjacent to other larger cities not included in any of the metropolitan districts. Of the 606 cities having a population in

excess of 10,000 and less than 25,000, 471 have no radio station, and of the 376 cities having a population in excess of 25,000, 143 have no radio station. However, of the total of 614 cities having no radio station, all but 111 receive primary service from at least one radio station, as shown in the following paragraphs:

(1) Three hundred and twenty-nine cities (53.6 percent) are within one of the 96 metropolitan districts specified by the Bureau of the Census. Each district has one or more radio stations.

(2) Eight cities (1.3 percent) are adjacent to larger cities which have a radio station.

(3) One hundred and sixty-six cities (27.0 percent), not included in (1) and (2) above, are within the primary service area of an existing station. In this case the limit of primary service was considered as 2 mv/m, the minimum signal normally required to render a satisfactory service in the residential area of the average city.

(4) The remaining 111 cities (18.1 percent) do not come within any of the foregoing categories.

The study indicates that there are 359 cities in the continental United States which have only one radio station. Of these, 88 have a population in excess of 25,000 and are not located within one of the 96 metropolitan districts.

The distribution of broadcast facilities to cities having various populations is summarized in appendix E, table II.

In order to ascertain the distribution of broadcast facilities to the several States, a study was made of the assignments together with their hours of operation and their location. This distribution is set forth in tabular form in appendix E, table III.

The distribution of facilities throughout the United States, with class of service, was found to be as follows:

	Total	Unlimited time	Limited time	Shared time and specified hours	Daytime
Clear	52	32		20	
Regional	343	202	25	63	53
Local	305	196		64	45
Grand total	700	430	25	147	98

Of significance is the fact that 270 stations share time or operate only in daytime or during limited time or specified hours. A study of the assignments was made to determine the number of stations that share time in the same city, or in different cities, the number of limited-time stations, etc.[11]

Of the existing facilities—

(1) 48 stations (6.9 percent) share time in the same city.
(2) 77 stations (11.0 percent) share time with stations in other cities.
(3) 119 stations (17.0 percent) are limited or daytime stations.
(4) 26 stations (3.7 percent) are specified-hours stations.
(5) 430 stations (61.4 percent) are unlimited-time stations.

The total of part-time assignments is 38.6 percent of the total facilities licensed.

Directional antennas.—The following table shows the number of directional antenna systems in use or authorized to be installed at the close of each fiscal year (from 1932 to 1937). This type of antenna

[11] Four stations included under daytime or limited time operation in the preceding table are, for the purpose of the following analysis, classified as sharing-time or specified-hours stations.

has proven very useful in reducing interference and in directing the signals to desired areas, thus improving the service. The present policy of the Commission does not permit the use of directional antennas on local-channel frequencies since such use is not feasible from an allocation standpoint due to the large number of stations on these frequencies.

Number of directional antennas in use or authorized for use

	Fiscal year ended June 30—					
	1932	1933	1934	1935	1936	1937
Stations on clear channels	0	2	4	7	8	9
Stations on regional channels	2	4	11	20	25	39
Total	2	6	15	27	33	48

New rules for regular broadcast service.—On January 19, 1937, the Commission amended rule 175 so as to provide that a single, continuous, uninterrupted speech, play, symphony concert, or operatic production of longer duration than thirty minutes need not be interrupted in order to announce the call letters and location of the station. However, in such instances it is required that the announcement of the call letters and location be made as soon as possible. This modification of the rule has proven helpful in the production of programs of this character and beneficial to the listening public.

On September 29, 1936, rule 177 and that portion of rule 321 affecting broadcast stations were amended and superseded by rules 177, 177.1, and 177.2, clarifying the requirements relative to the rebroadcasting of the programs of domestic stations in the various services and to the transmission of programs to be rebroadcast by foreign stations.

Applications received.—In the fiscal year, there were received 295 applications for new broadcast stations—approximately double the number of applications received during the last fiscal year of the Federal Radio Commission. The number of broadcast applications received each fiscal year since 1931 is set out in chart 2, appendix E.

Applications granted.—Fifty-one new regular broadcast stations were authorized by the Commission in the last fiscal year. The following table shows the class and the hours of operation of these newly authorized stations.

Class of station	Hours of operation	Number
Local channel	Unlimited	18
Do	Daytime, sharing, and specified hours	21
Regional channel	Unlimited	3
Do	Daytime	4
Clear channel	Unlimited	0
Do	Daytime	5
Total		51

The Brooklyn cases.—Among the many applications receiving the consideration of the Commission in the last fiscal year were the so-called *Brooklyn cases*, which ultimately presented approximately 18 conflicting applications by existing licensees and by applicants for new broadcast facilities, each of which was located in the same general area. The original applications were first heard before an examiner, appointed by the Federal Radio Commission, during August and September 1933. After the Examiner had submitted his report, the applications were remanded to the hearing docket to be further heard. When the Communications Act of 1934 became law, jurisdiction over these cases was transferred to the Federal Communications Commission. Additional applications having been filed, the Commission designated each of them, together with those pending, for hearing before an examiner. This hearing was held during December 1934. The Commission, by the Broadcast Division, made its decision in these cases on December 15, 1935 (vol. 2, F. C. C. Reports, p. 208). The Commission, en banc, upon consideration of several petitions for rehearing, filed under section 405 of the act, ordered that all the applications involved be heard in a *de novo* proceeding before the full Commission. That hearing began March 18, 1937, and was concluded with oral argument April 13, 1937. On June 29, 1937, the Commission made its decision (vol. 3, F. C. C. Reports, not yet published), deleting two of the four existing stations and granting the facilities thus deleted to one of the two remaining stations.

"*1570-kilocycle cases.*"—During the year hearings were conducted before an examiner in the so-called *1570-kilocycle cases*, involving several applications for special broadcast stations to operate on the frequency of 1570 kilocycles. The cases presented interesting aspects of a technical nature which will hereinafter be discussed. The examiner had submitted his report but no decision had been made thereon at the close of the fiscal year.

Of the broadcast cases that were appealed from the Commission to the Federal courts, the *Monocacy case* and the *Eastland-Congress Square Hotel cases* are of particular interest.

The Monocacy case.—The *Monocacy Broadcasting Co. case* arose from a decree of the District Court of the United States for the District of Columbia granting a motion by the Commission to dismiss a bill of complaint filed by the Monocacy Broadcasting Co. (Appeal 6818). The Monocacy Broadcasting Co., a corporation, filed an application with the Federal Communications Commission for a permit to construct a new broadcast station near Rockville, Md. Thereafter the Commission considered the application and granted it without a hearing, pursuant to its rules. A protest was filed to this grant by WCAU Broadcasting Co., Philadelphia, Pa., on the ground that the proposed station would cause objectionable interference with its station. Within the time prescribed by the rules the American Broadcasting Co. (Station WOL) filed a protest, which failed to meet the requirements of the Commission's rules and was therefore denied.

The Monocacy application was set for hearing upon the protest of Station WCAU, Philadelphia, and thereafter the American Broad-

casting Co. (WOL) filed a petition for leave to intervene. Still later, Station WCAU withdrew its protest and the hearing was canceled. It was then the contention of the Monocacy Co. that under the Commission's rules no further action was necessary to make final a formal grant of its application, since no protest remained before the Commission. Nevertheless, the Division, upon its own motion, reconsidered the Monocacy application and designated it for hearing. Whereupon the Monocacy Co. filed a bill of complaint for injunction in the United States District Court seeking to enjoin the Commission from holding said hearing. The Commission filed a motion to dismiss the bill on the grounds that the plaintiff had a plain, speedy, and adequate remedy at law under section 402 (b) of the Communications Act, 1934, which provides for appeals to the United States Court of Appeals for the District of Columbia, that the bill of complaint did not show that plaintiff had exhausted its legal remedy, and that the Commission did not violate its rules but had the legal authority to designate plaintiff's application for hearing. The District Court sustained that motion and dismissed the plaintiff's bill on the ground that plaintiff possessed a plain, speedy, and adequate remedy at law under section 402 (b). On appeal to the United States Court of Appeals for the District of Columbia, the decree of the lower court was affirmed. It cited with approval *United States* v. *American Bond & Mortgage Co.*, 31 F. (2d) 448; *White* v. *Federal Radio Commission*, 29 F. (2d) 113; *Sykes* v. *Jenny Wren Co.*, 64 App. D. C. 379; 78 F. (2d) 720.[12]

The Eastland Co. and Congress Square Hotel Co. cases.—The Eastland Co. and Congress Square Hotel Co. appeals (appeals 6772 and 6773) arose from a decision of the Commission granting an application of Portland Broadcasting System, Inc., for a new station at Portland, Maine, and denying the application of the Eastland Co. for a new station at the same place. Congress Square Hotel Co. is the owner and licensee of radio station WCSH located at Portland, Maine, and had been an intervenor in the proceedings before the Commission on economic ground. Both applicants, Portland Broadcasting System, Inc., and the Eastland Co., requested the use of the frequency of 640 kilocycles. At the time the hearings on these applications were held the Broadcast Division of the Commission was composed of Commissioners Gary (chairman), Brown, and Sykes. At the time the case was decided, the Broadcast Division was composed of Commissioners Sykes (chairman), Case, and Prall. Because of these changes in membership, it was contended by the appellants that the decision of the Broadcast Division was invalid. The United States Court of Appeals for the District of Columbia (Mr. Justice Stephens dissenting) overruled this contention. After a discussion of the various sections of the act. the court considered the fact that oral testimony had been followed by the filing of written briefs and the fact that stenographic reports had been made of the oral testimony, copies of which were in the possession of the Broadcast Division as it was composed when the matter was decided. It was pointed out that no question was raised by the appellants as to lack of notice, and the fact was also noted that they were all accorded ample and timely notice and a full opportunity to be heard. The court further

[12] See last Annual Report, pp. 30 and 31.

noted that the Commissioners who entered the decision reported that they had fully considered the evidence and the entire record of the case. The court further said:

> In our opinion the partial change in the personnel of the Division which decided the case did not invalidate its decision, for it was nevertheless the decision of the Division which acted upon the evidence.

The remaining contentions of the appellants challenged the findings of the Commission upon the facts as disclosed by the evidence, but as to those findings the court found them not "arbitrary or capricious." A further contention in this appeal was that "the denial of the application of the Eastland Co. and the granting of that of the Portland Broadcasting System, Inc., violated the facilities-distribution section of the Communications Act of 1934 and the quota regulations of the Commission." The court pointed out, however, that the statute and the rules of the Commission provide equalization "as nearly as possible," and that while the increase in night quota occasioned by the grant of the Portland System's application was slightly over that due, it was justified in view of the need shown and was consistent with the terms of section 307 (b) of the act.

Appellants have requested a stay of mandate under rule 24 of the Supreme Court, pending the filing of a petition for a writ of certiorari.

The Baker Case.—The first criminal case involving violation of section 325 (b) of the Communications Act of 1934 (48 Stat. 1091),[13] (*United States* v. *Norman Baker, E. R. Rood, and Roy Richardson*), was tried in the United States District Court for the Southern District of Texas, Laredo Division, during April 1937 (18 Fed. Supp. 48).[14] The indictment charged the defendants with the maintenance of apparatus in Laredo, Tex., for the manufacture of mechanical reproductions or phonograph records for transportation to Mexican Radio Station XENT, owned by Norman Baker, and their subsequent broadcast by that station. Conviction of all three defendants was obtained, Norman Baker was sentenced to 4 months in jail and was fined $2,000, E. R. Rood was sentenced to 4 months in jail and was fined $500, and Roy Richardson was sentenced to 1 day in jail, it appearing that prior to the trial Richardson had been in custody for approximately 90 days. An appeal was taken by the defendants to the Fifth Circuit Court of Appeals and was pending at the close of the fiscal year.

The principal question raised by the defense in this case, by means of demurrer to the indictment, was that the offense charged in the indictment was not covered by section 325 (b) of the act in that an electrical transcription or phonograph record was not "a mechanical reproduction of sound waves produced." In overruling the demurrer to the indictment, the trial court held that the offense charged was included within the meaning of the aforementioned section of the law and that the offense was sufficiently described in the indictment.

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[13] Section 325 (b) of the Communications Act of 1934 provides: "No person shall be permitted to locate, use, or maintain a radio broadcast studio or other place or apparatus from which or whereby sound waves are converted into electrical energy, or mechanical or physical reproduction of sound waves produced, and caused to be transmitted or delivered to a radio station in a foreign country for the purpose of being broadcast from any radio station there having a power output of sufficient intensity and/or being so located geographically that its emission may be received consistently in the United States, without first obtaining a permit from the Commission upon proper application therefor."

[14] Since the close of the fiscal year a petition for a writ of certiorari in the United State Supreme Court has been filed.

Other appeals.—During the year six appeals in broadcast cases previously taken to the United States Court of Appeals for the District of Columbia from decisions of the Federal Communications Commission were dismissed [15] at the request of the applicants prior to argument, and 11 appeals are now pending [16] in that court.

There is one case pending in the United States District Court for the District of Columbia.[17]

BROADCAST SERVICES OTHER THAN REGULAR BROADCAST SERVICE

New rules for services other than broadcast.—As a result of the informal engineering conference of June 8, 1936, and written suggestions filed prior to July 20, 1936, the proposed new rules governing the following services were changed in a few particulars, as announced in the various press releases prior to the effective date of September 15, 1936:

1. International broadcast stations.
2. Relay broadcast stations.
3. Visual broadcast service:
   (*a*) Television broadcast stations.
   (*b*) Facsimile broadcast stations.
4. High frequency broadcast stations.
5. Experimental broadcast stations.

In operation, the new regulations as adopted, have been simple, clear, and easy of application to these various services. At the close of the fiscal year 1937, 342 stations were licensed for these services and 76 construction permits were outstanding. At the close of the fiscal year 1936, only 287 stations were licensed for these services.

INTERNATIONAL BROADCAST SERVICE

Definition of service.—The term "international broadcast station" means a station licensed for the transmission of broadcast programs for international public reception. Frequencies for these stations are allocated from bands (between 6000 and 26000 kilocycles) assigned for broadcasting by article 7 of the General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932.

Allocation and interference problems.—During the fiscal year the correspondence on the increasing interference to international broadcasting indicated that the conditions previously reported had not improved. The international broadcast frequencies are world-wide in range and a small station in any country may cause interference in any other country. All the frequencies suitable for the various international services were allocated at the Madrid Conference in 1932 and a few bands have been set aside for international broad-

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[15] See p. 15.

[16] No. 6762, filed 6–29–36, *Paul R. Heitmeyer* (Cheyenne, Wyo.) v. *F. C. C.*; No. 6852, filed 10–1–36, *Great Western Broadcasting Association, Inc., a corporation* (Logan, Utah), v. *F. C. C.*; No. 6853, filed 10–1–36, *Great Western Broadcasting Association, Inc., a corporation* (Provo, Utah), v. *F. C. C.*; No. 6854, filed 10–1–36, *Intermountain Broadcasting Corporation, a corporation*, v. *F. C. C.*; No. 6866 filed 10–20–36, *Pulitzer Publishing Company, a corporation*, v. *F. C. C.*; No. 6869, filed 10–23–36, *Missouri Broadcasting Company* v. *F. C. C.*; No. 6909, filed 2–2–37, *Red River Broadcasting Company* v. *F. C. C.*; No. 6911, filed 2–15–37, *Continental Radio Company* v. *F. C. C.*; No. 6931, filed 3–16–37, *Tri-State Broadcasting Company* (Licensee of Radio Station KTSM) v. *F. C. C.*; No. 6990, filed 6–18–37, *Saginaw Broadcasting Company, a corporation*, v. *F. C. C.*; No. 6994, filed 6–28–37, *Woodmen of the World Life Insurance Association* v. *F. C. C.*

[17] No. 64232, filed 4–21–37, *Black River Valley Broadcasts, Inc.*, v. *Anning S. Prall, et al.*

casting. As the sun-spot cycle progresses to its maximum, generally predicted to occur about 1939, it appears that the distance coverage of the higher frequencies will develop to a more reliable state. The frequencies listed under group H of rule 1013 have therefore been made available for international broadcast stations by the adoption of the new rules and regulations. Although group H represents additional frequencies for this service, they are far from being adequate for the needs.

The increasing demand for and the use of the limited international channels have caused increased congestion in and interference to international broadcast reception. The channel separation necessary for reasonably good quality reproduction has been disregarded still further by several foreign administrations. In order to transmit through this increased interference, the use of additional power together with directional antennas directed toward the countries of the world desired to be served has become necessary.

The Commission has consistently followed the policy of 20-kilocycle separation between frequency assignments, and the records show that all United States international broadcast stations are maintained with no frequency deviation of any consequence.

European stations have materially increased the strength of their signals for better foreign reception, resulting in the loss of listeners to the weaker signals of stations of the United States that have not increased their power. This condition is present throughout the world, but is particularly true with reference to South America and the Orient. The only solution appears to be higher power and beam transmission for stations in this country. It is hoped that through proper negotiations a time-sharing basis or an engineering solution of some type can be found to cover the interference problem, but such negotiations between sovereign powers require time and patience.

Stations and applications.—No new international broadcast stations have been authorized during the fiscal year. Twelve existing stations located principally in the eastern part of the United States are licensed to operate on a total of 21 frequencies. Two pending applications for new high-power international broadcast stations to be located in the West were in the files at the close of the year.

The General Electric Co. application.—Of particular interest is the application of the General Electric Co. for a construction permit to authorize the establishment of an international broadcast station in the city of Belmont, Calif., to be operated on the frequencies of 9530 kilocycles and 15330 kilocycles, with power of 20 kilowatts, unlimited time. It is proposed that the applicant shall provide broadcast service to several foreign countries, particularly those in the Orient. As required by the rules, it was necessary for this applicant to present evidence relative to the experimentation which it proposed to conduct. During the hearing conducted before an examiner, such evidence was presented. The record of the proceedings is now before the Commission, Broadcast Division, for decision.

RELAY BROADCAST SERVICE

Definition of service.—The term "relay broadcast station" means a station licensed to transmit, from points where wire facilities are not available, programs for broadcast by one or more broadcast stations or orders concerning such programs.

The activity of the licensees of regular broadcast stations in relaying programs from remote localities, boats, airplanes, etc., for broadcast over regular broadcast stations, has demonstrated the real need and increasing demand for stations of this class.

"*Pack sets.*"—Small low-power relay broadcast transmitters, carried complete by the operator, commonly referred to as "pack sets," are very useful for relaying accounts of golf matches, floor events, etc., over short distances to a receiver, where the program is placed on wire lines and broadcast over a regular broadcast station. On June 30, 1937, the following authorizations were in effect in this service: 38 authorizations of 1-watt power or less, 42 authorizations from 1 to 2 watts, and 37 authorizations from 2 to 5 watts. The popularity of this type of station is shown by the figures, which indicate that they constitute 54 percent of the experimental relay authorizations, and 37 percent of the total number of relay broadcast stations authorized.

Frequencies.—When relay broadcast stations were originally authorized, there were few frequencies available on a share basis with other services. Permission for each instance of operation of relay stations was found necessary to avoid interference from simultaneous operation by more than one on the same frequency. Since that time the number of frequencies available has been increased to 24 regular and certain others under special circumstances.

Number of stations.—At the close of the fiscal year there were 330 authorizations in effect in the relay broadcast service. These consisted of the following: 81 station licenses for operation on the low frequencies, 188 station licenses for operation on the experimental high frequencies, and 61 construction permits.

Rule 1004.—On June 15, 1937, the Broadcast Division deleted the requirements of a 2-day notice and permission from the Commission to operate relay broadcast stations (rule 1002). Only rule 1004 requiring the licensees to agree among themselves to insure interference-free operation has been retained. In the case where such an agreement cannot be reached among the licensees, it must be referred to the Commission and a final decision made. It is believed that operation under the provisions of rule 1004 will be more satisfactory.

VISUAL BROADCAST SERVICE

Definition of service.—The term "visual broadcast service" means a service rendered by stations broadcasting images for general public reception. There are two classes of stations recognized in the visual broadcast service: namely, television broadcast stations and facsimile broadcast stations.

The term "television broadcast station" means a station licensed for transmission of transient visual images of moving or fixed objects for simultaneous reception and reproduction by the general public. The transmission of the synchronized sound (aural broadcast) is considered an essential phase of television broadcasting, and one license will be issued for both visual and aural broadcast, as hereinafter set out.

The term "facsimile broadcast station" means a station licensed to transmit images of still objects for record reception by the general public.

Considerable development has taken place in both television and facsimile broadcasting during the fiscal year. Yet it is still generally conceded that neither has reached the stage of development that will permit standardization and commercialized operation. No applications were received during the fiscal year for commercial authorizations. However, all evidence indicates satisfactory technical progress.

Television frequencies.—There is a great demand for frequencies for this service. Considerable information was presented at the informal engineering conference on June 8, 1936, indicating that, because of the progress in higher definition, television pictures of the detail now possible could not be successfully transmitted within the limits of the two lower-frequency television bands of 2000–2100 kilocycles and 2750–2850 kilocycles, and that these frequency bands could be used to better advantage by other services. Accordingly, after considerable investigation, the higher band was deleted from television service and was made available for police assignments. However, the band of 2000–2100 kilocycles was retained for those desiring to carry on research work in the secondary or rural-service area. Three television stations were active on this band at the close of the fiscal year. These stations are investigating the possibilities that rural listeners can be supplied with television pictures of necessarily less detail. The only available space where there is room for high-definition television pictures is among the high frequencies (above 40000 kilocycles), which under the present state of development will not serve much beyond the limits of the average metropolitan area and would not give satisfactory coverage for television service in large rural areas.

Improvements in television picture detail.—One television station in New York City broadcast for public reception, using a high picture definition of 343 lines, until December 1936, when operations were discontinued in order to alter the equipment to transmit definition of 441 lines. Demonstrations of this definition in April 1937 were successful, and the improvement in the picture detail was very noticeable.

Television broadcast stations and applications.—One construction permit was authorized for the erection of a new television broadcast station in Philadelphia, Pa. There were 17 licensed stations and 3 outstanding applications for construction permits for new television stations at the close of the fiscal year. Under the new regulations a single license authorizes both the aural and the visual transmitters.

The National Television Corporation application.—Of especial interest is the application of the National Television Corporation, New York City, for a special temporary experimental authorization to operate a television broadcast station. During July 1935 this application was heard before an examiner, who recommended that it be denied. Upon petition for reconsideration filed by the applicant, the Commission, sitting en banc, ordered that the application be reheard by the full Commission. Subsequent to this rehearing the Commission, on July 28, 1936, granted the requested experimental authorization for a period of 2 months ending September 15, 1936. By appropriate action this authorization was extended to December 15, 1936. Thereafter, the applicant filed with the Commission a petition for the issuance of a regular license to operate a

television broadcast station. This petition was denied (vol. 3, F. C. C. Reports, not yet published).

Facsimile broadcast stations.—There is considerable evidence that facsimile broadcast service will render an important contribution to the art of broadcasting. Facsimile signals can be transmitted at a low rate compared with the rate required for television signals, and can therefore be broadcast within the narrow limits of the low-frequency bands available. The latest news flashes, market reports, weather maps, etc., can be broadcast hundreds of miles and automatically recorded in the home ready for the rural observer or the residents of small communities to read at their leisure. The most popular suggestion is that regular broadcast stations be used for facsimile service between midnight and 6 a. m. to supply the citizen with a complete record of the latest news for perusal during his breakfast. The principal questions are: What will be the public reaction, and will the cost of maintaining this new service be prohibitive?

There were four facsimile broadcast stations licensed on general experimental frequencies and one construction permit authorized at the close of the fiscal year.

HIGH-FREQUENCY BROADCAST SERVICE

Definition of service.—The term "high-frequency broadcast station" means a station licensed on frequencies above 25000 kilocycles for the transmission of aural programs for general public reception. The frequencies for these stations are allocated on an experimental basis.

Stations and applications.—At the close of the fiscal year there were 40 authorizations in effect in the high-frequency broadcast service. These authorizations consisted of 28 station licenses and 12 construction permits. Only 10 applications were in the files awaiting consideration by the Commission. The interest in stations of this class has not continued to develop, a fact which may be attributed to the lack of receivers in the hands of the public that can be tuned to these frequencies (26000 to 42000 kilocycles). These stations are licensed on an experimental basis with the proposed program of research as the primary object. The simultaneous rebroadcasting of programs of regular broadcast stations is incidental to the research and is used only as a source of desirable modulation. While some information has been submitted on the propagation characteristics of these high frequencies and indications are favorable for a good broadcast service on them, nevertheless more engineering data are desired before a definite allocation can be attempted.

EXPERIMENTAL BROADCAST SERVICE

Definition of service.—The term "experimental broadcast station" means a station licensed to carry on development and research for the advancement of broadcast services along lines other than those prescribed by other broadcast rules.

Stations and applications.—There were 12 station licenses and 1 construction permit in effect at the close of the fiscal year. One pending application for a construction permit has not received consideration by the Commission.

Experiments in synchronization.—One experimental station of this class was authorized to conduct experiments in synchronizing a low powered transmitter operating on the same frequency as a regular broadcast station. It is proposed to locate the transmitter of the booster station on the edge of the primary service area of the parent station. The radio-frequency signal for synchronizing would be received from an antenna directed for reception from the parent station but only a short distance from the booster (a few hundred feet or less). This is a new scheme in synchronization and if it is successful it will materially reduce the cost of synchronization by eliminating the connecting landlines.

THE USE OF BROADCAST FACILITIES IN EMERGENCIES

Broadcast stations in coordination with other services have figured very prominently in rescue and rehabilitation work during disasters. The wide use of broadcast receiver sets, particularly battery operating sets, including automobile sets (since secondary power lines often fail at such times), in the rural areas, places broadcast stations in a unique position for giving warnings and directing rescue work during emergency periods, especially where the broadcast stations are equipped with an auxiliary power supply.

Ohio flood.—A notable example of the use of broadcast facilities for this purpose was the Ohio flood of last February. The broadcast station licensees in afflicted and adjacent areas willingly loaned the use of their facilities wherever needed. This voluntary action on the part of these licensees materially aided in the preservation of life and property. Stations outside the afflicted area generously donated broadcast time for aiding in the work of rehabilitation. Millions of dollars' worth of money, food, clothing, medical supplies, and other necessities were collected. The Commission is now studying methods of organizing all communication facilities, including all broadcast, telephone, and telegraph services, for the purpose of providing an immediate and more efficient use of these facilities in future emergencies of this kind.

COMPLAINTS AND INVESTIGATIONS

General nature of complaints.—The majority of the investigations conducted with regard to complaints received concerning the program service of broadcast stations have resulted in informal adjustments. Other complaints involving possible violations of the act and the rules and regulations of the Commission, including the broadcasting of lotteries, medical programs, and fortune-telling programs, and the illegal assignments of licenses and transfers of the control of licensee corporations, have been investigated, and appropriate action has followed either by way of adjustment or by the designation of applications for renewal of licenses for hearing.

The Commission maintains complete records showing the information required by Order No. 2 of the Broadcast Division, which include copies of all contracts entered into by licensees that may in any way affect the conduct or control of a broadcast station. These records show the corporate structure of each licensee corporation and a complete list of all the stockholders thereof.

Each application, particularly one for the renewal of station license, is compared with these records to determine whether a change in ownership or a transfer of the control of a licensee corporation has occurred and also to determine what interests the licensees or stockholders may have in other stations.

Number of investigations.—At the beginning of the fiscal year, investigations were pending against 39 stations, and during the year investigations against 52 stations were instituted. Investigations were closed against 61 stations, leaving a total of 30 stations under investigation at the close of the fiscal year. Of the number closed, 57 were adjusted informally and 4 were considered by the Commission after a formal hearing thereon.

Political broadcasts.—Section 315 of the Communications Act requires that equal opportunity for broadcast be consistently afforded by stations to all regularly qualified candidates for public office. Many complaints were received during the fall of 1936, an election year, involving the requirements of this section and in every instance they were adjusted by calling the attention of the station licensee to section 315 of the act.

BROADCAST ALLOCATION SURVEYS AND HEARINGS

Reasons for surveys and hearings.—The increase in demand for broadcast facilities, the need for local broadcast service in many communities which do not now have local broadcast stations, and the technical improvements and the development of greater knowledge of the propagation of waves in the broadcast band which have taken place since the broadcast allocation plan now in use was established in 1932, have convinced many in the industry that improvements and changes in allocation could and should be made. The Commission,

in consideration of these conditions, conducted the extensive technical survey of broadcasting described in its second annual report and called an informal engineering hearing to discuss the numerous phases of broadcast allocation.

Broadcast allocation survey.—A great mass of data was obtained by the Commission in the Broadcast Allocation Survey, to which the technical staff of the Commission has devoted much time in interpretation and study. These data were the result of measurements on 40 stations made by 58 records at 11 different locations throughout the United States. The material to be analyzed consisted of 4,000 continuous 24-hour field-intensity records made over a period of 3 months, and was supplemented by ground-wave-attenuation measurements made during the same period. It contained perhaps the largest amount of potential information on radio broadcast transmission ever assembled in any single investigation. Because of the great mass of data and the wide variability of many of the factors requiring proper weighting, the extraction of this information from the data required the development of special methods of statistical analysis. A description of some of these methods has been prepared and will shortly appear in one of the periodicals devoted to statistical matters.

Results of analysis of survey.—A considerable portion of the results derived from the Commission's analysis of the allocation-survey data was presented in a comprehensive report at the October 5 broadcast-allocation hearing. The essential parts of this report were graphical charts showing:

1. The fading characteristics of radio waves received in the secondary service areas of broadcast stations.
2. The radio-frequency conductivity of the ground in various sections of the country.
3. The variation of the intensity of radio waves during the twilight hours.
4. The period of fading for the various broadcast frequencies.
5. The field intensity in the secondary service areas of broadcast stations, at various distances throughout the United States, as affected by fading; i. e., the field intensities exceeded 5, 10, 30, 50, 70, 90, and 95 percent of the time throughout the entire range of distances encountered in practice in the United States.

Broadcast allocation hearing.—All of the five different kinds of data obtained from this analysis were of inestimable value in the hearing held at the offices of the Commission in Washington, D. C., from October 5 to 21, 1936. In the notice of hearing the Commission stated that the hearing would be held "for the purpose of determining what principles should guide the Commission in matters relating to or affecting the allocation of frequencies and the prevention of interference in the band 550–1500 kc, and, in particular, what changes, if any, should be made in the Commission's regulations or in the standards heretofore applied by its Engineering Department in order to give effect to these principles."

Subjects discussed and interests represented at the hearing.—Specifically, the major phases of the industry that were discussed were as follows:

1. Classification of broadcast stations: The desirability of changes, the number of frequencies to be allocated to each class, the protection from interference to be afforded each class, and the amount of power to be assigned to stations of each class.

2. Standards to be applied in determining coverage and the presence or absence of objectionable interference: Nighttime propagation characteristics, attenuation in various sections of the country, ratios of desired to undesired signal for various frequency differences, signals necessary to render satisfactory service in different areas, noise levels encountered, blanket area, etc.

3. Geographical distribution of broadcast facilities: Weight to be given various factors, such as population to be served, area, economic support, engineering considerations, etc.

4. Standards and methods of measurement: In determining power, field intensity, service, and interference.

5. Apparatus performance requirements to be imposed on broadcast stations: With respect to antenna, efficiency, percentage of modulation, fidelity, etc.

6. Effect of any proposals regarding the foregoing subjects: Socially and economically upon the public and the industry as a whole and the various branches of the industry individually.

Intense interest was manifested in the hearing by all persons associated with the broadcast industry and by numerous individuals engaged in other phases of radioactivity. Approximately 45 persons appeared and gave testimony concerning the subjects set forth in the notice of hearing and other matters relating to broadcasting. The transcript of the testimony comprises 1,741 pages of material concerning all angles of the broadcast problem. Practically every group of broadcast stations having a particular problem that is separate and distinct from the problems facing the industry as a whole was represented and presented testimony. These included the clear channel stations, the regional channel stations, and the local stations, the part-time and the limited-time stations, the chain stations, the nonchain stations, etc.

There were also represented the chain broadcasting organizations, groups interested in education by radio, manufacturers of broadcast receivers, and the Institute of Radio Engineers.

Witnesses discussed much detailed engineering data, and many recommendations were presented to the Commission by the leading radio engineers of the United States. Each of the empirical standards previously in use in the allocation of broadcast stations was discussed at length, and specific recommendations were received for changes in those standards. Specifically, the mileage-frequency-power separation tables, which were published in July 1932, were discussed, and it was proposed that those tables be modified in accordance with the data contained in the allocation survey report and that, in any case, such tables be used only as a guide in the absence of more nearly accurate information on a particular case.

The engineers presenting testimony to the Commission were asked to state their opinion regarding the accuracy of the data graphically portrayed in a series of curves (showing distances to ground-wave field-intensity contours versus frequency, ground conductivity, and power), which was published by the Commission in May 1936. Those engineers stated that they were in general agreement with the data so shown and had not found them to be incorrect in practice.

The analysis of night sky-wave recordings as contained in the allocation survey report (figs. 9 and 10) was accepted as being the most nearly complete data available upon this subject, although a few engineers were of the opinion that the data could well be supplemented by studies in other years or at other seasons of the year.

There were various specific proposals regarding the reclassification of broadcast stations into additional groups other than those provided for in the present plan of allocation.

The present standard of field intensity, which is taken as the limit of the blanket area, should, in the opinion of most of the engineers presenting testimony, be modified to provide for a higher permissible signal intensity. Values as high as 1 volt per meter were recommended for use as such a standard.

Other recommendations, with detailed studies in support thereof, were made by various engineers concerning the permissible value of undesired signal that may exist, without the production of objectionable interference to a desired station, when the undesired station operates on the same frequency, or on a frequency 10, 20, 30, or 40 kilocycles removed.

Further conference on January 18, 1937.—The Commission was not satisfied that sufficient study had been given to certain factors in connection with the study of blanket field intensity standards and to the problem of the ratio of desired to undesired signal when two stations are 10 kilocycles removed in frequency, and a further conference on these two subjects was called for January 18, 1937. This conference was well attended by various consulting engineers, laboratory representatives, receiver manufacturers' representatives, in addition to various broadcast station engineers.

Preliminary engineering report to the Broadcast Division.—All the data and the recommendations presented at the hearing of October 5, 1936, and the conference of January 18, 1937, are being carefully studied. The Engineering Department made a report, dated January 11, 1937, entitled "Preliminary Engineering Report to the Broadcast Division Concerning the October 5, 1936, Hearing—Docket 4063." This report covers 43 pages and gives a summary of the engineering presentation and conclusions.

Further survey of rural radio reception conditions.—The data compiled from the postcard questionnaire survey conducted in connection with the allocation survey, as reported in the previous annual report, were very helpful in determining general reception conditions in the rural areas and the types of stations upon which the average rural resident is dependent for his broadcast service. These data were, however, silent as to any differentiation between daytime and nighttime reception conditions, and the Commission was of the opinion that due to differences in propagation conditions, etc., there might be a material change in the results of the survey if an attempt were made to separate the data concerning daytime and nighttime reception conditions. The Commission therefore authorized a second questionnaire survey, which was conducted during April 1937. Approximately 31,000 questionnaire cards were mailed to the fourth-class postmasters throughout the United States. The Commission received in reply approximately 16,000 cards. The questionnaire card requested specific information concerning daytime receiving conditions and nighttime receiving conditions in the community where the postmaster resided. The analysis of these data has not yet been completed.

TECHNICAL DEVELOPMENTS IN THE BROADCAST ART

There have been several new technical developments in the broadcast industry. Although some of these have been known or in limited use before, they have only recently been used to any extent by broadcast stations.

A number of broadcast stations have installed shunt-excited (grounded) antenna systems, which are designed to reduce costs and minimize the effect of lightning. The latter is very troublesome to broadcast stations located in areas subject to frequent and severe electrical storms.

A new high-efficiency linear-power amplifier for modulated waves has been developed to reduce the consumption of power, the size of the high-voltage transformer and rectifier and the cooling system, which are important items in the operating costs of stations, particularly of those stations operating with high power.

The use of "reverse feedback" to reduce distortion and noise in the transmitted signals has been incorporated in a number of transmitters with very satisfactory results.

Automatic overmodulation limiters have been placed on the market, which permit maintaining a high average level of modulation without causing undesirable overmodulation.

Phase indicators have been developed which are invaluable not only in the first adjustment of directional arrays but in maintaining the proper adjustment.

There have also been several developments in broadcast-receiver design (directed mainly to improve the ease of manipulation or the fidelity in reproduction), two of which are automatic-tuning and volume-expansion circuits. Receivers so equipped have improved the quality of reproduction by the elimination of the distortion and interference due to improper tuning and by an increased extension of the volume range. None of the receiver developments has any substantial effect on the allocation of broadcast stations.

FEDERAL RADIO EDUCATION COMMITTEE

Origin and purpose.—The Federal Radio Education Committee was sponsored and appointed by the Commission with the cooperation of other Government departments as a result of the Commission's study pursuant to section 307 (c) of the Communications Act of 1934 and the conferences held pursuant thereto.[18]

The Communications Act of 1934, section 307 (c), provides:

> The Commission shall study the proposal that Congress by statute allocate fixed percentages of radio broadcasting facilities to particular types or kinds of non-profit radio programs, or to persons identified with particular types or kinds of non-profit activities, and shall report to Congress, not later than February 1, 1935, its recommendations together with the reasons for the same.

In accordance with this mandate, the Commission held a public hearing in its offices during October and November 1934, at which voluminous information was supplied. On the basis of this information and of other information in the files of the Commission, a report was made to the Congress dated January 22, 1935. The Commission proposed in that report (p. 7) to hold a national conference at an early date in Washington, at which time plans for mutual cooperation between broadcasters and nonprofit organizations could be made to the end that the educational experience of the educators be combined with the program technique of the broadcasters, thereby better to serve the public interest.

This conference was held on May 15, 1935, in Washington, D. C. Due notice was given to all broadcast licensees of the Commission, the National Association of Broadcasters, all chain broadcasting companies, all educational, religious, and eleemosynary institutions, and all persons, groups, and associations of every character interested in the subject to be present and to participate in this conference. The cooperation and participation of all Governmental agencies, particularly of the United States Bureau of Education, were especially requested. It was expected that at this hearing definite plans would be presented for consideration and study.

As a result of this conference it was decided to appoint a committee to be known as the Federal Radio Education Committee. Dr. John W. Studebaker, United States Commissioner of Education, accepted the chairmanship of the committee, and invitations for membership to the committee, were sent to persons prominent in the fields of education and broadcasting. On December 18, 1935, the Commission announced the names of the members on this committee as follows:

Mr. Waldo Abbott, University of Michigan.
Mr. Merlin Aylesworth, president, National Broadcasting Co.
Mr. James W. Baldwin, managing director, National Association of Broadcasters.

[18] There is here given a brief outline of the activities of the Commission relative to this section of the act prior to the formation of the Federal Radio Education Committee and prior to the last fiscal year. This outline is given at this time as no previous mention of this work has been made in an annual report to Congress. A separate report was made as required.

Mr. Edgar Bill, Radio Station WMBD.
Dr. S. Parks Cadman, Federal Council of Churches of Christ in America.
Dr. Morse A. Cartwright, director, American Association for Adult Education.
Dr. W. W. Charters, director, Bureau of Educational Research, Ohio State University.
Dr. Harry W. Chase, chancellor, New York University.
Mr. Gardner Cowles, Jr., Des Moines Register.
Mr. Lester E. Cox, Radio Station KWTO.
Mr. Edwin Craig, Radio Station WSM.
Dr. A. G. Crane, president, University of Wyoming.
Dr. Walter Damrosch, National Broadcasting Co.
Mr. Milton S. Eisenhower, Director of Information, Department of Agriculture.
Mr. John Elmer, Radio Station WCBM.
Mr. O. D. Fisher, Station KOMO.
Mr. Leo J. Fitzpatrick, president, National Association of Broadcasters.
Mr. Willard Givens, secretary, National Educational Association.
Mr. Tom C. Gooch, Daily Times Herald.
Mr. William Green, president, American Federation of Labor.
Mrs. Rose Jacobs, president, Hadassah Women's Zionist Organization.
Rev. Geo. W. Johnson, Catholic University of America.
Dr. C. B. Jolliffe, Radio Corporation of America.
Mr. Lamdin Kay, Station WSB.
Mr. John F. Killeen, Director of Broadcast Division, Federal Communications Commission.
Dr. Cline M. Koon, Office of Education, Department of Interior.
Mrs. B. F. Langworthy, president, National Congress of Parents and Teachers.
Miss Luella S. Laudin, Women's National Radio Committee.
Mr. H. B. McCarty, president, National Association of Educational Broadcasters, University of Wisconsin.
Mr. A. J. McCosker, president, Bamberger Broadcasting Service, Inc.
Mrs. Harold V. Milligan, president, Women's National Radio Committee.
Dr. Robert A. Millikan, president, California Institute of Technology.
Mr. William S. Paley, president, Columbia Broadcasting System.
Mr. A. D. Ring, assistant chief engineer, Federal Communications Commission.
Mr. John Shepard, III, president, The Yankee Network.
Dr. Levering Tyson, director, National Advisory Council on Radio in Education.
Miss Judith C. Waller, Mid-West Educational Director, National Broadcasting Co.
Mr. Frederick A. Willis, Columbia Broadcasting System.
Mr. Geo. F. Zook, president, American Council on Education.

Activities of the committee.—After the formation of this committee, an agenda was prepared for the first meeting, which was called by Chairman Studebaker, in February 1936. The primary objectives of the Federal Radio Education Committee, under the chairmanship of the Commissioner of Education, were as follows:

1. Eliminate controversy and misunderstanding between groups of educators and between the industry and educators.
2. Promote actual cooperative arrangements between educators and broadcasters on national, regional, and local bases.

Since the formation of this committee it has carried forward the study pursuant to section 307 (c) of the act with the full cooperation of the Commission. The report of the chairman, Dr. John W. Studebaker, for the last fiscal year follows:

REPORT OF THE FEDERAL RADIO EDUCATION COMMITTEE

By J. W. STUDEBAKER, *Chairman*

Following the appointment of the Federal Radio Education Committee by the Federal Communications Commission, in December 1935, J. W. Studebaker, chairman of the committee, organized a small planning committee consisting of a half-dozen members—Messrs. James W. Baldwin, Levering Tyson, A. D. Ring, C. M. Koon, C. F. Klinefelter, with J. W. Studebaker as chairman and Mrs. Gertrude Broderick as secretary. The purpose of the planning committee was to survey the possibilities for collecting and correlating data on which the main committee might base its deliberations when it came together for a meeting.

Since this was the first attempt that had been made for broadcasters and educators to meet together around the same table to discuss their various problems and to try to solve them cooperatively, the planning committee, in trying to arrive at some mode of action, soon discovered an almost total lack of factual material on which the committee might proceed to make recommendations to the Federal Communications Commission. It was agreed in the planning committee that before anything could be accomplished the necessary factual material would have to be compiled. It was agreed finally that the committee might well undertake a program of studies.

As a means of getting started, the planning committee designed a number of studies for purposes of consideration and discussion by the general committee. These studies were briefly outlined in an agenda and the general committee was called together for a meeting in Washington in February 1936. The general committee agreed that the study program was the proper procedure for the committee to adopt and each committee member was invited by the chairman to submit additional studies which might be incorporated in the program. As a result of that invitation, outlines of some 18 studies were developed.

The general committee voted to appoint subcommittees which would be charged with the responsibility of getting the program under way. The newly appointed committees were as follows:

An executive committee—replacing the old planning committee:

J. W. Studebaker, *Chairman.*
C. F. Klinefelter, *Vice Chairman.*
Gertrude G. Broderick, *Secretary.*
J. W. Baldwin.
John Elmer.
Willard Givens.
R. C. Higgy.
Rev. George Johnson.
A. D. Ring.
Levering Tyson.

A technical subcommittee to revise the outline of each project, to estimate the probable cost, and recommend to the executive committee:

W. W. Charters, *Chairman.*
Gertrude G. Broderick, *Secretary.*
Hadley Cantril.
John Karol.
C. M. Koon.
Henry C. Link.
Robert S. Lynd.
Edward S. Robinson.

A subcommittee on conflicts and cooperation, to study the problem of conflicts and to determine what it considered to be the responsi-

bility of the Federal Radio Education Committee with regard to them:

A. G. Crane. *Chairman.*
Gertrude G. Broderick, *Secretary.*
Harry C. Butcher.
William B. Dolph.
M. S. Eisenhower.
H. B. McCarty.
George B. Porter.
Thomas Reed.
Frank M. Russell.

An intensive 2-day meeting in Washington developed a report by the technical committee to the executive committee, recommending 16 studies at an estimated cost of $187,800. An additional study was proposed but it was felt that because of its highly technical nature, it should be scrutinized carefully by specialists in the field of research in psychology and sociology. The project was labeled "The Influence of Radio on Children and Adults" and Dr. Hadley Cantril, of the technical subcommittee, was appointed to head an extra committee which would design in detail the kind of study that was being proposed.

Dr. Cantril met with some dozen men and a study was proposed at an estimated cost of $54,000. This amount was added to the above-mentioned $187,800.

The conflicts committee also held a meeting in Washington, at which time it reviewed the proposed program of studies as set up and accepted by the technical and executive committees. It was felt that for their purposes it would be necessary for additional studies to be made to bring out information which would be necessary for the successful operation of the conflicts committee. Two additional studies which this committee proposed were accepted by the executive committee and added to the original proposal, making a total of $257,800 to cover the entire immediate research program of the committee.

The proposal was placed in the hands of the chairman, J. W. Studebaker, whose next responsibility was to find ways and means of financing the program. Since the results of these studies would be shared in by broadcasters and educators alike, it was believed that the broadcasting industry might be called upon to contribute part of the fund if educators—through some of the foundations—could contribute the other part.

On January 8th of this year, Judge E. O. Sykes and J. W. Studebaker extended a joint invitation to representatives of the broadcasting networks, the National Association of Broadcasters, the presidents of the Carnegie and the Rockefeller Foundations, and the director of the National Advisory Council of Radio in Education, to meet at the Federal Communications Commission to discuss in a closed, informal session just what could be done to finance the program. Following is a list of those who attended:

James W. Baldwin, National Association of Broadcasters.
Harry C. Butcher, Columbia Broadcasting System.
Commissioner Norman S. Case, Federal Communications Commission.
Dr. F. P. Keppel, president, Carnegie Corporation.
C. F. Klinefelter, Office of Education.
Lenox R. Lohr, National Broadcasting Co.
A. J. McCosker, Mutual Broadcasting Co.
John Marshall, The Rockefeller Foundation.
William S. Paley, Columbia Broadcasting System.
Anning S. Prall, Federal Communications Commission.

A. D. Ring, Federal Communications Commission.
John F. Royal, National Broadcasting Co.
Frank M. Russell, National Broadcasting Co.
David H. Stevens, The Rockefeller Foundation.
J. W. Studebaker, Commissioner of Education.
Levering Tyson, National Advisory Council on Radio in Education.
Frederick A. Willis, Columbia Broadcasting System.
Judge E. O. Sykes, presiding, Federal Communications Commission.
Gertrude G. Broderick, secretary, Federal Radio Education Committee.

Before making actual commitments it was suggested by some of the men in the industry that it might be possible to reduce the amount of money involved, by reworking the study outlines, combining some with others. It was agreed to select out of the attending group a small committee composed of three educators and three broadcasters, to undertake the revamping of the study program. That committee consists of the following members:

Levering Tyson, *Chairman.*	John F. Royal.
W. W. Charters.	Frederick A. Willis.
Hadley Cantril.	James W. Baldwin.

The committee agreed to report to the same group in about 6 weeks.

On March 12, at a meeting in Washington of the group which met on January 8, the revised program was presented by Chairman Tyson and further discussion followed. The informal "Committee of Six"—as it was referred to—reduced the original amount requested from $257,800 to $250,500. In so doing, certain studies were eliminated and others were combined. It is expected that the entire program can be completed within a period of 2 years.

There was unanimous agreement that the Committee of Six had done so well with their first assignment that they should be given the further responsibility of canvassing the potential financial sources. It is expected that the results of this canvass will be available soon.

In addition to the exploratory work of the subcommittee up to date, the Office of Education launched an experiment in genuine cooperative effort, the results of which are significant and should be useful to the committee in some of its future deliberations.

From the discussions which took place in the meetings of the original planning committee, the general committee, and the various subcommittees, it became quite evident that one large category of problems was concerned with difficulties relative to local and regional broadcasting. Local station managers, for example, reported that they had available time which they would be glad to have utilized by educational agencies if satisfactory programs could be provided. Many of the local school superintendents and officials of colleges and universities freely commented on the cooperative attitude of local station managers, but confessed their lack of experience in building and producing suitable educational programs. While none of the studies proposed by the subcommittees dealt with a direct attack on the situation I, as chairman of the Federal Radio Education Committee, felt justified in launching some experimental work designed to bring about a gradual improvement in what is essentially a local problem.

The Office of Education has been operating an experimental educational broadcast program for the past year and a half, financed with emergency relief funds. In connection with this activity, after consultations with J. W. Baldwin, of the National Association of

Broadcasters, and Levering Tyson, of the National Advisory Council on Radio in Education, we established a script writing, editing, and exchange service as a joint enterprise between the Radio Project and the Federal Radio Education Committee. An initial series of scripts was written, designed expressly for local station production. Station managers and the local educational agencies were circularized with a view to encouraging educational groups to engage in the actual production of this series over local stations. The success of this initial step was so pronounced that an exchange service was started whereby educational scripts which had been produced at one time or another were edited and made available for local purposes. Scripts broadcast over networks chains by the radio project were also made available.

Following are a few significant figures indicating the success of this undertaking:

Within the year programs furnished by the script exchange have been carried by 108 radio stations located in 41 States.

One hundred and eight stations have carried 161 programs series furnished by the exchange.

Each series has averaged 6 scripts (or 6 programs), making a total in the 161 series of 966 programs carried by 108 stations.

More than 1,700 local groups, including high schools, colleges and universities, theater guilds, C. C. C. camps, radio stations, and many others, have been served by this script exchange.

These groups have received 50,000 copies of radio scripts, 10,000 copies of the Radio Manual, Glossary of Radio Terms, and Music Arrangements.

It is believed that the study program, as it has been designed, will make it possible to carry out the charter given to the committee by the Federal Communications Commission—namely, to combine forces which will:

1. Eliminate controversy and misunderstanding between groups of educators and between the industry and educators.

2. Promote actual cooperative arrangements between educators and broadcasters on national, regional, and local bases.

There is reason to feel that sufficient funds will be available within the next few months to get the program under way. A complete detailed report on the proposed program will be sent to you within the next 2 or 3 months.

PART III

THE COMMISSION

TELEGRAPH DIVISION

MEMBERS OF THE TELEGRAPH DIVISION

AS OF JUNE 30, 1937

IRVIN STEWART, *Chairman.*
GEORGE HENRY PAYNE, *Vice Chairman.*
ANNING S. PRALL.

TELEGRAPH DIVISION

For the purpose of this report the material has been presented under the following topics: Organization and Jurisdiction of the Telegraph Division, Rates and Tariffs, Supervision of Accounts, Wire Facilities, Radio Facilities, Complaints and Investigations, Financial and Other Statistical Data, and Technical Developments in the Telegraph Art.

ORGANIZATION AND JURISDICTION OF THE TELEGRAPH DIVISION

Under the terms of Commission General Order No. 1 the Telegraph Division exercises jurisdiction over matters connected with and relating to the licensing of radiotelegraph and certain other classes of radio stations and licenses of radio operators; over matters relating to the promotion of safety of life and property through the use of radio communication; and over the regulation of interstate and foreign communication by telegraph originating or received in the United States, whether by wire, radio, or cable. All stations located in Alaska, other than broadcast stations, are placed under the jurisdiction of the Telegraph Division because of the unique situation in regard to communication existing in that Territory, as discussed more fully on page 70.

The responsibilities of the Telegraph Division are carried out in part through the exercise of its power to determine and prescribe just and reasonable rates, maximum or minimum rates, or maximum and minimum rates for interstate and foreign telegraph communication, to approve or disapprove classifications of messages, to suspend and make determinations with regard to tariffs, and to issue on certain conditions or to refuse or revoke various classes of authorizations covering the operation of radio stations. Carriers, both radio and wire, are required to file schedules of charges with the Commission, to maintain their accounts in accordance with regulations promulgated by the Commission, and to render specific reports with respect to their operation. Further regulation of wire-telegraphy is attained through the granting or denying of certificates of public convenience and necessity for the construction, extension, acquisition, or operation of additional lines. In general, the Division has power to exercise functions so as to make available so far as possible to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire- and radio-communication service with adequate facilities at reasonable charges and to serve purposes of the national defense.

NEW LEGISLATION

During the fiscal year, two acts of Congress were passed amending the Communications Act of 1934, which greatly extended the duties of the Telegraph Division.

Amendment of section 318.—An act approved March 29, 1937 (Public Law No. 26, 75th Cong.), amended section 318 of the act for the purpose of permitting the Commission to waive the requirement, in the case of certain classes of radio stations, that the actual operation of transmitting apparatus be carried on only by a person holding an operator's license, where it finds that the waiver or modification of that requirement is in the public interest. The primary object of the amendment is to permit the use of automatic radio devices under regulations to be formulated by the Commission, and the amendment is in keeping with progress in the radio art. For the effect of this amendment see page 73.

Public Law No. 97, 75th Congress.—The act of Congress approved May 20, 1937 (Public Law No. 97, 75th Cong.), amended the act in several important particulars, the principal purpose being to add a new type of jurisdiction and to impose new duties on the Commission in connection with the promotion of safety of life and property through the use of wire- and radio-communication. A new part was added to the provisions of the act relating to radio, providing for the compulsory equipment of ships with radio installations; conferring power on the Commission to make exemptions in certain classes of cases; providing for the maintenance of watches by operators and for the use of automatic alarms; setting forth detailed technical requirements for ship radio transmitters and direction-finding apparatus, including radio equipment for lifeboats; authorizing the Commission to approve the installations; providing for the transmission of distress messages and information relating to hazards to navigation; requiring the carrying by ships, to which the act applies, of appropriate certificates or certifications as to compliance; making provision for suitable inspections; and adding new provisions relating to forfeitures, and to remissions or mitigations thereof by the Commission. The new law repeals the Ship Act of 1910, as amended, except as it relates to vessels navigating the Great Lakes, and directs that a special study be made by the Commission with regard to radio requirements for safety purposes for ships navigating the Great Lakes and the inland waters of the United States. The matter of jurisdiction of and preparation for this special study is referred to on page 20. Other provisions of Public Law No. 97 authorize the Commission to make rules and regulations pursuant to the act for the carrying out of the Safety Convention, and substantial changes have been made in the provisions of the act with regard to the suspension of radio operators' licenses. For the effect of this amendment see page 73.

RATES AND TARIFFS

RATE SCHEDULES

Filing of tariffs; rules and regulations relating thereto.—Pursuant to section 203 of the act, telegraph and other communication carriers are required to file with the Commission and keep open for public inspection schedules showing all charges for interstate and foreign communication, including in such schedules all classifications, practices, and regulations affecting such charges. Accordingly, a total of 10,888 rate schedules or tariff publications relating to telegraph rates and services have been filed since the organization of the Commission, to and including June 30, 1937. Of this number, 8,518 related exclusively to telegraph rates and 2,370 related to both telegraph and telephone rates. During the fiscal year, a total of 5,489 tariff publications relating to telegraph rates and services were filed with the Commission, of which number 3,620 related exclusively to telegraph rates and 1,869 related to both telegraph and telephone rates.

During the fiscal year, much progress was made in requiring telegraph tariff publications to be brought in compliance, as to both form and content, with statutory requirements and with the rules and regulations promulgated by the Commission, and to be modified in such manner as to remove objectionable provisions therein.

These requirements have resulted in the orderly publication and filing of rate schedules showing charges for interstate telegraph services and describing all classifications, regulations, and practices relating thereto. This condition contrasts favorably with the one existing prior to the passage of the act, when many rates or regulations affecting interstate communication service were not published or fully described in tariffs made available to the public.

Public reference room.—The many rate schedules mentioned above are made conveniently available to the public through the medium of a public reference room at the offices of the Commission. By this means the public has access to an official file of all charges for interstate telegraph service, all international telegraph rates (insofar as such rates are required to be filed with the Commission), and all classifications, regulations, and practices relating to such telegraph services and charges. Many persons availed themselves of the opportunity to use the public reference room during the fiscal year. In several instances, photostatic copies of tariff material were obtained for the public at cost.

Reports to the public.—The many tariff publications pertaining to telegraph rates and regulations received during the fiscal year and mentioned above were reported to the public by means of press releases, issued upon their receipt by the Commission. These notices to the public described briefly the dates of receipt, the dates the new schedules were to become effective, and the general nature of such schedules. This information is released to the public in order that

all interested parties may be informed of, and be enabled to file protests relating to, all changes in telegraph charges or services or in the classifications, regulations, and practices pertaining thereto.

Examination and correction of tariffs.—Each of the several thousand tariff publications relating to telegraph rates received during the fiscal year was carefully examined to determine whether it conformed to the requirements of the act and to the regulations prescribed by the Commission relative to the filing of tariffs, and particularly to discover any rates, regulations, or provisions that appeared unreasonable, unjustly discriminatory, unduly prejudicial or preferential, or otherwise unlawful. In many instances, corrections and modifications were required to be made in these tariff schedules.

Rejection and suspension of tariffs.—During the fiscal year, certain tariff schedules of five telegraph carriers were suspended by the Telegraph Division pending investigation and public hearing regarding the lawfulness of the rates, classifications, or regulations contained therein. In six instances, tariffs offered for filing by telegraph carriers were rejected because of failure to give lawful notice of their effective dates.

Special tariff applications.—Section 203 (b) of the act prohibits any change in the charges of communication carriers or in the classifications, regulations, and practices relating thereto, except after 30 days' notice to the Commission and to the public, unless the Commission, in its discretion and for good cause shown, modifies this requirement. During the fiscal year, 136 applications were received from telegraph carriers for special permission to publish schedules of charges on less than 30 days' notice or without regard to certain other regulations relative to the publication of tariffs. Of this number, the Division granted 122 applications and denied 13. One application was withdrawn prior to action thereon. Those that were granted pertained generally to reductions in charges, the establishment of new or extended services, or other modifications or changes clearly in the public interest.

RATE REDUCTIONS

During the fiscal year the Division continued its investigation of the existing classifications of telegraph service commenced under Telegraph Division Order No. 12 during a prior fiscal year.

Night-rate reduction.—The important reduction in night telegraph rates, effective June 1, 1937, resulted from the above-mentioned investigation and from conferences relating thereto. It is estimated that, based on the present volume of traffic, the saving to the American public will be $3,000,000 annually; and with increase in traffic the saving to the public will be proportionately greater. These reduced night rates constitute the lowest in the history of American telegraphy and introduce for the first time the principle of decreasing rates as the length of the message increases. Combined with the reduction, there was brought about a simplification of the night-rate structure in that the old night-message and night-letter classifications were replaced by a single new night-letter service. Corresponding reductions and modifications were made in the rates and classifications offered by the radiotelegraph carriers in the domestic field, preserving their existing word differential.

Illustrations of the reductions effected by the new night rates are shown in the following tables:

Wire telegraph rates for overnight messages

Between Washington and—	25 words		100 words	
	Old rate	New rate	Old rate	New rate
Richmond, Va.	$0.30	$0.24	$0.60	$0.39
Philadelphia, Pa.	.30	.24	.60	.39
Norfolk, Va.	.36	.28	.72	.46
New York, N. Y.	.36	.28	.72	.46
Pittsburgh, Pa.	.42	.30	.84	.55
Boston, Mass.	.48	.35	.96	.68
Chicago, Ill.	.60	.42	1.20	.90
Omaha, Nebr.	.66	.48	1.44	1.11
Minneapolis, Minn.	.66	.48	1.44	1.11
Denver, Colo.	.90	.50	1.80	1.40
Salt Lake City, Utah.	.90	.50	1.80	1.40
San Francisco, Calif.	.96	.50	2.40	1.70

Radiotelegraph rates for overnight messages

Between Washington and—	30 words		120 words	
	Old rate	New rate	Old rate	New rate
Baltimore, Md.	$0.30	$0.24	$0.60	$0.39
Camden, N. J.	.30	.24	.60	.39
Philadelphia, Pa.	.30	.24	.60	.39
New York, N. Y.	.36	.28	.72	.46
Detroit, Mich.	.48	.35	.96	.68
Boston, Mass.	.48	.35	.96	.68
Chicago, Ill.	.60	.42	1.20	.90
New Orleans, La.	.60	.42	1.20	.90
Los Angeles, Calif.	.96	.50	2.40	1.70
San Francisco, Calif.	.96	.50	2.40	1.70
Seattle, Wash.	.96	.50	2.40	1.70

Reduced word-count for groups of figures and marks.—Another rate reduction of major importance, which became effective during the fiscal year, resulted from the change in regulations applicable to the counting of words in domestic telegraph messages whereby, among other things, groups of figures and groups of figures and marks are counted at the rate of five characters or fraction thereof per word, instead of one word for each character as formerly. Also, when figures and marks are grouped with the letters, the figures and marks are counted in a similar manner when they appear in uninterrupted sequence within such groups. The letters within such groups are also counted in a similar manner when appearing in uninterrupted sequence, which was the former rule in regard to letters.

List of important reductions.—Among the reductions in telegraph rates that became effective during the fiscal year are the following, listed according to their effective dates. While estimates have not been made, except in the case of the new night rates mentioned above, it is evident that these rate reductions resulted in large savings to the public.

Effective July 1, 1936, the press rates of Postal Telegraph-Cable Co., Mackay Radio & Telegraph Co., Commercial Pacific Cable Co., the Western Union Tele-

graph Co., and R. C. A. Communications, Inc., were reduced from the United States to the Philippine Islands, and the press rates of the Commercial Pacific Cable Co., Mackay Radio & Telegraph Co., and R. C. A. Communications, Inc., were reduced from Honolulu (Hawaii) to the Philippine Islands.

Effective July 1, 1936, the timed-wire-service rates of The Western Union Telegraph Co. were reduced over a large number of routes.

Effective August 1, 1936, the night letter rates of R. C. A. Communications, Inc., All America Cables, Inc., Mackay Radio & Telegraph Co., Postal Telegraph-Cable Co., The Western Union Telegraph Co., and Tropical Radio Telegraph Co., were reduced to Habana (Cuba).

Effective August 21, 1936, the telegraph rates of the Public Utilities California Corporation, a telegraph carrier serving parts of California, Oregon, and Nevada, were reduced over many of its routes upon its establishment of so-called square-to-square rates for message telegraph service.

Effective January 1, 1937, the rates of the Pacific Telephone & Telegraph Co. were reduced over many of its routes by the establishment of a square-to-square basis of telegraph rates.

Effective January 7, 1937, the rates of the Mackay Radio & Telegraph Co., Postal Telegraph-Cable Co., Commercial Pacific Cable Co., The Western Union Telegraph Co., and R. C. A. Communications, Inc., were reduced from the United States to Guam, Midway, Hawaiian Islands, and Philippine Islands.

Effective June 1, 1937, new "night letter" rates applicable between points in the United States, canceling the then existing "night message" rates, were filed by the Western Union Telegraph Co., Postal Telegraph-Cable Co., Continental Telegraph Co., Pacific Telephone & Telegraph Co., Tropical Radio Telegraph Co., Mackay Radio & Telegraph Co., and R. C. A. Communications, Inc.

Effective June 22, 1937, regulations applicable to messages between points in the United States, providing for the counting of figures, groups of figures and marks, and groups of figures and letters, at the rate of five characters per word when used in their normal sense and not as a cipher or code, instead of one figure per word, were established by R. C. A. Communications, Inc.

Effective June 23, 1937, regulations similar to those described in the paragraph immediately above were established by the Western Union Telegraph Co.

Effective June 23, 1937, regulations similar to those described in the second paragraph above were established by Postal Telegraph-Cable Co. and Mackay Radio & Telegraph Co. except that the new word-count is applicable to code and cipher messages as well as to plain-language messages.

In addition to the foregoing, there were many other reductions of less importance to the public affecting both interstate and foreign rates, and miscellaneous changes such as reduced rates for telegraph service effective on special occasions or in connection with extraordinary events such as the Olympics, and the establishment from time to time of commercial news service rates applicable to certain cities.

The Division will give particular attention to the effect of these rate reductions upon the revenues of the telegraph carriers and to the extent to which traffic is stimulated by such reductions.

Adjustment of State and square rates.—Surveys were made with reference to existing telegraph-rate structures, resulting in the discovery of inconsistencies and irregularities in the so-called State and square rates. Progress was made by the Division in its efforts toward the correction or elimination of these irregularities.

NEW AND EXTENDED SERVICES

Many new and extended telegraph services which were established during the fiscal year 1937 were tantamount to rate reductions, inasmuch as they made available to the public cheaper telegraph services. It is apparent that the establishment of new types of service and the extension of existing services are of paramount importance to the public.

List of new and extended services.—All the new and extended services that became effective during the fiscal year 1937 are briefly described below, arranged in the order of their effective dates.

Effective August 15, 1936, Globe Wireless, Ltd., established "radiomail" service between Chicago (Ill.) and Guam, Hawaiian Islands, and Philippine Islands, and established coastal radio-telegraph service from Chicago to ships at sea.

Effective September 19, 1936, the Western Union Telegraph Co. established bulletin service for football games.

Effective September 21, 1936, the Western Union Telegraph Co. established "telemeter" service between New York and Chicago.

Effective September 24, 1936, Radiomarine Corporation established new night radiotelegram service from ships at sea to points in the United States.

Effective September 26, 1936, Mackay Radio & Telegraph Co. established night radiotelegram service from ships at sea to points in the United States.

Effective October 15, 1936, Tropical Radio Telegraph Co. established night radiotelegram service from ships at sea to points in the United States.

Effective November 14, 1936, Tropical Radio Telegraph Co. established stock-quotation service between Miami (Fla.) and Nassau (Bahamas).

Effective November 26, 1936, Globe Wireless, Ltd., established telegraph service from Honolulu, Guam, San Francisco, Los Angeles, and Seattle to points in Europe and Africa, through connection at New York with the French Telegraph Cable Co.

Effective December 7, 1936, the Western Union Telegraph Co. established special rates for messages requesting hotel reservations and replies thereto.

Effective December 29, 1936, the Western Union Telegraph Co. established facsimile service between New York and Chicago.

Effective January 1, 1937, All America Cables, Inc., established "drop-copy press" service at all points served by the company between New York and Buenos Aires (Argentina).

Effective May 26, 1937, Hearst Radio, Inc., established a new "reception" service.

Effective on various dates during the fiscal year 1937, 358 cities were added to the list of those to which American Telephone & Telegraph Co. offered teletypewriter exchange service.

Effective on various dates during the fiscal year 1937, 290 cities were added to the list of those to which the Western Union Telegraph Co. offered some class of commercial news service.

GOVERNMENT RATES

The Telegraph Division issued its Order No. 15–C, prescribing rates of pay for Government communications by telegraph during the period from July 1, 1937, to June 30, 1938. In general, this order provides that Government communications shall have priority over all other business and shall be sent at rates not to exceed 40 percent of the rates applicable to commercial communications of the same class, of the same length, and between the same points in the United States, subject to certain minimum charges. Certain exceptions are made in the case of serial messages, timed-wire service, and communications between the continental United States and its possessions, between the United States and foreign countries, and between the United States and ships at sea, for which other provisions are prescribed.

INTERNATIONAL RATES

Special attention has been given to the relationship of the American carriers with the foreign government administrations which normally operate foreign telegraph service, with special emphasis on the competitive problems resulting from foreign contracts, the division of tolls between the carriers sharing in the charges for the

handling of international messages, and the settlement of accounts involving fluctuating foreign currencies.

International traffic studies; international conventions; review of international regulations.—International rate and traffic data were prepared for use by the American Delegation at the meeting of the International Consulting Committee on Telegraph at Warsaw, Poland, in October, 1936. At the end of the fiscal year, preparation was also being made for the meeting of the International Telephone and Telegraph Conference at Cairo, Egypt, in February 1938. These matters are discussed under the title "International Conferences" on pages 7 to 9 of this report.

Special studies of international traffic and division of tolls.—A study was made of foreign telegraph rates from points in the United States to points in certain foreign countries reached via routes across the Pacific Ocean. The results of this study were made available to the interested parties, together with an explanation of rate conditions. Other studies were also made of international telegraph rates and their effect upon American communication carriers and American users of international service.

An order was issued during the fiscal year requiring carriers to submit information relative to the division of tolls on foreign traffic. A study will be made of the information obtained under this order.

The necessity for making studies such as those mentioned above will continue. Experience indicates that this type of information is of vital importance in effective rate regulation.

Cooperation with the Berne Bureau.—During the fiscal year, the Division cooperated with the Bureau of the International Telecommunication Union at Berne, Switzerland, by furnishing information relative to American telegraph services, and particularly by securing information for this Bureau with reference to the volume of traffic and with respect to land-line charges for radiotelegrams exchanged between mobile stations and points in the United States, Alaska, Canada, and Mexico, via coastal stations in the United States and Alaska.

SUPERVISION OF ACCOUNTS

The regulation, including the examination, of the accounts of communication carriers is necessary in the effective administration of the act. It is considered fundamental in effective rate regulation and is an indispensable means of fact finding by the Commission.

UNIFORM SYSTEMS OF ACCOUNTS

Revised system of accounts for wire-telegraph carriers.—A uniform system of accounts was prescribed for telegraph and cable companies (exclusive of wireless telegraph companies) by the Interstate Commerce Commission, effective on January 1, 1914. This system is continued in effect by the act until it is modified by this Commission. No uniform system of accounts has been prescribed for, or adopted by, radiotelegraph carriers, which now represent an important group in the telegraph industry.

During the fiscal year 1937, there was under preparation a new uniform system of accounts for telegraph and cable carriers (exclusive of radiotelegraph carriers). It is contemplated that this new system will be the subject of conferences with representatives of State commissions and the telegraph carriers during the early part of the fiscal year 1938.

This revision of the uniform system of accounts for telegraph and cable carriers engaged in wire communication is considered necessary in order to meet present conditions in the industry and to cope with present problems of regulation.

Uniform system of accounts for radiotelegraph carriers.—At the close of the fiscal year 1937, there was nearing completion a uniform system of accounts for radiotelegraph carriers. As stated above, no uniform system of accounts has previously been prescribed for, or adopted by, such carriers.

This proposed uniform system of accounts for radiotelegraph carriers will be the subject of conferences with respresentatives of State commissions and other interested parties as in the case of the revised system of accounts for wire-telegraph carriers.

The formulation and prescription of a uniform system of accounts for radiotelegraph carriers will be an important step forward in the regulation of these carriers.

EXAMINATIONS OF ACCOUNTS

General examinations of the accounts of two large radiotelegraph carriers and an examination of certain accounts of one of the largest holding companies were completed during the fiscal year 1937. The examination of the accounts of the holding company, which controls an international communications system, had for its purpose the development of information with respect to the intercorporate relations existing between that company and its several American subsidiaries. The other examinations mentioned above concerned the operations and activities of two major radiotelegraph carriers. In addition to a

general analytical review of their accounts, the objectives of these latter examinations included analyses of (1) license and management contracts, (2) investment in plant and equipment, and (3) traffic development and traffic interchange. This information was of particular value in the preparation of the uniform system of accounts for radiotelegraph carriers.

In addition to the examinations of accounts mentioned above, several special examinations of lesser magnitude were conducted during the year. At the close of the fiscal year an examination of the accounts and records of a third major radiotelegraph company was nearing completion.

As a result of these or similar examinations, carriers have been or will be called upon to make appropriate corrections and modifications in their accounts.

DEPRECIATION STUDIES

Depreciation studies during the year centered chiefly upon the practices of wire-telegraph (including cable) carriers. Extensive data were compiled from reports on examinations conducted in the field, from responses to questionnaires, and from the annual reports submitted by the carriers to the Interstate Commerce Commission and the Federal Communications Commission. From the information thus obtained and from other data to be developed hereafter, a definite program will be devised, having for its ultimate objective the prescription of percentages of depreciation to be charged by telegraph carriers, pursuant to section 220 of the act. Among other things, consideration is to be given to the history of various classes of telegraph plant and the actual experience of the carriers relative to such plant, the methods of accounting for depreciation, the adequacy and correctness of existing reserves, and the results of various rates of depreciation and of the divergent practices of the carriers in the past with reference to depreciation.

It is recognized that depreciation constitutes a very large and important item in operating expense and also has a vital effect on the book valuation of operating properties. As such, depreciation-accounting practices have a very potent effect, over a long period, upon rates charged the public for various telegraph services.

OTHER ACCOUNTING ACTIVITIES

Interpretation of accounts.—All inquiries received from carriers or other interested persons relative to the interpretation of existing accounting regulations and with reference to the manner of accounting for specific transactions were answered promptly during the fiscal year.

Accounting for bankruptcies and receiverships.—Consideration was given to the necessity for special accounting regulations with respect to bankruptcies, receiverships, and other proceedings resulting from insolvency.

Social Security taxes and pension funds.—A special accounting bulletin was issued by the Division containing regulations relative to the accounting for social security taxes by telegraph carriers; and special attention is being given to the matter of accounting for funds accumulated under employees' pension and benefit plans.

Accounting for extension of lines.—During the fiscal year, attention was also given to the accounting considerations involved in the applications received from telegraph carriers relating to extension of lines.

WIRE FACILITIES UNDER JURISDICTION OF TELEGRAPH DIVISION

EXTENSIONS OF LINES OF WIRE-TELEGRAPH CARRIERS

Applications under section 214.—Applications, under the requirements of section 214 of the act, for certificates or authorizations for the construction, extension, acquisition, or operation of lines of telegraph carriers, handled by the Division, were as follows:

Pending July 1, 1936	2
Received July 1, 1936, to June 30, 1937	57
Total	59
Granted July 1, 1936, to June 30, 1937	54
Withdrawn	1
Pending June 30, 1937	4
Total	59

Mileage of extensions.—The Western Union Telegraph Co. was granted the authority requested in 36 applications (included above) to lease a total of 1,443 miles of circuit for temporary operation and the authority requested in 15 applications to lease a total of 380 miles of circuit for permanent use. R. C. A. Communications, Inc., was granted the authority requested in two applications (included above) to lease a total of 214 miles of circuit from the Western Union Telegraph Co.

The Chesapeake & Potomac Telephone Co. of West Virginia was granted authority for the construction of a two-wire circuit, 17 miles long, to be used for telegraph operation.

RADIO FACILITIES AND OPERATORS UNDER JURISDICTION OF TELEGRAPH DIVISION

FIXED SERVICES

Number of point-to-point radio stations licensed for fixed service.—On June 30, 1937, there were 439 point-to-point radiotelegraph stations licensed for fixed public service (an increase of 19 during the past year), 75 licensed for fixed public press service, and 7 licensed for agriculture service in the United States and its Territories (except Alaska) and possessions, subject to the jurisdiction of the Commission. Although the majority of these stations are licensed for, and operate primarily in, the international and overseas service, the figures include 129 stations that conduct domestic communications. Of this number, 50 operate exclusively in the domestic service, on the condition [19] that the use of frequencies above 6,000 kilocycles for domestic service shall not interfere with international service. With the exception of those licensed for agriculture service, each licensee may transmit only public correspondence pursuant to tariffs filed with the Commission and the necessary service messages incidental to the expeditious movement of this traffic. Addressed-program material to overseas points and press service to two or more fixed points and to ships at sea are among the classes of traffic handled as public correspondence in conformity with established tariffs.

Names of countries to which direct communication is available.—Stations are licensed for direct communication with many foreign countries and United States possessions, as shown by the following tabulation:

Points of communication authorized by licenses	Licensees									
	Globe Wireless, Ltd.	Hearst Radio, Inc.	Mackay Radio & Telegraph Co.	Press Wireless Inc.	Government of Puerto Rico	R. C. A. Communications, Inc.	South Puerto Rico Sugar Co.	Southern Radio Co.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation
Argentina			X	X		X				
Australia						X				
Austria			X	X		X				
Bahama Islands									X	
Belgium				X		X				
Bolivia								X		
Brazil			X	X		X				
British Honduras									X	
Canada				X		X				
Chile			X	X		X				
China	X		X	X		X				
Colombia			X			X			X	
Costa Rica						X			X	
Cuba		X	X	X		X			X	
Curacao, Dutch West Indies					X	X	X			
Czechoslovakia			X			X				
Denmark			X			X				

[19] Pursuant to art. 7, par. 19, of the General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932.

Points of communication authorized by licenses	Licensees									
	Globe Wireless, Ltd.	Hearst Radio, Inc.	Mackay Radio & Telegraph Co.	Press Wireless, Inc.	Government of Puerto Rico	R. C. A. Communications, Inc.	South Puerto Rico Sugar Co.	Southern Radio Co.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation
Dominican Republic						X	X			
El Salvador			X							
England				X		X				
Fiji Islands						X				
France			X	X		X				
French Indo-China						X				
Germany			X	X		X				
Guadaloupe, French West Indies							X			
Guam	X									
Guatemala						X			X	
Haiti			X			X	X			
Hawaii	X		X	X		X				
Holland				X		X				
Honduras									X	
Hungary			X							
Italy				X		X				
Japan			X	X		X				
Java				X		X				
Liberia						X				X
Manchuria				X		X				
Mexico		X		X		X			X	
Nicaragua						X			X	
Norway						X				
Panama						X			X	
Persia						X				
Peru			X							
Philippines	X		X	X		X				
Poland						X				
Portugal						X				
Puerto Rico						X	X		X	
Siam						X				
Spain			X	X		X				
Surinam						X	X			
Sweden						X				
Switzerland						X				
Syria						X				
Tahiti						X				
Turkey						X				
Union of Soviet Socialist Republics				X		X				
Vatican City			X			X				
Venezuela						X	X			

With the exception of Australia, Persia, Siam, Fiji Islands, and Tahiti, direct radiotelegraph service between the United States and each of the countries and possessions listed is available through the facilities of one or more of these communication companies. Communication with Australia is available via stations at Montreal, Canada; with Tahiti and the Fiji Islands via Hawaii; and with Siam via the Philippines. Direct service between the United States and Persia has not been inaugurated.

Growth of multiple-address service.—During the period from July 1, 1936, to June 30, 1937, multiple-address message service in accordance with the provisions of rule 241 (a), which was adopted as a result of the hearing discussed on page 76, has been established by Press Wireless, Inc., to the following points: La Paz (Bolivia), Recife and Rio de Janeiro (Brazil), Santiago (Chile), Barranquilla and Bogota (Colombia), San Jose (Costa Rica), Habana (Cuba), Guayaquil (Ecuador), Panama City (Panama), Lima (Peru), San Juan (Puerto Rico), Johannesburg (Union of South Africa), and Caracas (Venezuela). The station licenses for Hearst Radio, Inc., which also

operates stations in the fixed public-press service, were modified to bring them into conformity with the provisions of this rule, but no notification of the establishment of service has been received.

Applications of particular interest upon which formal hearings were held are discussed in the following paragraphs.

Mackay application to add Oslo, Norway, as point of communication.—A rehearing limited to oral argument was had before the Commission, and the decision of the Telegraph Division entered during the previous year, denying the applications of Mackay Radio & Telegraph Co. to add Oslo, Norway, as a point of communication, was affirmed. The opinion of the Telegraph Division was adopted as the opinion of the Commission en banc. The Commission found that radio and cable facilities between the United States and Norway were adequate, competition was keen, and there was no complaint of the service rendered; that the proposed new circuit, while increasing the revenues of applicant, would decrease the revenues of all other established competing carriers and would decrease the total revenues of the American-owned companies; that the increase in applicant's revenue was not shown to be necessary for the continued operation of applicant or of its associated companies comprising the International System; that the proposed circuit would result in the practical withdrawal of an associated cable company from competition; and that public interest, convenience, and necessity would not be served by the granting of the application. This applicant appealed from the Commission's decision to the United States Court of Appeals for the District of Columbia, which appeal was pending at the end of the fiscal year.

Applications of R. C. A. C., Mackay Radio, Press Wireless, and Hearst Radio for additional frequencies.—Hearings were held before an examiner upon the applications of R. C. A. Communications, Inc., Mackay Radio & Telegraph Co., Press Wireless, Inc., and Hearst Radio, Inc., for additional frequencies for use in public point-to-point radiotelegraph service. The primary consideration involved was whether the additional frequencies were needed in order to maintain an adequate radio service to the points of communication already authorized to the applicant companies. The examiner's reports were published, but the matters have not proceeded to the point of final decision by the Division at the close of the fiscal year.

Applications of Mackay to add Rome (Italy) and Warsaw (Poland) as primary points of communication.—Near the close of the year hearings were designated before an examiner upon applications to modify certain licenses of the Mackay Radio & Telegraph Co. so as to add Rome (Italy) and Warsaw (Poland) as primary points of radiotelegraph communication for the extension of its existing international service. The protracted hearings necessary in these cases will extend into the fiscal year 1938.

MARINE RADIO SERVICE

Importance and scope of marine radio service.—The only telegraphic communication available between ship and shore is that offered by the various classes of station in the maritime service licensed by the Division. Ship radiotelegraph stations are used for communication with other ships and with coastal radiotelegraph

having access to a public telegraph office to correspond by telegram stations. By means of these stations it is possible for any one on land with any one on board a vessel carrying a licensed ship radiotelegraph station. In addition to the handling of ordinary public communications, the maritime radiotelegraph service provides daily press bulletins, weather reports, and hydrographic reports for the benefit of the passengers and operators of ships at sea. In addition, medical advice may be obtained from surgeons of the Public Health Service and others with respect to the treatment of persons injured or becoming ill at sea. In cases of distress, the safety of a vessel and the lives of its passengers may depend in a major degree upon the efficient functioning of the maritime radiotelegraph service.

Ratification of International Convention for the Safety of Life at Sea, London, 1929.—The International Convention for the Safety of Life at Sea, London, 1929, was ratified by the United States and became effective November 7, 1936. From this effective date to the end of the fiscal year, seven ships previously having no means of radio communication were equipped with radio transmitting and receiving apparatus including emergency transmitters and power supplies. In addition, there were installed on other vessels subject to the Safety Convention the following-named apparatus:

264 emergency tranmitters,
333 emergency power supplies,
117 emergency receivers, and
6 direction-finders on passenger vessels.

Three motor-propelled lifeboats on passenger vessels were equipped with transmitters and receivers.

Approval of automatic alarms.—During the year the final decision of the Division was entered approving the two types of alarm submitted subject to certain conditions and with requirements for the modifications of the apparatus to increase the efficiency thereof.

Radio direction-finders.—Among the responsibilities placed upon the Commission in Public Law No. 97, 75th Congress, and exercised by the Telegraph Division, is the approval of radio direction-finders or gonimeters for use on board certain ocean-going vessels. Apparatus of this kind has been manufactured and has been installed on ships of United States registry for many years. No type approval has yet been given for direction-finder apparatus. Installations have been inspected in place, and, if found to be in proper operating condition and sufficiently accurate, have been tentatively approved. In some cases, repair or recalibration was required before approval was given.

No major sea disasters during fiscal year.—The part radio plays in marine operation is too well known to need amplification. Fortunately there have been no major sea disasters in the past fiscal year, although there have been many cases of distress in which radio has again, as in the past, played its important part.

Changes in rules and regulations.—During the fiscal year several changes in the existing rules and regulations covering the Maritime Service were made, due to the ratification by the United States of the Safety Convention, and made necessary by the terms of Public Law No. 97, approved May 20, 1937. These rules, known as the Ship Radiotelegraph Safety Rules, May 21, 1937, were placed in effect

as required by Public Law No. 97 immediately upon the enactment of the law, which became effective on the date of approval. They were formulated pursuant to the duties imposed upon the Commission under the new law to make substantive rules and regulations to carry out the purpose of the Congress, to make detailed requirements with regard to the minimum-performance standards of equipment, to provide the conditions under which various forms of application may be considered, and in general to provide for the administration of the act and for the carrying into effect of the radio provisions of the Safety Convention and other international agreements affecting ship radio to which the United States is a party.

With the development of apparatus, changes in economic conditions, and experience in enforcement, modifications may be expected to the end that the best radio service may be available in the interest of safety of life at sea and for the conduct of public message traffic with a minimum of regulation and expense.

Disposition of complaints in Marine Service.—Upon complaint by members of the public, or upon the Commission's own motion, usually based on reports received from its field inspectors, a large number of informal investigations were conducted during the year, which led (through correspondence, conference, or subsequent formal proceedings) to elimination of interference, to correction of improper operation, to compliance with the rules regarding the keeping of records, and in general to compliance by licensees with their legal obligations. The majority of these violations occurred in the operation of ship radiotelegraph stations. In view of this method of rectification of discrepancies, in very few instances was it necessary to take serious disciplinary action. In a few cases, hearings were held with regard to the practices of licensees. In every case undesirable conditions were corrected without the need for further action. In several cases equipment was replaced at the insistence of the Commission without the necessity for formal procedure.

AVIATION RADIO SERVICE [20]

Without the aid of radio facilities authorized by the Commission, high-speed passenger and air-mail service would be impracticable. New aircraft are now in the process of construction which will be operated at such speeds and at such altitudes as will require the use of radio equipment with several times the power of that now in general use. These aircraft will also increase the power required to be installed at the associated aeronautical stations located along the airways. The extent of the communications system now licensed by the Commission is shown by the map, Commercial Aviation Communication System, contained in appendix G.

International aviation radio facilities.—The position of the United States with respect to international aviation is increasing in importance with the establishment of regular air service to Hong-Kong and Bermuda, as well as the initiation of survey flights across the North Atlantic to London. Many difficulties were encountered in providing the facilities necessary for adequate communication along these new routes, and although those now pro-

[20] See Appendix F.

vided are not entirely adequate, they are affording safe operation. This measure of efficiency could not have been achieved without the cooperation of foreign administrations.

Responsibility for the installation of radio equipment.—Responsibility for the installation of aids to air navigation along the airways is vested in the Secretary of Commerce. However, radio aids to aircraft in the vicinity of airports must be provided by private operating agencies. The Commission regularly licenses stations for airport control, and, under authorization of the Commission, great strides have been made for providing facilities for the blind landing of aircraft. This work has progressed to such an extent that there is a possibility that regular installations may be made within the next fiscal year. Such apparatus would eliminate conditions which in the past have been contributory causes of air-line disasters. As in the marine radio service, radio in aviation has daily played its part. Although there have been serious disasters during the past fiscal year, in no case was there any indication that failure of the communications system licensed by the Commission was in any way contributory to the conditions resulting in the disaster.

Only one major change has been made in the rules and regulations governing the aviation service. That was to permit an increase in the power which may be authorized at terminal airports. Other changes have merely involved additions of frequencies and other similar modifications of the facilities available to meet the needs attending the growth of this service.

POLICE SERVICE[21]

Purposes for which authorizations are made.—The Commission authorizes the use of radio by police departments for the following purposes:

By municipalities for one-way communication to mobile units and remote police stations;

By municipalities for two-way communication with mobile units;

By States in the general dispatching of State police units;

By States and municipalities for the radiotelegraphic exchange of police information;

By harbor police in connection with the dispatching of harbor police boats and the general policing of shipping; and

By States for emergency radiotelegraphic use in the event of interruption of the private-wire teletypewriter network.

Growth of this service.—The use of radio by police departments is perhaps the fastest growing of any of the various uses to which radio has been put. This service has been of inestimable value to the public in the prevention of crime, the capture of criminals, and the recovery of stolen property. Radio was first used by police departments in 1916, when a private coastal station was established by the city of New York for communication with harbor police boats and for the general policing of shipping in New York Harbor. The city of Detroit was the first municipality to make use of radio for communication with police cars in the manner now well known. The State of Michigan in 1931 was the first State to provide for com-

[21] See Appendix F.

munication between State police headquarters and police officers on their assignments. Bayonne, N. J., in 1932, was granted the first authorization for two-way police communication.

New police services.—The newest of the services operated by the police departments is the police radiotelegraph system, authorized by the Commission in September 1936. Although this service is new and only a small number of stations have been established, it has already proven its worth and steps are now in progress which may lead to its extension on an international basis.

Rules and regulations changed to establish police radiotelegraph system.—The only major changes in the rules and regulations covering the police service were those necessary to establish the police radiotelegraph system. In connection with the establishment of this system, the relay of messages by radiotelephone stations will be prohibited after January 1, 1938. This prohibition has been found necessary because of the congestion of the radio-frequency channels. Since these channels are assigned primarily for voice communication with local mobile police units, subordination of such use to point-to-point communication cannot well be justified.

Disputes settled by cooperation.—Disputes between various stations in the Police Radio Service as they arose have been amicably settled through conferences by requiring cooperation in the use of police frequencies by stations located within close proximity to each other.

ALASKA STATIONS

Telegraph Division jurisdiction.—As mentioned on page 53, all classes of radio stations (other than broadcast) in Alaska, whether public or private, and whether telegraph or telephone, have been placed under the jurisdiction of the Telegraph Division. The only means of communication between Alaska and the United States proper is through facilities operated by the Alaska Communications System (formerly designated as the Washington-Alaska Military Cable and Telegraph System), an organization under the jurisdiction of and operated by the Signal Corps, United States Army. In addition, the backbone of the communication system within Alaska is operated by this same organization. Aside from a private-wire system operated by the Alaska Railway for its own purpose, and communication between aeronautical point-to-point stations on aviation chains in Alaska, no private organization operates any long-distance communication system within Alaska. For the most part, the facilities authorized, while licensed as public facilities, are operated primarily for safety purposes and for reaching points where wire facilities are not available. In these cases, the public at the location of the licensed station usually comprises only the licensee and employees. This licensing policy was adopted by the Federal Radio Commission after consultation with the Signal Corps, and has been continued by this Commission.

Development of radio in Alaska.—During the past year there has been a great deal of development in the use of radio in Alaska, particularly with respect to its use in connection with aviation. As a result of this growth a need was felt for a revision of the Commission's rules and regulations. In this regard a series of conferences was held, participated in by those interested in this subject.

As a result of these conferences it was decided to send representatives to Alaska to confer with the Alaska Aeronautics and Communications Commission, established by the Alaska Legislature in May 1937, and with others interested in Alaska communications. This conference is to be held at Juneau beginning August 2, 1937.

AMATEUR SERVICE[22]

Value of amateur stations.—During the past year amateur stations were of inestimable value to the public in furnishing radio-communication facilities in emergencies. Noteworthy service was rendered during the Ohio River valley flood, when amateur stations aided the American Red Cross and other organizations in providing radio-communication between stricken areas and outside aid. In numerous cases amateur stations were located in the midst of the affected areas and served as the sole means of communication with rescue organizations.

In recognition of the assistance that many amateurs were giving in flood relief, the Commission ordered amateur stations not engaged in handling emergency and relief communications to discontinue operation on amateur frequencies below 4000 kilocycles during the flood-emergency period in order to enable those amateur stations engaged in active relief work to expedite communications with a minimum of interference.

Activities to test the skill of amateurs.—On Navy Day, October 27, 1936, many amateur operators were successful in copying a message addressed to them from the Secretary of the Navy, transmitted from the naval radio stations NAA (Arlington, Va.) and NPC (San Francisco, Calif.).

A message from the Chief Signal Officer, United States Army, was transmitted to members of the Army Amateur Radio System on November 11, 1936.

On January 20, 1937, many amateurs took part in a Governor-to-President Relay when amateurs in Washington delivered to President Roosevelt messages that had been transmitted by amateur stations from the Governors of the several States.

These yearly events stimulate interest, encourage accuracy in receiving, and enable amateurs to test their skill and proficiency in the International Morse Code.

Study made of rules and regulations.—No major changes have been made in the rules governing amateur stations and operators during the year; however, a study has been undertaken with a view of revising some of the rules to cope with the changing aspects of this service, from the standpoint of technical progress and administration.

Request by amateurs for reallocation of frequencies.—A request submitted by an organization representing a large group of amateurs for a reallocation of frequencies for radiotelephony in the amateur 3500-to-4000-kilocycle band was designated for hearing to determine whether the granting of the request would meet the statutory requirement of public interest, convenience, and necessity. The request was later withdrawn by this organization and the hearing was accordingly canceled.

[22] See appendixes F and H.

At the close of the fiscal year pending before the Commission a request from this same organization that the Commission amend a number of the amateur-service rules. This request includes a proposal to reallocate frequencies for radiotelephony in the 28000-to-30000-kilocycle band and to require additional qualifications for operators desiring to use radiotelephony on frequencies below 56000 kilocycles, and a plan for emergency and relief communication during floods, hurricanes, and similar disasters that would require the allocation of specific frequency subbands within the present amateur frequency assignments.

No action has been taken upon these requests; however, the Commission is studying these proposals in connection with other changes that are being considered with respect to the amateur service.

Complaints and violations, amateur service.—With nearly 47,000 amateur operators licensed by the Commission it is obvious that a large number of alleged violations of the Commission's rules and regulations would be reported. During the past fiscal year three orders for revocation of amateur-station licenses and four orders for suspension of amateur-operator licenses were issued. A considerable number of other investigations resulted in findings disclosing no violations of the rules and regulations or violations of such character as not to warrant formal proceedings. In one case, as a result of a formal complaint, a hearing was held with respect to the operation of an amateur station.

OTHER SERVICES [22]

Special emergency stations.—Special emergency stations, while authorized originally for use by public utilities such as electric-power systems in the event of wire failure, are now in general use for emergency communication of all kinds. A number of organizations such as American Legion posts and amateur radio societies have constructed trucks elaborately equipped with supplies, first-aid medical equipment, and tentage, together with a complete self-contained special emergency station. Stations of this class rendered excellent service during the recent flood in the Ohio River Valley.

Forest protection.—This class of station has been authorized for use also by organizations interested in the protection of forests.

Geophysical stations.—Geophysical stations [23] are used by oil companies and others primarily in connection with the determination of the character of the underground strata of the earth in order that the location of possible oil deposits may be ascertained. One case involving stations of this class has been designated for hearing to investigate the method of operation as conducted by the applicant.

Marine fire stations.—Marine fire stations [23] were authorized for the purpose of permitting communication between fire headquarters and fireboats in order that closer coordination of activities might be achieved with consequent better protection of the water front. Only one frequency is assigned for this service on a shared basis.

Motion-picture stations.—Motion-picture stations [23] were provided for by the Federal Radio Commission, after hearing, for use in the motion-picture industry in connection with the production of major

[22] See appendix F.

motion-pictures. These stations are not to be used to replace wire lines, but may be authorized for operation when pictures are to be taken at sea, in the desert, or under circumstances where the operation of large groups of personnel must be coordinated or aircraft directed. Considerable use has been made of these facilities, and the success of many major motion-pictures may be attributed in part to the existence of this class of station.

Howton burglar alarm.—A hearing was held before the Telegraph Division upon the application of the Howton Radio Alarm Co. for the use of radio frequencies in connection with the operation of an automatic burglar-alarm system. The issues included the question whether an adequate burglar-alarm service was available through the use of communication facilities other than radio, the question whether interference would be caused by the use of radio for burglar-alarm purposes, and also the question of competition with existing wire burglar-alarm systems. As a part of the proceedings in the case, a special temporary authorization providing for experimentation with the Howton system was issued, with the expectation that further proceedings in the case would follow, based on the results of the experiments and the data thereby obtained.

RADIO OPERATORS [25]

In the regulation of radio operators under the provisions of section 303 of the act the Commission has continued in force without substantial change during the year its rules and regulations governing professional radio operators.

Examinations now conducted in Territories and possessions.—Through the procedure authorized by section 329 of the act the Commission extended its activities with respect to examining operators at remote locations in the Territories and possessions of the United States through the cooperation of the Army, the Navy, and the Coast Guard. In Alaska, examinations are supervised by the Army and the Coast Guard, while the Navy performs this service for the Commission in Puerto Rico, Canal Zone, Guam, and other remote points beyond the reach of the Commission's field force. This arrangement has been adopted in order that licensed operators may be made available for the operation of radio stations which have been licensed by the Commission for use in many isolated places.

Effect of Public Law No. 26 (75th Cong.).—During the year the Congress amended section 318 of the act, heretofore discussed more fully on page 54. One of the purposes of this amendment was to authorize the Commission to determine whether licensed operators are required for the operation of certain classes of radio stations. Thus far, only the experimental radio station licensed to Harvard University has been authorized to operate without licensed operators in attendance at all times. This station, which is engaged in ionosphere-measurement research, operates automatically, and it has been determined that to require licensed operators on duty at all times would be impracticable as well as unnecessary.

Effect of Public Law No. 97 (75th Cong.).—Legislation has also been enacted having for its purpose the promotion of safety of life and property at sea (Public Law No. 97, 75th Cong.), heretofore discussed

[25] See appendix J.

on page 54. A number of provisions of this new law pertain to radio operators. For example, additional grounds for which operator licenses may be suspended have been established, and provision has been made for taking appeals in operator cases to the United States Court of Appeals for the District of Columbia.

Rules and regulations.—In view of these developments, there has been undertaken a revision of the rules and regulations governing professional operators with a view to raising the standards of operators, simplifying licensing procedure, and facilitating the handling of radio-operator examinations. This study was still in progress at the close of the fiscal year.

Violations and complaints—radio operators.—With approximately 30,000 professional operators licensed in the various grades it is obvious that a number of alleged violations would be reported. During the past fiscal year orders were issued barring eight persons from examination for operator privileges.

COMPLAINTS AND INVESTIGATIONS

The regulatory activities of the Telegraph Division are, in a large part, reflected by the formal and informal hearings conducted both upon complaints and upon the Commission's own motion. There follows a summary of the more important complaints and investigations and the decisions entered during the year.

Complaint of Aeronautical Radio, Inc., v. A. T. & T. Co.—During the previous fiscal year a complaint was filed with the Division by Aeronautical Radio, Inc., asking that the Commission require the American Telephone & Telegraph Co. to furnish private-line telegraph service to it under its existing tariffs, or to establish at reduced rates a separate classification for wire service in connection with aircraft operation. A decision was rendered holding that the complainant was entitled to private-line teletypewriter service under existing tariffs of the defendant, and an order was entered dismissing the complaint upon the ground that a reasonable request for service had not been made as required by section 201 (a) of the act, without prejudice to complainant's right to institute further proceedings if service should be refused after reasonable request. The decision further held that complainant was not entitled to a special classification.

Complaint against Globe Wireless, Ltd.; investigation of "LTR."—Hearings were held upon the joint complaint of the several radio and cable companies operating telegraph systems in the Pacific against Globe Wireless, Ltd., alleging that the classification of service known as Radiomail offered by the latter was an unlawful classification under the provisions of sections 201–205 of the act. There was designated for hearing at the same time an investigation based on the protest of Globe Wireless, Ltd., against tariffs filed by the competing carriers offering a new "LTR" service at greatly reduced rates which, it was alleged, produced unfair competition to the Globe Wireless service. The filing carriers failed to offer evidence in justification of the "LTR" service and withdrew the proposed service from the United States to the islands of the Pacific. To an important degree these issues affect the service to the public and the rates for the service between the United States and various points in the Pacific (including points in Hawaii, Midway, Guam, and the Philippines) and indirectly other transpacific communication service. Protracted hearings were held in the *Radiomail case*, and the matter was pending at the close of the fiscal year.

Complaint of Lobo & Co. v. A. T. & T. Co.—A formal complaint was filed by Lobo & Co. against the American Telephone & Telegraph Co., alleging that the charges made in connection with private-line telegraph communication service from New York to Habana were unjustly or unreasonably discriminatory. This complaint was set for hearing, and remained pending on the hearing calendar at the end of the year.

Telegraph Division Order No. 12.—During the year further progress was made in the carrying out of the Commission's investigation

instituted pursuant to Telegraph Division Order No. 12 with regard to the justness and reasonableness of the message classifications and of the ratio between the charges for the various classifications and with regard to the rules, regulations, and practices of the carriers concerning telegraph service. A number of adjustments were made through correspondence and conference, resulting in the removal of certain discriminatory tariff provisions and the elimination of certain unlawful classifications and practices. (See "Rates and tariffs", p. 55.) The record of the hearing held pursuant to Telegraph Division Order No. 12 was closed insofar as it related to the justness and reasonableness of the ratio between the charges for international ordinary and urgent messages (except press urgents), the justness and reasonableness of the carrier's practice of imposing artificial delay upon the handling, transmission, and delivery of ordinary messages, and the existence of discriminations, prejudices, or disadvantages resulting from such ratio and from such practice.

A report was entered with respect to the Western Union Telegraph Co. finding the practice of imposing artificial delay on ordinary messages and the prescribed ratio between the charges for ordinary messages and urgent messages (except press urgents) to be unjust and unreasonable, and unreasonably discriminatory and prejudicial. A cease and desist order was issued, on June 14, 1937, against this company, pursuant to the report, and it was ordered to establish, within 180 days, rates for urgent messages which will bear a just and reasonable ratio to the rates for ordinary messages and prevent the unlawful discriminations, prejudices, and disadvantages found to exist.

Reports and orders have not yet been made with respect to the other carriers involved, insofar as this practice and this ratio are concerned. The report in the Western Union case stated, however, that since the facts and evidence upon these questions may vary as to the respective carriers, separate reports and orders applicable to each of them may subsequently issue as may be found necessary or proper.

Other matters pending Telegraph Division Order No. 12.—Certain matters still under investigation pursuant to Telegraph Division Order No. 12 remained open at the close of the year; and the record of the proceedings as a whole has not yet been closed pending final adjustments of rate ratios and telegraph practices in both domestic and international fields.

Multiple-address press service authorized by adoption of rule 241 (a).—Early in the fiscal year an informal hearing was held before an individual Commissioner upon the request of Press Wireless, Inc., to be permitted to engage in multiple-address press communication to unnamed receiving points in various parts of the world. This hearing, in which the various carriers engaged in handling press traffic participated, resulted in the adoption of a rule permitting the carrying on of a multiple-address service on a secondary basis to any point where a market might be found for the news service of the customers of the carrier. The addition of new receiving points is subject to the condition that prompt notification be made to the Commission of the points to which transmissions are made and specifically subject to the condition that the Commission may

require the suspension of transmission to any given point upon finding that the national or public interest has been or is being adversely affected.

Auto-alarm receivers.—A hearing was held before the Telegraph Division, in which manufacturers of automatic radio-alarm apparatus, numerous representatives of the shipping industry, and representatives of the radio operators' associations participated. This hearing was held for the purpose of considering the type approval of automatic devices for the reception of distress messages, as contemplated by the Safety Convention and the General Radio Regulations Annexed to the International Telecommunication Convention of Madrid, 1932. The principal purpose of the alarm is to make possible the reception of distress messages while operators are off watch; however, an operator is required to stand at least 8 hours' watch on vessels so equipped. The hearing resulted in a final decision by the Division approving the two types of alarm submitted, subject to certain conditions, and with requirements for the modification of the apparatus to increase the efficiency thereof.

Complaint of Ransom v. Western Union Telegraph Co. et al.—A formal complaint was filed by Albert W. Ransom, a user of cable service, for the purpose of contesting the reasonableness of the charge made by the carriers in the international telegraph field for the registration of cable code addresses with a central registration bureau. Hearings have been held in the matter before an examiner, but the case has not yet proceeded to final decision.

FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Basis and purpose of reports.—In accordance with authority contained in section 219 of the act, telegraph carriers are required to submit annual and monthly reports to the Commission, under oath, on forms prescribed by the Division. These reports are an important means of obtaining financial and other statistical data relating to individual carriers and to the telegraph industry as a whole. The factual data obtained in this manner are considered necessary for the guidance of the Commission and are utilized to a very large extent by the general public.

Content of reports.—Both the monthly and the annual report forms are similar to those prescribed in previous years, in order to attain comparability of statistical data, but have been expanded or modified from time to time as occasion has arisen.

During the fiscal year, the Division expanded somewhat the annual report form on which telegraph carriers were required to make returns for the calendar year 1936. Among other changes, the carriers were required to disclose the beneficial owners of their capital stock so far as known, additional information was called for with respect to pensions and other benefits to employees and with respect to taxes, a schedule relating to telegraph franks and franked messages was provided for in the report form, and an analysis of advertising expense was required.

Number of carriers filing reports.—During the fiscal year, annual reports were received from 35 telegraph carriers for the calendar year 1936. Of this number, 20 were radiotelegraph carriers and 15 were telegraph and cable carriers engaged in wire communication.

Examination and correction of reports.—All accounting schedules and other data contained in the reports filed by telegraph carriers were carefully examined and corrections were made wherever necessary, after correspondence with the carriers concerned.

Holding-company reports.—Annual reports are also required from holding companies controlling communication carriers. Two forms of report are prescribed, one designed for holding companies owning large interests in communication carriers and the other, a less comprehensive form, for holding companies owning only minor interests in communication carriers. During the fiscal year, 24 holding companies owning interests in telegraph companies filed reports with the Commission for the calendar year 1936.

Public reference room.—The foregoing reports are made available to the public through the medium of a public reference room, as mentioned on page 24 of this report.

STATISTICAL COMPILATIONS

Publications.—The following publications containing financial and statistical information relating to telegraph, cable, and radiotelegraph carriers were issued during the fiscal year:

Selected financial and operating data from the annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1935.
Operating data from monthly reports of telegraph carriers.
Salary report of telephone and telegraph carriers, 1935.

These publications are called for by many persons and institutions throughout the country.

Inquiries answered.—Many special compilations of statistical data relative to telegraph carriers were furnished in response to letters of inquiry from other governmental agencies, from Members of Congress, and from various institutions and persons throughout the country.

Financial and other statistical data contained in appendix.—There are contained in the appendix to this report tables and charts showing financial and other statistical data relative to communciation carriers and one table showing intercorporate relations between communication carriers and holding companies. As shown in the appendix, the tables and charts, with some exceptions, are separated into (1) those relating exclusively to telephone carriers, (2) those relating exclusively to telegraph carriers, and (3) those relating to both telephone and telegraph carriers. Appropriate explanation concerning these statistical tables and charts is contained in the appendix.

TECHNICAL DEVELOPMENTS IN THE TELEGRAPH ART

WIRE TELEGRAPHY

The following pages describe briefly the major technical developments in wire telegraphy and radiotelegraphy.

Several additional varioplex circuits have been installed during the past year.

Description of the varioplex.—The varioplex is an automatic system which permits the division of a multiplex telegraph circuit into as many two-way communication channels as are desired. Only those channels that are actually in use consume line-time on the circuit. The individual channels are automatically connected to the circuit when transmission starts and automatically disconnected when transmission stops. When a number of channels are working, the capacity of the circuit in words per minute is divided equally between them. Since the above-mentioned division of circuit capacity takes place each time a channel is started or stopped, the speed of all operating channels will be subject to an irregular variation. Varioplex channels may be terminated in the main office at standard multiplex operating positions or may be extended through suitable character-storing devices to teletype positions in the main office, distant branch offices, or offices of private customers. Varioplex channels may be "repeatered" through to other varioplex systems or to multiplex channels on other circuits.

Telemeter service.—The development of the varioplex system enabled the telegraph company to offer what is known as telemeter service. In this service, a varioplex channel is leased to a customer for its sole use or leased to two customers at different points for their joint use. The charges for such circuits are based on the total number of words transmitted.

Facsimile.—Additional facsimile circuits have been made available to the public.

Miscellaneous technical developments.—Although there have been few outstanding developments in wire telegraphy during the past 5 years, the telegraph carriers are continually increasing their efficiency of operation by improvements in equipment and operating procedure. Some of these improvements are listed below:

Relay contacts that require only a fraction of the maintenance required by those previously used.

Improved facsimile equipment.

More efficient carrier-current telegraph systems, by means of which more telegraph channels can be obtained.

Improved synchronization systems.

Higher speed terminal equipment, such as printers, reperforators, and transmitters.

Improved central office equipment, such as switchboards and concentrators.

Relaying equipment for automatically connecting multiplex circuits that do not operate at the same signaling speed.

Extended channel equipment, by means of which any channel of a multiplex circuit may be extended to any desired branch office or private customer.

Portable carrier-current equipment, for increasing the number of available telegraph channels in an emergency.

More efficient rectifiers for converting alternating current to direct current for providing telegraph power.

Improved amplifiers for ocean cable operation.

More efficient printers for use on ocean cables.

Improvements in anti-induction networks to eliminate interference on telegraph wires from power lines and other sources.

RADIOTELEGRAPHY

Increasing demand for radio facilities.—With the rapid technical advances in all lines of activity, there is an ever-increasing demand for radio facilities, both for direct experimental observation of physical phenomena and as a necessary adjunct for the safety of life and property.

Notable technical advances.—Among the technical advances in the radio art have been the design and development of new apparatus for the study of the ionized regions of the upper atmosphere.

Nature of radio propagation.—The propagation of radio waves for long-distance communication is not only affected by their natural spreading in their spherical mode of propagation, but by repeated refractions or reflections between the ground and the ionized regions of the upper atmosphere, and by absorption during their passage through these regions. The height and the intensity of the ionization of the upper atmosphere have, therefore, a direct effect upon the propagation of radio waves.

Experimentation essential to radio regulation.—A comprehensive knowledge of the manner in which the ionization changes during the day, the seasons, from year to year, and over long periods such as sun-spot cycles, is an invaluable aid in the regulation of radio services to make possible an adjustment of the services to conform to the optimum conditions of each service. The Commission has, therefore, authorized experimental stations for the purpose of recording a continually changing state of ionization of the regions of the upper atmosphere.

Development of equipment useful in the location of tropical storms.—Licenses for experimental stations have been granted for the purpose of conducting research in the development of equipment to determine the location of tropical storms by the associated static. Such authority has been granted to the University of Florida and the University of Puerto Rico. The theory of operation of this equipment is based upon the determination of the direction of atmospherics emanating from storms. If the approximate position of the storm is known with reference to the observing station, it is possible to select radiation coming from that general direction. From similar observations made at other stations, it is hoped that the probable positions of the storms may be determined by the method of triangulation. In order for such a system to be effective,

it is essential that rapid intercommunication between the several stations be established for the purpose of insuring simultaneous observations.

Development of aids to aviation.—In the past year considerable experimentation has been made in connection with the development of aids to aviation. Foremost among these is the continued development of blind landing devices, as mentioned above, in connection with the aviation service. Although there are a number of types of systems under experimentation, these systems all provide for the following:

A transmitter to provide a path, generally called the "glide path," along which an aircraft may be guided to insure a proper descent through the overcast to the runway;

A transmitter to localize the runway that also provides a path along which an aircraft may be navigated with the assurance that upon touching the ground the aircraft will be on an established runway;

Two or more local transmitters to advise the pilot of his location and to signal changes in flying procedure; and

A transmitter to provide a communication channel between the aircraft and the airport in order that instructions may be given to the pilot.

The duties of these various transmitters may under certain circumstances be combined in single units. For instance, the "glide path" and runway-localizer path transmitters may be combined in a single unit. This equipment when perfected will permit aircraft to land at suitably equipped airports irrespective of visibility at the airport.

Other developments in the field of aviation authorized to be investigated by the Commission are the reaction-type altimeter and the airplane flight recorder, the former to determine the altitude of the aircraft and the latter its location relative to the airport.

Need for experimental data on use of ultra-high frequencies.—There is still a need for experimental data on the use of the ultra-high frequencies that will eventually be allocated to commercial service. Commercial companies are intensely interested in this work and are providing a large amount of technical data relative to the transmission characteristics of the frequencies used over their circuits. Coordination of these data on the actual use being made of the experimental frequencies will be extremely valuable from the standpoint of eventually making an equitable distribution of the frequencies to the various services and in obtaining the maximum use of the radio spectrum. The Commission has therefore authorized the use of the ultra-high frequencies on an experimental basis for such services as public press and point-to-point forestry service.

General research.—In addition to the typical projects mentioned above, research is continually being conducted by various organizations leading to the development of more efficient reliable equipment. As a result of the activities of the radio engineers of this country, the equipment developed and in use in the United States is unexcelled.

PART IV

THE COMMISSION

TELEPHONE DIVISION

MEMBERS OF THE TELEPHONE DIVISION

AS OF JUNE 30, 1937

PAUL A. WALKER, *Chairman*

THAD H. BROWN, *Vice Chairman*

ANNING S. PRALL

TELEPHONE DIVISION

The telephone industry, ranking as the third largest public utility in the United States, represents an investment in excess of $5,000,000,000, of which the greater amount is in operating facilities. The American public pays an annual telephone bill in excess of $1,000,000,000 for services rendered through 18,000,000 telephones and by more than 300,000 employees.

There are approximately 7,000 operating telephone companies in this country. The American Telephone & Telegraph Co., which with its associated companies is the largest private business organization in the world, operates 85 percent (15,000,000) of the telephones in service in the United States and handles nearly 98 percent of all interstate wire-telephone service.

The telephone systems operating in the United States have made available to this Nation the finest telephone service offered the citizens of any nation on the globe. Approximately one-half of the world's 36,000,000 telephones are in the United States. By means of land lines, cables, and radio circuits, any person having a connection with the Nation-wide wire facilities of this country may communicate with 70 foreign countries and with 95 percent of all the telephones in the world.

During the last year, floods of almost unprecedented severity occurred in sections of the United States. Telephone offices were flooded, telephone lines were broken, and service was disrupted. Even under such conditions, telephone service was maintained wherever possible and repairs were made and service renewed as soon as possible.

The maintenance of telephone service during flood periods constituted, as a rule, the principal means of communication by which radio stations in the flood area received information to be broadcast to the public. The broadcasting of warnings, location of marooned persons, etc., by various radio stations within the flooded area resulted in the saving of many lives.

The art of telephony is advancing. Many new inventions are making possible improvements in the service now available. A number of these developments are touched upon at page 108 of this report.

The Commission is pleased to report that during the fiscal year reductions in interstate and foreign rates were effected which will result in an estimated saving to the users of interstate and foreign telephone service in excess of $21,000,000 per annum. A discussion of these rate reductions may be found in this report, commencing on page 88.

Subjects covered by this report.—For the purpose of this report the material is presented under the following topics: Organization and Jurisdiction of the Telephone Division, Rates and Tariffs, Supervision of Accounts, Wire Facilities, Radio Facilities, Complaints and

Investigations, Financial and Statistical Data, and Technical Developments in the Telephone Art.

ORGANIZATION AND JURISDICTION OF THE TELEPHONE DIVISION

By virtue of General Order No. 1, adopted by the Commission on July 17, 1934, the Telephone Division of the Commission "has jurisdiction over all matters relating to, or connected with, interstate and foreign telephone communication (other than broadcasting) by wire, radio, or cable, including all forms of fixed and mobile radiotelephone service, except as otherwise herein specifically provided for."

The members of the Telephone Division meet each week and at such other times as may be necessary to consider and formally dispose of the various matters under the jurisdiction of the Division. Public hearings are also held from time to time.

Jurisdiction over telephone carriers.—As a preliminary step to the exercise of regulatory power over telephone carriers, it has been necessary for the Commission to determine what carriers are subject to its jurisdiction under the Communications Act of 1934, as amended. Under section 2 (b) (2) of the act, wire-telephone carriers are divided into two classes: (1) Carriers subject to all provisions of the act, and (2) connecting carriers subject only to the provisions of sections 201–205 of the act. Connecting carriers are not required to file tariffs, to make annual and other reports, or to respond to many of the orders of the Telephone Division.

During the year the Commission continued its work of classifying telephone companies. As of June 30, 1936, approximately 2,200 telephone companies had been informed of their classification. As of June 30, 1937, approximately 6,250 companies had been classified. In a number of instances, it was necessary to conduct hearings in order to determine the jurisdiction of the Commission over a particular carrier.

RATES AND TARIFFS

Basis and purpose of rate and tariff regulation.—Rate and tariff regulation is provided for principally by sections 201–205 of the act. Regulation, as authorized by the act, extends to all rates and charges of telephone carriers for interstate and foreign service, and to all classifications, regulations, and practices in connection therewith. The elimination or correction of rates, regulations, and practices that are unreasonable, unjustly discriminatory, or unduly prejudicial or preferential will be of benefit both to the public and to the telephone carriers.

Telephone-rate reductions effected during the fiscal year 1937, hereinafter discussed, are of far-reaching importance to the public. It is believed that a wider use of telephone service can be attained by proper rate adjustments and that the efficiency and growth of American telephone systems will be enhanced thereby.

RATE SCHEDULES

Filing of tariffs—rules and regulations relating thereto.—Telephone carriers are required to file tariff schedules with the Commission containing all charges in connection with interstate and foreign telephone service, and describing all classifications, regulations, and practices in connection therewith. This requirement is imposed by section 203 of the act. Tariff regulations were promulgated by the Commission under authority of this section.

The formulation and enforcement of appropriate regulations governing the filing of these numerous tariff schedules have resulted in the orderly publication and filing of telephone charges for interstate and foreign services and of the classifications, regulations, and practices relating thereto, in a manner convenient, uniform, and understandable to the public.

Number of tariffs filed.—A total of 15,997 tariff publications dealing with telephone rates and services were filed with the Commission during the fiscal year 1937. Of this number, 14,128 pertained exclusively to telephone rates and services and 1.869 pertained to both telephone and telegraph rates and services.

Of the total of 41.892 tariff schedules filed with the Commission from its organization to and including June 30, 1937, 31,004 pertained exclusively to telephone rates and services, 2,370 to both telephone and telegraph rates and services, and 8,518 exclusively to telegraph rates and services.

Examination and correction of tariffs.—Each telephone-rate schedule received during the fiscal year was carefully examined to determine whether it conformed to the requirements of the act and to the rules prescribed by the Commission relative to the filing of tariffs.

Particular attention was given to the elimination or modification of provisions that appeared to be unreasonable, unjustly discriminatory, or otherwise unlawful, or that were objectionable in form of publication or ambiguous as to possible interpretation and operation.

As a result either of correspondence with the carriers or of informal conferences held between representatives of the Commission and representatives of the carriers, many such discrepancies or irregularities in the tariffs were corrected.

Rejection of tariffs.—In four instances, telephone-rate schedules offered for filing with the Commission were rejected because of failure to give lawful notice to the Commission and the public of the effective date thereof.

Special applications.—During the fiscal year, 37 applications were received from telephone carriers for special permission to publish tariffs on less than 30 days' notice to the Commission and the public or for relief from other regulations governing the filing of tariffs. These applications were granted, inasmuch as they pertained generally to reductions in charges, establishment of new or extended services, or other modifications or changes clearly in the public interest.

Public reference room.—The many tariffs mentioned above are made conveniently available to the public through the medium of a public reference room, mentioned on page 124 of this report. Many persons availed themselves of the use of this room during the last fiscal year and numerous inquiries were answered regarding telephone rates and services. When requested, photostatic copies of tariff material were furnished to the public at cost.

Reports to the public.—During the fiscal year 1937, the public was informed of the filing of all new telephone-rate schedules through press releases describing briefly the date of the receipt of each tariff publication by the Commission, the date the new tariff was to become effective, and the general nature or effect of the new tariff publication.

RATE REDUCTIONS

The Telephone Division, during the fiscal year, directed its efforts particularly to securing rate reductions and other changes in tariff regulations appearing to be in the public interest. Many reductions in interstate and foreign rates were made effective which, it is believed, will tend to expand and increase the use of telephone services in this country to the benefit of both users and the carriers.

Savings to the public.—The estimated combined saving to the public during the fiscal year from certain of these reductions (hereinafter specifically described) will exceed $21,000,000 per annum. However, the saving resulting from many of the reductions has not been estimated and is not included in the figure mentioned above. The actual saving to the public appears to be substantially in excess of $21,000,000 per annum and may be still further increased as a result of the stimulation of telephone traffic incident to the lowering of charges.

The most important rate reduction during the fiscal year was the general revision of telephone rates for interstate service effective on January 15, 1937, which will result in a saving to the public estimated at $12,000,000 annually. Illustrations of the reductions in telephone rates effective on the above-mentioned date are shown in a table on page 91 of this report.

Reductions reflected in intrastate rates.—It is apparent, therefore, that telephone rate reductions accomplished during the fiscal year are of far-reaching importance to the public. Furthermore, the reductions in rates for interstate and foreign telephone service in some instances have influenced or been reflected in intrastate reductions. Thus the saving to the public will be greatly in excess of the $21,000,000 mentioned above.

Consideration is being given by the Telephone Division to the effect these rate reductions will have upon the revenues of telephone carriers and the extent to which traffic will be stimulated thereby.

List of rate reductions.—There follows a brief description of the interstate and foreign telephone-rate reductions that were made during the fiscal year 1937, arranged according to their effective dates:

1. Effective July 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for broadcast-program-transmission channels from Miami (Fla.) to San Jose (Costa Rica), Guatemala, Tegucigalpa (Honduras), Managua (Nicaragua), Panama, San Juan (P. R.), Barranquilla (Colombia), Bogota (Colombia), and Ciudad Trujillo (Dominican Republic); from New York (N. Y.) to Buenos Aires (Argentina), Rio de Janeiro (Brazil), London (England), Reykjevik (Iceland), and Lima (Peru); and from San Francisco (Calif.) to Honolulu (Hawaii) and Manila (P. I.).

2. Effective July 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for overseas-message toll telephone service from the United States to the principal European and Central American countries and to Honolulu (Hawaii), Manila (P. I.), Bogota (Colombia), and Ciudad Trujillo (Dominican Republic).

3. Effective July 1, 1936, the initial-period rates of the American Telephone & Telegraph Co. for message-toll telephone service to Cuba were reduced by $1.50.

4. Effective July 1, 1936, the rates of the Radio Corporation of Puerto Rico were reduced for broadcast-program-transmission service from San Juan (P. R.) to Miami (Fla.).

5. Effective August 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for message-toll telephone service to ships at sea, plying between 500 and 1,500 nautical miles from New York (N. Y.) or San Francisco (Calif.), from $18 to $9.

6. Effective August 10, 1936, the charges of the American Telephone & Telegraph Co., in connection with broadcast-program-transmission channels, were reduced from $4,000 per annum for the first, the first two, or the first three transmitting connections, to $1,000 per annum for each transmitting connection.

7. Effective August 21, 1936, the method used by the Public Utilities California Corporation, a telephone and telegraph carrier serving points in California, Oregon, and Nevada, in computing interstate-message toll telephone service rates was changed from a specific point-to-point basis to an air-line-mileage basis, and the initial period was extended from 1 minute to 3 minutes, resulting in a rate reduction in the territory where the carrier operates.

8. Effective September 1, 1936, the person-to-person overtime rates of the American Telephone & Telegraph Co. were reduced for all message-toll telephone service calls of 234 miles or less air-line distance, and both the initial-period and overtime rates were reduced for all calls of more than 234 miles air-line distance. Similarly the rates of the associated Bell System companies were reduced. The total estimated saving to the public is more than $7,350,000 per annum.

9. Effective September 20, 1936, the rates of the American Telephone & Telegraph Co. were reduced for broadcast-program-transmission channels to ships at sea plying between 500 and 1,500 nautical miles from shore.

10. Effective October 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for overseas-message toll telephone service from the United States to Bahama Islands, French Indo-China, Egypt, India, Netherland Indies, Palestine, Siam, Syria, Union of South Africa, and Venezuela, and special Sunday rates were established from the United States to the Bahama Islands and Venezuela.

11. Effective October 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for broadcast-program-transmission service from Miami

(Fla.) to Nassau (Bahamas) and Caracas (Venezuela), and from New York (N. Y.) to Cairo (Egypt), Bombay (India), and Capetown (South Africa).

12. Effective November 1, 1936, the method used by the American Telephone & Telegraph Co. in computing charges for broadcast-program-transmission channels, and certain other regulations applicable to this service, were changed as follows:

(1) The method of computing charges for interexchange channels was changed from a route or circuit basis to an air-line basis.

(2) In connection with schedule A channels, the receiving connection charge was reduced from $4,000 per anum to $175 a month.

(3) The higher-grade continuous service may be contracted for on a monthly basis instead of an annual basis.

(4) Amplifying equipment provided by the broadcaster at the studio may be used to interconnect channels.

(5) All classes of channel facilities furnished by the telephone carrier may be interconnected.

Similar changes were also made in the regulations applicable to the broadcast-program-transmission service of all the associated Bell System companies except the Bell Telephone Co. of Pennsylvania, the Diamond State Telephone Co., the New York Telephone Co., and the Northwestern Bell Telephone Co. It is estimated that $250,000 per annum will be saved by the customers of the long lines department of the American Telephone & Telegraph Co., and that customers of the Associated Bell System Companies will save $210,000 per annum on interexchange channels and $70,000 per annum on local channels, making a combined saving of approximately $530,000 per annum by the Bell System users.

13. Effective November 1, 1936, the rates of the American Telephone & Telegraph Co. were reduced for message-toll telephone service from San Francisco (Calif.) to Japan.

14. Effective November 6, 1936, certain message-toll telephone service rates of the Postal Telegraph-Cable Co. were reduced to the level of the reductions made by the Bell System companies on September 1, 1936.

15. Effective November 15, 1936, the rates of R. C. A. Communications, Inc., were reduced for broadcast-program-transmission service from New York (N. Y.) to Buenos Aires (Argentina), Rio de Janeiro (Brazil), Bogota (Colombia), Habana (Cuba), Berlin (Germany), Rome (Italy), Madrid (Spain), and Geneva (Switzerland), and from San Francisco (Calif.) to Batavia (Dutch East Indies) and Manila (P. I.).

16. Effective December 1, 1936, the rates of the Pacific Telephone & Telegraph Co. were reduced for interstate intracompany message-toll telephone service. The estimated saving to the public is $290,000 per annum.

17. Effective January 15, 1937, the rates of the American Telephone & Telegraph Co. were reduced for message toll telephone station-to-station and person-to-person service between points over 43 miles apart (air-line distance), for message toll telephone person-to-person night-and-Sunday service between points over 49 miles apart (air-line distance), and for message toll telephone station-to-station night-and-Sunday service between points over 97 miles apart (air-line distance). The estimated saving to the public is $12,000,000 per annum.

18. Effective May 1, 1937, the rates of the Postal Telegraph-Cable Co. were reduced between certain of its message toll telephone service points to the level of the reductions made by the American Telephone & Telegraph Co. on September 1, 1936.

19. Effective June 1, 1937, the interstate intracompany message-toll telephone service rates of the Southwestern Bell Telephone Co. were reduced to the level of the reductions established by the American Telephone & Telegraph Co. on January 15, 1937. The estimated saving to the public is $460,000 per annum.

In addition to the foregoing, there were some miscellaneous reductions such as special message-toll telephone service rates on Christmas and New Year's Day.

The general revision of telephone rates effective on January 15, 1937, hereinbefore mentioned, resulted in Nation-wide reductions for interstate service, covering both station-to-station and person-to-

person calls. Illustrations of the reductions in rates that became effective on this date are given below:

Examples of the reductions in rates of the American Telephone & Telegraph Co., effective Jan. 15, 1937, for the 3-minute initial period

From Washington, D. C., to—	Day station-to-station		Day person-to-person	
	Old rate	New rate	Old rate	New rate
Richmond, Va	$0.60	$0.55	$0.90	$0.75
Philadelphia Pa	.75	.60	1.05	.85
Norfolk, Va	.85	.70	1.20	1.00
New York, N. Y	1.05	.85	1.40	1.20
Boston, Mass	1.50	1.25	1.90	1.65
Chicago, Ill	2.10	1.85	2.75	2.45
Omaha, Nebr	3.25	2.90	4.00	3.75
Denver, Colo	4.75	4.25	6.25	5.75
Salt Lake City, Utah	5.75	5.00	7.50	6.75
San Francisco, Calif	7.25	6.25	9.50	8.50

The most important of the above-listed reductions of rates and charges for services to the public were made effective after formal or informal conferences between members of the Telephone Division (or members of its staff) and officials of carriers and their technical staffs. Such reductions were accomplished without the delays, expense, and controversies incident to formal rate proceedings, and were made effective by the filing of revised tariffs by the carriers.

NEW AND EXTENDED SERVICES

The establishment of new or extended telephone services is also of importance to the public. Among such developments during the past fiscal year was the establishment of direct telephone service between the United States and China.

List of new and extended services.—There follows a brief description of the new or extended telephone services established during the fiscal year, arranged in the order of their effective dates:

1. Effective August 1, 1936, the American Telephone & Telegraph Co. added the steamship *Caledonia* to the list of ships equipped for overseas-message toll telephone service, bringing the total number of ships so equipped to 21.

2. Effective August 20, 1936, the American Telephone & Telegraph Co. and the New York Telephone Co. established coastal telephone and harbor telephone services through a radiotelephone station at New York (N. Y).

3. Effective December 1, 1936, the Southern Bell Telephone & Telegraph Co. established coastal telephone and harbor telephone services through a radiotelephone station at Miami (Fla.).

4. Effective March 8, 1937, the New England Telephone & Telegraph Co. established coastal telephone service through a radiotelephone station at Boston (Mass.).

5. Effective March 30, 1937, the American Telephone & Telegraph Co. established direct message toll telephone and program-transmission services with Paris.

6. Effective April 1, 1937, the Ohio Bell Telephone Co. and the American Telephone & Telegraph Co. established message toll telephone service from and to points in the United States and foreign countries to and from vessels operating on the Great Lakes, through the radiotelephone station of the Lorain County Radio Corporation at Lorain (Ohio).

7. Effective April 14, 1937, the American Telephone & Telegraph Co. established program-transmission service between Miami (Fla.) and San Salvador (Salvador).

8. Effective June 12, 1937, the American Telephone & Telegraph Co. established message-toll telephone and program-transmission services with Shanghai (China).

SUPERVISION OF ACCOUNTS

Basis and purpose of accounting regulation.—The regulation of accounts is authorized by section 220 of the act and is necessary in the effective administration of various other sections of the act. Such control is considered fundamental and indispensable in effective rate regulation.

Revised system of accounts for the larger telephone carriers.—A new uniform system of accounts for the larger telephone carriers,[26] formulated and prescribed by the Telephone Division, became effective on January 1, 1937. With certain minor modifications, this is the issue of June 19, 1935, which originally had been ordered effective on January 1, 1936, but which was delayed through an injunction proceeding instituted by various telephone carriers seeking to set aside the new system of accounts.

Supreme Court decision.—On December 7, 1936, the Supreme Court of the United States affirmed the decree of the United States District Court for the Southern District of New York, which had denied, with minor exceptions, the relief sought by the carriers in the aforesaid injunction proceeding. (*American Telephone and Telegraph Company et al.* v. *U. S.* and *F. C. C.* 14 Fed. S. 121, 299 U. S. 232.)

The principal provisions of this system of accounts that were the basis of this suit were those that required the carrier to show on its books the original cost of the property of the utility at the time such property was first dedicated to public use. The National Association of Railroad and Utilities Commissioners, representing various regulatory commissions, intervened in support of the contested order.

Mr. Justice Cardozo, in the opinion of the Supreme Court, made the following observation:

> * * * To a great extent, the telephone business as conducted in the United States is that of a far-flung system of parent, subsidiary, and affiliated companies. The Bell System is represented in this case by 37 companies, the American Telephone & Telegraph Co. at their head. Seven other companies, intervening as a group, represent a second and smaller system. Purchases are frequently made by a member or members of a system from affiliates or subsidiaries, and with comparative infrequency from strangers. At times obscurity or confusion has been born of such relations. There is widespread belief that transfers between affiliates or subsidiaries complicate the task of rate-making for regulatory commissions and impede the search for truth. Buyer and seller in such circumstances may not be dealing at arm's length, and the price agreed upon between them may be a poor criterion of value. * * * Even if the property has been acquired by treaty with an independent utility or a member of a rival system, there is always a possibility that it is nuisance value only—and not market or intrinsic value for the uses of the business—that has dictated the price paid. Accordingly the work of the Commission may be facilitated by spreading on the face of the accounts a statement of the cost as of the time when the property to be valued was first acquired by a utility or dedicated to the public use. The same considerations show why the regulations do not direct that the inquiry as to original cost shall be carried even farther back,

[26] Prescribed for use by telephone carriers having average annual operating revenues in excess of $50,000.

so as to cover, for illustration, the cost to manufacturers who may have sold to the first utility. In the process of analysis, inquiry is halted at the point where it ceases to be fruitful.

New developments in accounting.—This new system of accounts constitutes a revision, extensive in scope, of the uniform system of accounts prescribed by the Interstate Commerce Commission, effective on January 1, 1933.

To effect the restatement of plant accounts on the basis of original cost, carriers are required to submit adjusting journal entries to the Commission for approval. Investigations will be made, where necessary, to enforce the regulations of the new accounting system.

It is of paramount concern to the public that telephone-plant accounts be stated in such a manner as to reflect the history of the plant properties involved and to protect the public from inflation from one cause or another. It is essential that the accounts reflect the facts necessary to the determination of a proper rate base. It is felt that the new accounting system is an important step forward in accomplishing these objectives.

Uniform system of accounts for small telephone carriers.—A uniform system of accounts for small telephone carriers with average annual operating revenues not exceeding $50,000 was in the course of preparation at the close of the year, based largely on the system discussed above for larger telephone carriers, but condensed for practical use by the smaller carriers. Before final adoption of this new system, conferences will be held with representatives of State regulatory bodies and other interested parties.

Uniform work-order system and perpetual record of property changes.—A uniform work-order system and regulations providing for a perpetual record of property changes for telephone carriers were also in course of preparation at the close of the fiscal year. These auxiliary accounting regulations will facilitate the audit and verification of plant accounts by Commission representatives. These regulations will be discussed with representatives of State regulatory bodies and other interested parties, as in the case of the accounting system for smaller carriers mentioned above.

DEPRECIATION STUDIES

Studies of depreciation are being made with a view to assembling reliable data on the basis of which rates of depreciation can be prescribed by the Commission pursuant to section 220 of the act and on the basis of which proper regulations for depreciation accounting can be prescribed.

In the past the determination of the amounts to be charged annually as expense of depreciation has been left largely to the discretion of the carriers, although depreciation is one of the largest items of operating expense and has an important effect upon the book valuation of telephone plant. For the calendar year 1936, the depreciation expense of the telephone carriers reporting to the Commission amounted to 23.62 percent of the total operating expense.

OTHER ACCOUNTING ACTIVITIES

Application and interpretation of accounting regulations.—Numerous inquiries were received from telephone carriers and represent-

atives of State regulatory bodies with respect to the application and interpretation of accounting regulations. The volume of such inquiries has been greatly increased on account of the new accounting system for telephone carriers.

Approval of journal entries.—Journal entries are being presented to the Commission for approval, relative to transfers of account balances incident to the installation of the new accounting system and with respect to the accounting for specific transactions. Various other inquiries or notifications are being received under the new accounting system, such as those relating to subdivisions of accounts and to clearing, temporary, and experimental accounts.

Accounting circulars.—An accounting circular was formulated and published by the Telephone Division containing regulations relative to accounting for social security taxes by telephone carriers.

Relief and pensions.—An order was adopted by the Telephone Division, effective June 16, 1937, containing additional regulations with respect to accounting for relief and pensions. This subject is receiving special attention of the Telephone Division.

Destruction of records.—During the fiscal year, attention was given to the enforcement of regulations relative to the destruction of records, and consideration is being given to the revision of such regulations.

Bankruptcies and receiverships.—Consideration was also given to special accounting regulations governing bankruptcies and receiverships of telephone carriers. Such proposed regulations will receive further consideration during the fiscal year 1938.

Mergers and consolidations.—Special attention was given during the fiscal year to accounting for mergers and consolidations by telephone carriers. Proposed journal entries submitted by the carriers, accounting for such transactions, were reviewed in each instance.

Extensions of lines.—Attention was also given to the accounting considerations involved in applications received from telephone carriers for authority to extend their lines. This was done for the purpose of securing correct accounting and particularly to preserve the integrity of the plant accounts affected by such extensions of lines.

COOPERATION WITH STATE REGULATORY BODIES

As hereinbefore indicated, the Telephone Division has pursued a policy of close cooperation, in all matters relating to telephone accounting, with State regulatory bodies and with the National Association of Railroad and Utilities Commissioners—particularly with the Association's Committee on Statistics and Accounts of Public Utility Companies. This has been especially true in the formulation of new accounting systems and changes in existing regulations. The cooperation and assistance of representatives of State regulatory bodies and of the association and its committee are gratefully acknowledged.

WIRE FACILITIES UNDER THE JURISDICTION OF THE TELEPHONE DIVISION

This section of the report deals with the regulation of wire-telephone carriers, through the granting or denying of certificates of public interest and necessity for the construction, extension, and transfer of wire facilities as well as for the supplementing of existing facilities.

EXTENSION OF LINES

Under section 214 carriers subject to all the provisions of the act are required to apply to the Commission for a certificate of public convenience and necessity for authority to construct, extend, acquire, or operate a telephone line that constitutes a part of an interstate line. This section provides that reasonable notice shall be given to the Governor of each State in which the property is located and that there be an opportunity for hearing. The section further provides that the Commission may, upon appropriate request being made, authorize temporary or emergency service, or the supplementing of existing facilities, without regard to the provisions of this section.

During the fiscal year 49 applications were received under this section of the act. This is a considerable increase over the 2 previous years. Four such applications were received during the year ended June 30, 1935, and nine during the year ended June 30, 1936.

Acquisitions under section 214.—Two of the above-mentioned applications were for authority to acquire new or extended lines.

(1) On August 25, 1936, the Telephone Division approved the application of the Southwestern Bell Telephone Co. to purchase 14.5 miles of wire circuit in the vicinity of Bay and Florence, Mo., from the United Telephone Co.

(2) On June 29, 1937, an application was received from the Nebraska Continental Telephone Co. for permission to acquire and operate all the telephone lines, system, business, and assets now owned by the Nebraska Continental Telephone Corporation. This application is now pending.

Supplementing existing facilities.—The remaining 47 applications were for authority to supplement existing facilities. Forty-six of these were analyzed and approved by the Commission. The other application was returned to the applicant because it did not conform to the requirements of the Commission. Many of these applications contemplated the substitution of cables for open-wire lines. The carriers anticipate the growth of business over their circuits and apply to the Commission for authority to construct their lines accordingly.

In connection with these projects it is the policy of the Commission to require periodic construction-and-progress reports and a full report upon their completion. The reports are received and analyzed by the engineering and accounting departments.

The estimated construction cost of these projects ranged from $1,000 to $2,378,000, with a total of $5,466,000. This construction when completed will add 478 miles of cable and 8,593 circuit miles of open wire to interstate telephone toll plants.

Construction of facilities by the Southwestern Bell Telephone Co.—Among the applications to supplement existing facilities filed during the last fiscal year was one by the American Telephone & Telegraph Co. to supplement its existing toll facilities between Dallas and San Antonio and between Dallas and Houston, Tex.

By proper order, the Commission consolidated with the application of the American Telephone & Telegraph Co. a proposed plan of the Southwestern Bell Telephone Co. to supplement its existing facilities between the same points, which proposal the latter maintains does not come within the provisions of section 214. The proceeding is now before the Commission on briefs of interested parties.

PETITIONS FOR AUTHORITY TO CONSOLIDATE

Authority given by the Act.—Under section 221 (a) of the act telephone carriers desiring to consolidate their properties may file with the Commission a petition requesting it to certify that the proposed consolidation, merger, acquisition, or control of the property of one or more telephone companies by another company or other companies will be of advantage to the persons to whom service is to be rendered and in the public interest. If after due notice and hearing the Commission so certifies, the transaction is thereby exempted from the provisions of the antitrust acts of Congress.

Three applications coming under this section were considered by the Telephone Division during the fiscal year. The history of these applications follows:

Crown Point Telephone Co. and the Northwestern Indiana Telephone Co., for certificate, etc.—A joint petition was filed requesting the Commission to certify that the proposed acquisition by the Crown Point Telephone Co. (a wholly owned subsidiary of the Illinois Bell Telephone Co.) of the physical properties of the Northwestern Indiana Telephone Co., Valparaiso, Ind., would be of advantage to the persons to whom service is to be rendered and in the public interest. The Commission on August 13, 1936, after hearing, denied the petition. Briefly stated, the certificate was denied because the record did not show that the fair value of the physical properties to be acquired and the earnings of the company would justify the sale price of the properties as stipulated in the contract.

Pacific Telephone & Telegraph Co. and the Campbell Telephone Co., for certificate, etc.—On November 13, 1936, a joint petition was filed requesting the Commission to certify that the proposed acquisition by the Pacific Telephone & Telegraph Co. of the physical properties of the Campbell Telephone Co. would be of advantage to the persons to whom service is to be rendered and in the public interest. The Pacific Telephone & Telegraph Co. operated an exchange at Campbell, Calif. The properties of the Campbell Telephone Co. surrounded the exchange area of the Pacific Co. at Campbell. Under the then existing arrangements the Campbell Co. was responsible for the rendering of service from the telephones of its subscribers to the exchange area of the Pacific Co., the Pacific

Co. being responsible for rendering the remaining service. The Commission found that the proposed acquisition would be of advantage to the persons to whom service is to be rendered and in the public interest, should one company rather than two be responsible for the rendering of all telephone service in that community. The petition was granted and a certificate was issued.

The Bell Telephone Co. of Pennsylvania and the Pennsylvania Telephone Corporation, for certificate, etc.—On April 13, 1937, a joint petition was filed requesting the Commission to certify that the proposed acquisition by the Pennsylvania Telephone Corporation of certain of the physical properties of the Bell Telephone Co. of Pennsylvania and the proposed acquisition by the Bell Telephone Co. of certain physical properties of the Pennsylvania Telephone Corporation would be of advantage to the persons to whom service is to be rendered and in the public interest. The proposed acquisitions have as their main objective the elimination of the duplicated telephone facilities in the Johnstown, Pa., area. A public hearing upon this petition was held before an examiner of the Commission at Harrisburg, Pa., on June 28, 1937, and the matter is now pending.

PHYSICAL CONNECTION BETWEEN CARRIERS

Under section 201 (a) of the act the Commission in the regulation of interstate and foreign communication service may require carriers to establish physical connection with other carriers and to establish through routes and charges applicable thereto if, after opportunity for hearing, the Commission finds such action necessary or desirable in the public interest. During the year one petition was filed requesting the Commission to order a physical connection, which is discussed in the following paragraphs.

Oklahoma-Arkansas Telephone Co. v. *Southwestern Bell Telephone Co.*—The Oklahoma-Arkansas Telephone Co., of Poteau, Okla., filed a petition requesting the Commission to require the Southwestern Bell Telephone Co. to establish a physical connection with the facilities of the petitioner at Fort Smith, Ark. At the present time the interstate communication service of the Oklahoma-Arkansas Telephone Co. is handled over the lines of the Southwestern Bell Telephone Co., which operates a toll line into Poteau, Okla., where physical connection is made with the facilities of the petitioner. The petitioner has a toll line extending from Poteau, Okla., to Fort Smith, Ark. The cause of action arises out of the fact that the Southwestern Bell Telephone Co. refuses to give petitioner a physical connection at Fort Smith, Ark.

A public hearing upon this petition was held before an examiner of the Commission at Fort Smith, Ark., on October 5, 1936; the report of the examiner was released February 19, 1937; the respondent's exceptions thereto were filed May 24, 1937; and the petitioner's reply to the respondent's exceptions were filed June 4, 1937.

RADIO FACILITIES UNDER THE JURISDICTION OF THE TELEPHONE DIVISION

The radio facilities under the jurisdiction of the Telephone Division may be divided into two general classes: (1) Fixed point-to-point radiotelephone and (2) Maritime radiotelephone.

POINT-TO-POINT RADIOTELEPHONE

International radiotelephone communication.—Point-to-point radiotelephone stations supply telephone service to people separated by natural barriers. Through the use of these stations the wire-telephone systems in one country may be connected with the wire-telephone systems in other countries. This interconnection of the facilities of each continent has made it possible for any telephone subscriber in the United States having a connection with its Nation-wide wire facilities to communicate with over 95 percent of all the telephones in the world.

Radiotelephone service across the Atlantic between New York and London was inaugurated on January 7, 1927. Radio engineers determined that with highly directional antennas a satisfactory overseas circuit could be obtained with much less power than that required for the long-wave circuit originally employed. The first short-wave channel was placed in service in June 1928, between New York and London.

In April 1930, radiotelephone service was established between New York and Buenos Aires, in 1931 a direct connection was established with Rio de Janerio, and Lima (Peru) was added in 1932.

Meanwhile engineers directed their attention to transpacific radiotelephone service. In December 1931, the service was opened to Honolulu, Hawaii. A direct connection was established in March 1933 with Manila. Late in 1934 a direct connection was made between San Francisco and Tokyo. Radio service to the Caribbean and Central American countries centered in Miami, Fla. Circuits from New York to Sidney by way of London were established in 1930, and negotiations are now pending for a direct circuit to Australia. On December 1, 1936, a direct short-wave radiotelephone channel was established between New York and Paris, the service being formally opened in the offices of the Commission on that date. The past year has seen direct radiotelephone service established to Shanghai, China.

A. T. & T. Co. application for special experimental license.—On February 9, 1937, the American Telephone & Telegraph Co. filed an application with the Commission seeking a special experimental license for experimental services only "to any fixed point beyond the continental limits of the United States." The applicant proposed to use in the operation of the experiment the 21 frequencies already licensed to it for telephone communication from its station at Lawrenceville, N. J.

The Commission set the case for hearing. Other carriers having an interest in radio communication to and from the United States were made parties to the proceeding. The hearing was originally set for June 17, 1937, but it was found necessary to postpone the hearing to a date beyond the end of this fiscal year.

The Commission (see sec. 218 of the act) is watching the development of radiotelephone communication with great interest. It is impossible to foresee what the future possibilities of the radiotelephone will be in making service available to people living in areas heretofore inaccessible to telephone-communication service.

In 1927 only 2,296 paid messages, in both directions, were handled over trans-Atlantic circuits, while in the first 6 months of the current calendar year (1937) 17,384 such messages were handled, indicating that the traffic for the entire year will be approximately 35,000 paid messages. (See table I and chart 1 of appendix K.) The terminals, length, and service date of each international radiotelephone circuit as of June 30, 1937, will be found in table II of appendix K. The following table shows the overseas countries and territories to which telephone service is available from the United States as of June 30, 1937.

Overseas countries and territories to which telephone service is available from the United States June 30, 1937

[* Indicates direct circuit]

Algeria.
*Argentina.
Australia.
Austria.
*Bahama Islands.
Balearic Islands.
Belgium.
*Bermuda.
*Brazil.
Bulgaria.
Canary Islands.
Chile.
*China.
*Colombia.
*Costa Rica.
Czechoslovakia.
Danzig.
Denmark.
*Dominican Republic.
Egypt.
Finland.
*France.
French Indo-China.
Germany.
Gibraltar.
*Great Britain.
*Guatemala.
*Hawaii.
*Honduras.
Hungary.
Iceland.
India.
Irish Free State.
Italy.
*Jamaica.
*Japan.
Kenya.
Latvia.
Lithuania.
Luxemburg.
Morocco (French).
Morocco (Spanish).
Netherlands.
*Netherlands Indies.
*Nicaragua.
Norway.
Palestine.
*Panama.
Paraguay.
*Peru.
*Philippine Islands.
Poland.
Portugal.
*Puerto Rico.
Rumania.
*Salvador.
Siam.
Spain.
Sweden.
Switzerland.
Syria.
Tunisia.
Union of South Africa.
Uruguay.
*Venezuela.
Yugoslavia.

NOTE.—Canada, Cuba, and Mexico are served by wire lines.

MARITIME SERVICES

Maritime service under the jurisdiction of the Telephone Division may be divided into three general classes—coastal, coastal harbor, and ship.

Coastal and coastal harbor stations.—A coastal telephone station is a radio station used primarily for radiotelephone service with ocean-going vessels. A coastal harbor station is a radio station used primarily for radio communication service with small craft or other vessels that employ relatively low-power transmitters of limited range.

Nation-wide service.—Both coastal and coastal harbor stations are connected with the land-line wire network of the American communication systems, thus making possible telephone communication from any telephone subscriber in the United States to any person on board vessels equipped for this type of service.

Coastal stations.—As of June 30, 1936, there were three public coastal telephone stations. The American Telephone & Telegraph Co. operated stations at Ocean Gate and Lawrenceville, N. J., with power of 20 kilowatts and the Transpacific Communications Co., Inc., operated a station at Dixon, Calif., with power of 20 kilowatts.

During the year the Commission licensed the American Telephone & Telegraph Co. to operate a public coastal telephone station at Hialeah, Fla., with power of 400 watts, and authorized the transfer of the license of Station KMI, Dixon, Calif., as well as the licenses of fixed point-to-point telephone stations at this location, from the Transpacific Communications Co., Inc., to the American Telephone & Telegraph Co.

As of June 30, 1937, there are 21 ocean-going vessels that communicate with the coastal telephone stations. Twenty of these vessels ply the Atlantic Ocean and one the Pacific. A list of the vessels to which this communication service is offered may usually be found in the telephone directory of any large city.

Coastal harbor stations.—The service area of a coastal harbor station is much smaller than that of a coastal station, due to the fact that the public coastal harbor station uses a low-power transmitter. The limitation in the power of the coastal harbor station is made necessary because of the fact that the ships with which it communicates usually carry low-power transmitters having a smaller range of operation.

Public coastal harbor radiotelephone stations are operating at seven ports of the United States, as follows:

The Lorain (Ohio) station, operated by the Lorain County Radio Corporation, offers radiotelephone service with ships plying the Great Lakes. During the year, high-frequency operation has been inaugurated at this station.

The Marshfield (Mass.) station, operated by the New England Telephone & Telegraph Co., furnishes radiotelephone service in the vicinity of Boston Harbor.

The Staten Island (N. Y.) station, operated by the New York Telephone Co., furnishes radiotelephone service in the vicinity of New York Harbor.

The Miami (Fla.) station, operated by the American Telephone & Telegraph Co., furnishes coastal harbor radiotelephone service in the vicinity of Miami, Fla., as well as coastal telephone service along the southeast coast of the United States.

The San Rafael (Calif.) station, operated by the Pacific Telephone & Telegraph Co., furnishes radiotelephone service in the vicinity of San Francisco Harbor.

The San Pedro (Calif.) station, operated by Southern California Telephone Co., furnishes radiotelephone service in the vicinity of San Pedro Harbor.

The Edmonds (Wash.) station, operated by the Pacific Telephone & Telegraph Co., furnishes service in the Seattle, Wash., area.

Renewal of licenses of stations WOX, KLH, KOW, and KOU.—On September 9, 1936, the Commission granted the application of the New York Telephone Co. (WOX), the Pacific Telephone & Telegraph Co. (KLH and KOW), and the Southern California Telephone Co. (KOU) for the renewal of the licenses previously granted them to operate public coastal harbor radiotelephone stations. The applications had been set for hearing because of the fact that there had been very little use of this service. The high cost of equipping ships to communicate with the shore stations had been one of the principal reasons for the small use of this service. The hearing disclosed that a new type of equipment was shortly to be placed on the market and that the cost of equipping a boat for radiotelephone service would be materially decreased. The Commission granted the applications for renewal because of the need for the telephone service in the area served by each station.

During the year the Commission received three applications for new public coastal harbor stations, which are discussed in the following paragraphs:

Warner & Tamble application.—The Warner & Tamble Radio Service, a partnership, composed of R. V. Warner and G. H. Tamble, applied for authority to construct a public coastal harbor radiotelephone station at Memphis, Tenn., to communicate with vessels plying the Mississippi River and particularly vessels in the vicinity of Memphis Harbor. The case was heard before an examiner on May 7, 1937, and is now pending before the Commission.

Chesapeake & Potomac Telephone Co. of Virginia application.—The Chesapeake & Potomac Telephone Co. of Virginia, an operating wire-telephone carrier, applied for authority to construct a public coastal harbor radiotelephone station near Norfolk, Va., to communicate with vessels operating in the lower end of Chesapeake Bay and off the Virginia Capes. The case was heard before an examiner on June 9 and 10, 1937, and is now pending before the Commission.

Thorne Donnelley application.—Thorne Donnelley, an individual residing at Lake Bluff, Ill., applied for authority to construct a public coastal harbor radiotelephone station at Lake Bluff, Ill., to communicate with ships plying the Great Lakes, particularly those vessels operating in the southern end of Lake Michigan. The case was set for hearing before an examiner on July 8, 1937.

Private coastal harbor stations.—The city of New York, Department of Plant and Structures, with a station located in New York Harbor, and the Inland Waterways Corporation, with a station located at New Orleans, La., operate coastal harbor stations that are not open to public correspondence.

Ship stations.—As of June 30, 1936, there were 58 ship telephone stations licensed by the Commission. During the year 224 new stations were authorized and 25 stations were deleted, leaving 257 ship telephone stations in service as of June 30, 1937. The licenses herein mentioned are for stations on vessels plying the Great Lakes and inland and coastal waters, as well as for stations on small vessels, yachts, ferries, tugs, fishing boats, and other small craft. These ships, which usually carry a 5- to 50-watt transmitter, communicate with coastal harbor stations.

During the year the cost of low-power radio transmitters has been substantially reduced, and the number of vessels that are being equipped for this service is increasing. One reason for the popularity of this type of installation is the slight technical training necessary to obtain a license to operate the equipment. A small amount of study enables a captain or a member of a crew to obtain the third-class radiotelephone operator's license that is necessary for the operation of this apparatus.

Safety of life at sea.—The majority of these small vessels are not required by law to carry radio apparatus. The value of this equipment in case of emergency as a means of saving life and property is one of the reasons so many ships are being equipped for this service.

COMPLAINTS AND INVESTIGATIONS

General nature of complaints.—The Telephone Division of the Commission receives many letters from parties complaining of acts of omission or commission on the part of the telephone companies. The majority of these letters relate to exchange, or local, telephone service. Under the provisions of the act of 1934, the Commission has no jurisdiction over such complaints. Upon the receipt of a complaint relating to exchange service, the complainant is informed that the State regulatory authority rather than the Federal Communications Commission has jurisdiction over the matter.

Interstate toll service.—Upon the receipt of a letter concerning a matter within the jurisdiction of the Commission, if the facts justify such action, the carrier or carriers involved are requested to inform the Commission with respect thereto in order that appropriate action may be taken. The carrier usually deals with the party making the complaint in an effort to bring about a satisfactory adjustment thereof, subject to the approval of the Commission. If any complaint seems to justify such action, the Commission may, on its own motion, institute an investigation. If the carrier does not effect a satisfactory adjustment or if the party complaining is not satisfied with the action taken, the latter may file either a formal or an informal complaint with the Commission. The procedure in handling such complaints is set forth in the rules of practice and procedure, adopted by the Commission.

SPECIAL TELEPHONE INVESTIGATION

The Congress by Public Resolution No. 8, Seventy-fourth Congress (49 Stat. 43), directed the Federal Communications Commission to investigate the entire telephone industry, including the manufacture and sale of telephone instruments and equipment. The performance of these duties was assigned to the Telephone Division.

The Commission's report of its activities, findings, and recommendations under Public Resolution No. 8 will be submitted to the Congress as a separate report.

Final hearings on the general phases of the investigation, with the exception of rate analyses and special studies, were concluded on June 30, 1937. Seventy-seven volumes of staff reports covering the matters investigated were introduced at the hearings, as a part of the record. There are approximately 8,500 pages of testimony supported by these staff reports, and, in addition, hundreds of supplemental exhibits and thousands of work papers and documentary data.

The transcript of testimony and copies of all staff reports have been supplied to the Senate Committee on Interstate Commerce and to the House Committee on Interstate and Foreign Commerce. Copies of the staff reports have also been furnished to all the State regulatory commissions.

The information so compiled will be useful to the Congress in considering future legislation applicable to the telephone industry, and also will be useful to this Commission and to State regulatory agencies as basic material in the effective regulation of the industry.

The matters investigated include the corporate organization and control, inter-company relationships, financial history, rates, services, public relations, patents, expenses, profits, and operating policies and practices of the American Telephone & Telegraph Co. and its subsidiaries and affiliates, including the Western Electric Co., Inc., Bell Telephone Laboratories, Inc., Electrical Research Products, Inc., and the operating telephone companies.

Information early developed in the investigation indicated that interstate telephone rates were too high. Various reductions in rates, totaling approximately $24,000,000 per annum, or $65,750 a day, have followed the instituting of the investigation.

Further investigation of interstate rates is now being made to determine the effect of past rate reductions and the reasonableness of the charges now in effect. Appropriations are available to continue these studies until the close of the fiscal year ending June 30, 1938.

MISCELLANEOUS STUDIES AND INVESTIGATIONS

During the fiscal year the Telephone Division conducted the following miscellaneous studies and investigations:

1. A report of the radio amateur participation in the flood of January 1937.
2. A comparison of telephone rates in the various countries of the world.
3. The radiotelephone facilities of the Bell System companies.
4. A quantitative analysis of American cable, radiotelegraph, and radiotelephone rates and facilities to all parts of the world.
5. The program-transmission facilities and rates of the Bell System companies.
6. The service areas of the various independent telephone companies reporting to the Commission.
7. The telephone services of the United States, requested by the Bureau of International Telecommunications Union.

FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Basis and purpose of reports.—Pursuant to section 219 of the act, class A and class B telephone carriers [27] are required to file annual reports with the Commission disclosing financial and other statistical data. Monthly reports are required from the larger telephone carriers whose average annual operating revenues amount to more than $250,000. These reports constitute an important and economical means of securing financial and other factual data relative to individual telephone carriers and with respect to the telephone industry as a whole. This information is of considerable importance in the regulation of telephone carriers and is of economic interest throughout the country. The annual reports are filed on a calendar-year basis.

Form and content of reports.—Annual and monthly report forms are prescribed by the Telephone Division. These forms are somewhat similar to those prescribed for telephone carriers in prior years, in order to obtain comparability of statistical data, but have been expanded or modified from time to time as occasion has arisen.

The annual report form is comprehensive in nature and contains information specifically required by section 219 of the act, mentioned above. During the fiscal year 1937, this report form was expanded somewhat, so as to include, among other things, the following requirements: That telephone carriers disclose the beneficial owners of their capital stock, if known; that an additional schedule be inserted in the report containing an analysis of advertising expense; that additional information be submitted relative to pensions and other benefits to employees; and that additional information be submitted regarding taxes.

Number of carriers filing reports.—During the past fiscal year a total of 103 telephone carriers filed annual reports for the calendar year 1936. A total of 148 telephone carriers filed annual reports for the calendar year 1935. The reduction to 103 for the calendar year 1936 is accounted for largely by some carriers' claiming to be subject only to sections 201–205 of the act. Fifty-one of the telephone carriers filing annual reports filed monthly reports during 1936, inasmuch as only the larger carriers having average annual operating revenues of more than $250,000 are required to report monthly, as hereinbefore stated. Thirty other telephone carriers voluntarily filed monthly reports for statistical purposes.

Examination and correction of reports.—All accounting schedules and other statistical data contained in the reports filed by telephone carriers are carefully examined, and corrections are made where necessary, following correspondence with the carriers.

Holding-company reports.—Holding companies owning interests in communication carriers are also required to file annual reports with

[27] Includes all telephone carriers subject to the act with average annual operating revenues in excess of $50,000 except carriers subject only to secs. 201–205 of the act.

the Commission. Two report forms have been prescribed for such companies, designed respectively for holding companies owning large interests in communication carriers and for those owning only minor interests therein.

During the fiscal year 1937, 23 holding companies owning interests in telephone carriers filed annual reports with the Commission.

Public reference room.—Annual and monthly reports filed by telephone carriers and annual reports filed by holding companies are made available to the public through the medium of a public reference room, mentioned on page 24 of this report.

STATISTICAL COMPILATIONS

The following publications containing financial and other statistical data relative to telephone carriers were issued during the fiscal year:

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1935.
Summary of monthly reports of large telephone carriers in the United States.
Salary report of telephone and telegraph carriers, 1935.

These publications contain financial and economic data of general interest throughout the country. Copies of these compilations are requested by other governmental agencies, financial and educational institutions, and interested individuals.

Summary of selected statistical data.[28]—Reports filed with the Commission show that the 103 telephone carriers filing annual reports had $4,554,000,000 invested in telephone plant at the close of 1936. The operating revenues for the year were $1,079,000,000, or approximately 8 percent greater than the operating revenues for the previous year, and the operating expenses amounted to $724,000,000. These telephone carriers reported operating tax accruals in the approximate amount of $122,000,000, subdivided into $34,000,000 for United States Government taxes and $88,000,000 for State and local Government taxes. Excise taxes (not included in operating taxes) amounting to approximately $19,000,000 were collected from the users of communication service for payment principally to the United States Government. The total operating and excise taxes reported by the 103 telephone carriers were $140,000,000, and of this amount the United States Government taxes were slightly less than $50,000,000.

The net operating income of the aforesaid telephone carriers was $234,000,000 and the net income or profit (without elimination of intercompany duplications) amounted to $363,000,000. Dividends in the amount of $347,000,000 were declared on the capital stock of the carriers, resulting in an average rate[29] on all common and preferred stock of 8.1 percent.

The telephone carriers reporting to the Commission on an annual basis had 16,140,000 telephones and 21,700 teletypewriter and Morse stations in service at the close of 1936. An average of 2,304,000,000 local calls and 73,000,000 toll calls were handled each month through the carriers' central offices during the year. On December 31, 1936,

[28] The figures herein stated cover only carriers reporting to the Commission, whereas the figures shown on page 85 refer to the whole telephone industry.
[29] Based on total par value of all par stock plus total book liability of all stock without par value.

TABLE XI.--FEDERAL COMMUNICATIONS COMMISS

ACCOUNTING, STATISTICAL, AND TARIFF DEPT.

WASHINGTON, D. C.

SUMMARY OF MONTHLY REPORTS OF LARGE TELEPHONE CARRIERS IN THE U

Compilations, subject to revision, from reports of revenues and expenses of telephone carriers, each having annual operating revenues in excess of $250,000

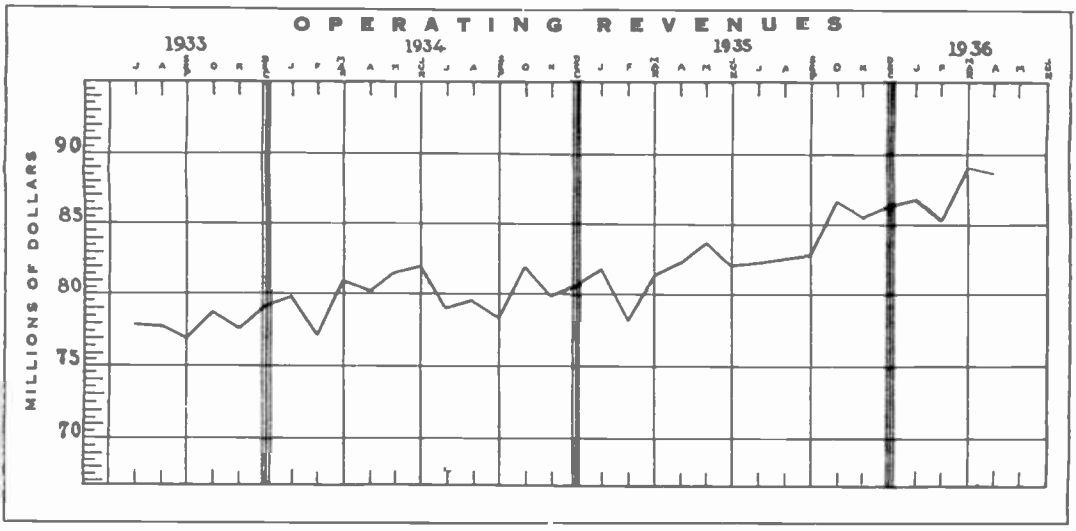
FOR THE MONTH OF APRIL, 1936 AND 1935.

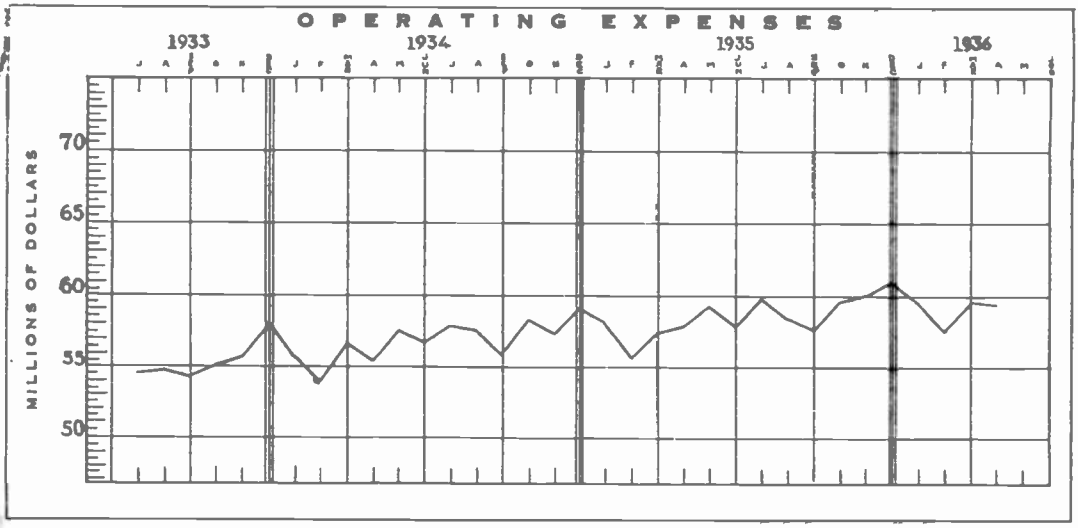
Item	United States		New England Region		Middle Atlantic Region		Great Lakes Region		Eastern District		Chesapeake Region	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Number of company telephones in service at end of month	15,004,403	14,386,643	1,454,007	1,416,399	4,295,517	4,183,490	3,237,955	3,078,297	8,987,479	8,680,186	701,907	662,351
OPERATING REVENUES:												
Subscribers' station revenues	$53,981,672	$51,266,163	$4,922,596	$4,763,483	$18,009,692	$17,264,186	$11,780,687	$10,996,751	$34,712,977	$33,024,420	$2,247,330	$2,168,081
Public telephone revenues	3,685,351	3,437,778	311,261	310,000	2,055,893	1,925,868	660,513	623,568	3,027,667	2,859,456	210,574	172,524
Miscellaneous local service revenues	944,322	866,816	46,212	40,199	360,218	331,288	182,973	157,816	589,403	529,303	22,666	19,947
Message tolls	23,297,797	20,646,260	1,638,636	1,460,112	10,737,902	9,417,330	3,141,756	2,779,065	15,518,494	13,656,507	675,601	609,034
Miscellaneous toll service revenues	2,710,136	2,371,207	81,964	74,382	2,002,974	1,719,367	254,242	233,349	2,339,180	2,027,098	19,510	19,400
Revenues from general services and licenses	1,089,832	1,008,106	875	1,700	1,078,459	996,453	-	-	1,079,334	998,153	348	612
Sundry miscellaneous revenues	3,324,012	3,180,368	223,682	230,082	1,404,638	1,379,526	555,569	516,942	2,183,889	2,128,550	147,405	133,868
Uncollectible operating revenues - Dr.	279,405	337,778	19,929	23,378	120,112	165,816	28,600	28,291	168,641	217,485	8,886	10,949
Operating revenues	88,753,917	82,438,922	7,205,499	6,856,580	35,529,664	32,868,202	16,547,140	15,281,220	59,282,303	55,006,002	3,314,546	3,112,517
OPERATING EXPENSES:												
Depreciation and extraordinary retirements	14,507,210	14,705,013	1,235,817	1,228,687	5,591,917	5,650,402	2,716,137	2,726,376	9,543,871	9,805,465	520,351	516,634
All other maintenance	15,717,814	14,835,478	1,490,180	1,389,280	6,383,757	6,084,993	2,727,572	2,526,229	10,601,509	10,000,502	536,343	533,660
Traffic expenses	11,782,137	10,986,098	1,218,286	1,168,120	4,035,247	3,769,922	2,301,884	2,142,546	7,555,417	7,080,588	502,062	462,178
Commercial expenses	6,739,779	6,408,015	560,823	539,864	2,556,406	2,420,544	1,256,949	1,251,927	4,374,178	4,212,335	295,262	278,211
General office salaries and expenses	4,814,189	4,626,062	320,923	322,135	2,365,472	2,192,640	768,082	828,155	3,454,477	3,342,930	151,174	165,521
General services and licenses	1,062,614	979,964	99,195	93,806	349,302	324,757	221,569	200,701	670,066	619,264	44,271	41,291
All other operating expenses	4,919,190	5,151,983	215,897	230,077	3,136,058	3,161,299	736,018	749,201	3,689,973	4,140,577	124,718	107,057
Operating expenses	59,542,933	57,692,609	5,141,121	4,971,969	24,418,159	23,804,557	10,530,211	10,425,135	40,089,491	39,201,661	2,174,181	2,104,552
INCOME ITEMS:												
Net operating revenues	29,210,984	24,746,313	2,064,378	1,884,611	11,111,505	9,063,645	6,016,929	4,856,085	19,192,812	15,804,341	1,140,367	1,007,965
Rent from lease of operating property	915	833	-	-	619	537	50	50	669	587	-	-
Rent for lease of operating property	4,434	7,080	-	-	120	35	50	51	170	86	-	-
Net operating income before tax deduction	29,207,465	24,740,066	2,064,378	1,884,611	11,112,004	9,064,147	6,016,929	4,856,084	19,193,311	15,804,842	1,140,367	1,007,965
Operating taxes	10,389,766	8,439,158	678,582	556,914	3,936,462	2,926,410	2,279,916	1,936,233	6,894,960	5,421,557	374,581	322,812
Net operating income	18,817,699	16,300,908	1,385,796	1,325,697	7,175,542	6,137,737	3,737,013	2,919,851	12,298,351	10,383,285	765,786	685,153
Ratio of expenses to revenues (%)	67.09	69.98	71.35	72.51	68.73	72.42	63.64	68.22	67.62	71.27	65.60	67.62
CHANGES IN CAPITAL ITEMS:												
Increase during month:												
In "Telephone plant"	5,930,552	2,515,636	578,695	456,133	1,023,915	155,789	1,495,624	1,075,576	3,098,234	1,689,498	513,459	1,460
In "Capital stock"	347,000	4,400	-	-	347,000	-	-	4,400	347,000	4,400	-	-
In "Funded debt"	29,713,900	d 450,805	-	-	d 249,100	d 805	-	-	d 249,100	d 805	-	-

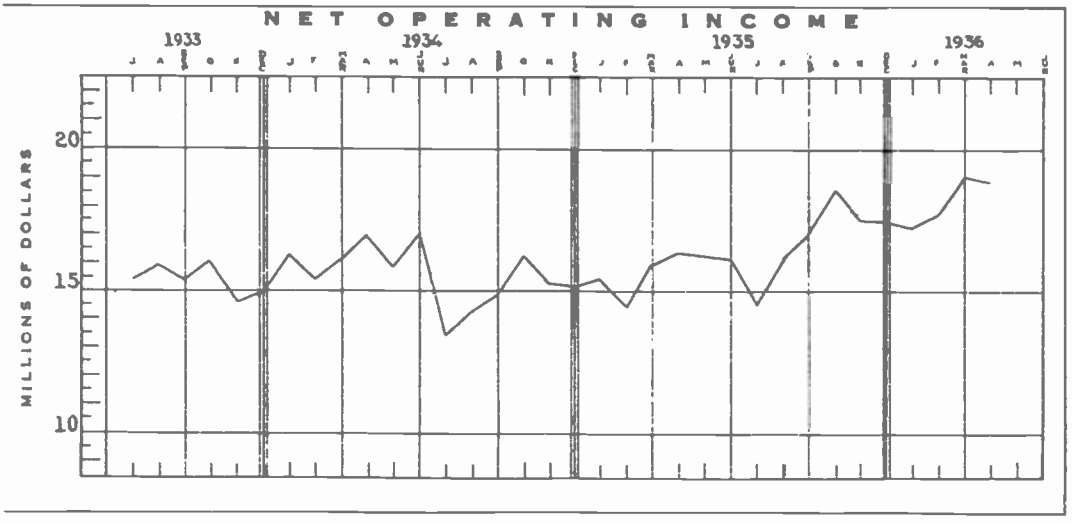
Item	Southeastern Region		Southern District		North Central Region		South Central Region		Mountain Region		Pacific Region		Western District	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Number of company telephones in service at end of month	1,035,103	970,894	1,737,010	1,633,245	820,752	785,986	1,422,760	1,364,518	430,153	406,253	1,606,229	1,516,455	4,279,914	4,073,212
OPERATING REVENUES:														
Subscribers' station revenues	$3,066,188	$2,974,509	$5,313,518	$5,142,590	$2,324,637	$2,206,866	$4,487,613	$4,250,357	$1,214,936	$1,140,160	$5,927,991	$5,501,770	$13,955,377	$13,099,153
Public telephone revenues	74,148	68,348	284,722	280,912	32,763	28,085	99,870	90,906	17,493	15,089	222,836	203,330	372,962	337,410
Miscellaneous local service revenues	56,375	53,774	79,041	73,721	40,556	39,278	98,416	96,382	15,276	14,154	121,628	113,980	275,878	263,794
Message tolls	1,495,248	1,358,711	2,170,849	1,967,745	903,018	835,672	2,087,178	1,858,598	519,441	469,938	2,098,817	1,857,600	5,608,454	5,022,008
Miscellaneous toll service revenues	35,540	29,282	55,050	48,682	31,793	29,946	59,300	78,138	41,968	35,000	182,845	152,343	315,906	295,427
Revenues from general services and licenses	-	-	348	612	7,944	7,163	1,823	1,794	48	40	335	344	10,150	9,341
Sundry miscellaneous revenues	211,326	192,724	358,731	326,592	153,885	149,022	340,030	328,394	73,074	65,351	214,403	186,459	781,392	725,226
Uncollectible operating revenues - Dr.	19,908	25,799	28,794	36,746	11,954	11,405	33,327	30,159	4,389	4,278	32,300	37,703	81,970	83,545
Operating revenues	4,918,917	4,651,589	8,233,465	7,764,106	3,482,642	3,284,827	7,141,105	6,670,410	1,877,847	1,735,454	8,736,555	7,978,123	21,238,149	19,668,814
OPERATING EXPENSES:														
Depreciation and extraordinary retirements	862,079	848,928	1,382,430	1,365,562	590,876	578,619	1,199,744	1,186,497	338,815	329,599	1,451,474	1,439,271	3,580,909	3,533,986
All other maintenance	812,053	723,064	1,348,396	1,256,728	706,763	677,756	1,142,973	1,085,464	306,361	280,828	1,611,812	1,534,200	3,767,909	3,578,248
Traffic expenses	747,802	704,838	1,249,864	1,167,016	521,700	479,545	1,025,638	950,305	306,916	282,129	1,122,602	1,026,515	2,976,856	2,738,494
Commercial expenses	355,170	323,231	650,432	601,442	289,871	268,418	557,497	513,500	186,198	177,018	681,603	635,302	1,715,169	1,594,238
General office salaries and expenses	198,176	174,504	349,350	340,025	200,905	183,209	319,559	311,328	105,110	95,467	384,788	353,103	1,010,362	943,107
General services and licenses	64,965	60,285	109,236	101,576	49,164	44,782	93,457	85,720	25,194	22,864	115,497	105,758	283,312	259,124
All other operating expenses	243,101	250,302	367,819	357,359	120,740	129,172	272,284	235,409	62,125	63,055	206,249	226,411	661,398	654,047
Operating expenses	3,283,346	3,085,152	5,457,527	5,189,704	2,480,019	2,361,501	4,611,152	4,368,223	1,330,719	1,250,960	5,574,025	5,320,560	13,995,915	13,301,244
INCOME ITEMS:														
Net operating revenues	1,635,571	1,566,437	2,775,938	2,574,402	1,002,623	923,326	2,529,953	2,302,187	547,128	484,494	3,162,530	2,657,563	7,242,234	6,367,570
Rent from lease of operating property	-	-	-	-	-	-	25	25	150	150	71	71	246	246
Rent for lease of operating property	-	-	-	-	-	-	4,177	6,903	-	-	87	91	4,264	6,994
Net operating income before tax deduction	1,635,571	1,566,437	2,775,938	2,574,402	1,002,623	923,326	2,525,801	2,295,309	547,278	484,644	3,162,514	2,657,543	7,238,216	6,360,822
Operating taxes	625,550	569,197	1,000,131	892,009	349,822	295,101	753,135	742,586	231,386	207,327	1,160,332	880,578	2,494,675	2,125,592
Net operating income	1,010,021	997,240	1,775,807	1,682,393	652,801	628,225	1,772,666	1,552,723	315,892	277,317	2,002,182	1,776,965	4,743,541	4,235,230
Ratio of expenses to revenues (%)	66.75	66.32	66.28	66.84	71.21	71.89	64.57	65.49	70.86	72.08	63.80	66.69	65.90	67.63
CHANGES IN CAPITAL ITEMS:														
Increase during month:														
In "Telephone plant"	362,712	213,981	876,171	215,441	277,591	211,745	563,147	325,978	199,225	131,845	916,184	d 58,867	1,956,147	610,697
In "Capital stock"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
In "Funded debt"	d 36,000	-	d 36,000	-	-	-	d 1,000	-	-	-	30,000,000	d 450,000	29,999,000	d 450,000

d Deficit or other reverse item.

NITED STATES







Refunds, amounting approximately to $16,000,000, to Chicago coin-box subscribers covering an 11-year period were deducted during June 1934 by the Illinois Bell Telephone Co., but have been restored in above charts to preserve the consistency of the trend.

FEDERAL COMMUNICATIONS COMMISSION

APRIL, 1936

ACCOUNTING, STATISTICAL, AND TARIFF DEPT.

WASHINGTON, D. C.

SUMMARY OF MONTHLY REPORTS OF LARGE TELEPHONE CARRIERS IN THE UNITED STATES

Compilations, subject to revision, from reports of revenues and expenses of telephone carriers, each having annual operating revenues in excess of $250,000

FOR THE FOUR MONTHS ENDED WITH APRIL, 1936 AND 1935.

Item	United States		New England Region		Middle Atlantic Region		Great Lakes Region		Eastern District		Chesapeake Region	
	1936	1935 1/	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935 1/
OPERATING REVENUES:												
Subscribers' station revenues	$214,129,570	$203,087,190	$19,435,025	$18,935,632	$71,731,583	$68,411,994	$46,389,556	$43,398,666	$137,556,164	$130,746,292	$8,921,752	$8,506,299
Public telephone revenues	14,628,178	13,808,699	1,295,130	1,236,824	8,134,582	7,825,578	2,595,649	2,434,644	12,085,361	11,497,046	809,752	705,758
Miscellaneous local service revenues	3,730,021	3,428,080	183,326	162,393	1,433,825	1,335,632	703,199	609,272	2,320,350	2,107,297	90,826	77,103
Message tolls	89,922,102	78,644,382	6,268,173	5,530,064	41,607,521	36,341,899	12,084,589	10,417,698	59,960,283	52,289,621	2,539,248	2,249,517
Miscellaneous toll service revenues	10,851,171	9,650,085	321,991	290,680	8,024,504	7,080,766	1,009,249	905,512	9,355,744	8,276,958	84,012	73,994
Revenues from general services and licenses	4,401,757	4,164,820	3,576	6,921	4,357,049	4,117,539	-	-	4,360,625	4,124,460	1,392	2,471
Sundry miscellaneous revenues	13,347,784	12,474,203	904,016	925,297	5,674,306	5,251,881	2,213,704	2,083,589	8,792,028	8,260,767	569,575	541,628
Uncollectible operating revenues - Dr.	1,200,973	1,348,057	65,912	93,003	532,849	671,995	141,203	160,924	739,964	925,882	41,981	27,087
Operating revenues	349,809,610	323,873,402	28,345,327	26,994,808	140,430,521	129,693,294	64,854,743	59,688,457	233,630,591	216,376,559	12,989,576	12,131,643
OPERATING EXPENSES:												
Depreciation and extraordinary retirements	57,924,611	58,744,309	4,935,223	4,907,325	22,350,065	23,367,035	10,797,596	10,905,826	36,082,864	39,180,186	2,071,912	2,064,717
All other maintenance	61,879,316	57,927,017	5,879,924	5,826,246	24,965,014	23,868,316	10,775,095	10,057,572	41,620,033	39,352,134	2,141,977	2,093,173
Traffic expenses	46,936,773	43,976,203	4,809,477	4,618,170	16,115,498	15,291,557	9,251,516	8,581,580	30,176,491	28,491,307	2,022,445	1,861,502
Commercial expenses	26,502,369	25,273,177	2,275,080	2,151,302	9,939,813	9,570,185	4,957,297	4,892,133	17,172,190	16,613,620	1,165,399	1,084,393
General office salaries and expenses	19,028,516	18,433,143	1,272,190	1,255,731	9,251,925	8,753,771	3,074,914	3,303,728	13,599,029	13,313,230	607,662	657,489
General services and licenses	4,292,123	4,052,078	403,787	389,560	1,430,188	1,366,113	884,152	829,916	2,718,127	2,585,589	179,663	170,809
All other operating expenses	19,706,639	20,362,542	901,053	964,045	12,574,800	12,435,732	2,157,107	2,953,107	15,632,960	16,352,864	479,785	426,017
Operating expenses	236,272,347	228,768,469	20,476,734	19,712,379	96,627,303	94,652,709	41,897,677	41,523,862	159,001,714	155,888,950	8,668,803	8,358,100
INCOME ITEMS:												
Net operating revenues	113,537,263	95,104,933	7,868,593	7,282,429	43,803,216	35,040,585	22,957,066	18,164,595	74,628,877	60,487,609	4,320,773	3,773,543
Rent from lease of operating property	1,699	1,773	-	-	864	981	357	156	1,221	1,137	-	-
Rent for lease of operating property	16,609	28,505	-	-	120	35	357	156	477	191	-	-
Net operating income before tax deduction	113,522,513	95,078,201	7,868,593	7,282,429	43,803,962	35,041,531	22,957,066	18,164,595	74,629,621	60,488,559	4,320,773	3,773,543
Operating taxes	40,502,638	33,113,079	2,648,487	2,195,323	14,826,088	11,649,614	9,121,748	7,292,727	26,596,323	21,137,664	1,469,340	1,250,601
Net operating income	73,019,875	61,965,122	5,220,106	5,087,106	28,977,874	23,391,917	13,835,318	10,871,868	48,033,298	39,350,891	2,851,433	2,522,942
Ratio of expenses to revenues (%)	67.54	70.64	72.24	73.02	68.81	72.98	64.60	69.57	68.06	73.43	66.74	68.90
CHANGES IN CAPITAL ITEMS:												
Increase during period:												
In "Telephone plant"	20,902,270	2,419,290	849,639	968,207	4,770,752	d 5,687,196	6,790,033	2,493,221	12,410,424	d 2,285,768	1,429,224	247,844
In "Capital stock"	591,161	4,400	-	-	1,220,700	-	432,070	4,400	1,652,770	4,400	-	-
In "Funded debt"	d 21,686,051	d 1,883,750	-	-	d 2,843,040	d 13,950	434,500	d 31,000	d 2,408,540	d 44,950	d 138,500	-

Item	Southeastern Region		Southern District		North Central Region		South Central Region		Mountain Region		Pacific Region		Western District	
	1936	1935	1936	1935 1/	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
OPERATING REVENUES:														
Subscribers' station revenues	$12,537,925	$12,000,336	$21,459,677	$20,508,595	$9,186,152	$8,744,127	$17,735,885	$16,879,690	$4,812,390	$4,525,476	$23,379,942	$21,683,010	$55,113,729	$51,832,303
Public telephone revenues	312,314	282,268	1,122,066	988,026	127,719	116,575	389,903	342,525	70,611	59,970	892,516	804,557	1,460,751	1,323,627
Miscellaneous local service revenues	221,190	214,223	312,016	291,326	162,885	156,523	383,759	374,992	62,922	56,737	486,089	441,205	1,097,655	1,029,457
Message tolls	6,008,305	5,364,706	8,547,553	7,518,283	3,411,937	3,012,363	8,078,182	7,116,979	1,976,613	1,723,711	7,947,574	6,985,485	21,414,266	18,840,538
Miscellaneous toll service revenues	138,709	112,996	222,721	186,990	126,086	114,891	247,599	309,592	162,517	142,669	736,504	618,985	1,272,706	1,186,137
Revenues from general services and licenses	-	-	1,392	2,471	31,181	29,042	7,261	7,252	186	165	1,150	1,430	39,780	37,669
Sundry miscellaneous revenues	846,656	772,897	1,431,231	1,314,525	622,129	594,239	1,375,525	1,289,904	294,283	266,462	832,588	748,306	3,124,525	2,898,911
Uncollectible operating revenues - Dr.	67,403	84,599	109,384	111,646	49,077	58,664	136,038	128,599	28,618	20,153	137,892	139,153	351,625	346,589
Operating revenues	19,997,696	18,562,867	32,987,272	30,694,510	13,618,972	12,709,096	28,081,396	26,194,375	7,350,906	6,755,037	34,140,473	31,143,825	83,191,747	76,802,333
OPERATING EXPENSES:														
Depreciation and extraordinary retirements	3,446,363	3,391,235	5,516,275	5,455,952	2,359,952	2,311,767	4,800,279	4,735,376	1,350,763	1,316,299	5,812,458	5,744,729	14,323,452	14,108,171
All other maintenance	3,302,314	2,801,364	5,444,291	4,894,537	2,693,536	2,614,865	4,447,276	4,061,645	1,190,440	1,100,389	6,483,740	5,903,447	14,814,992	13,680,346
Traffic expenses	2,978,749	2,798,395	5,001,198	4,659,897	2,080,979	1,891,487	4,017,406	3,736,585	1,216,771	1,122,544	4,445,932	4,074,823	11,761,088	10,824,999
Commercial expenses	1,410,958	1,257,735	2,576,313	2,342,128	1,142,552	1,082,136	2,177,775	2,009,513	736,195	694,921	2,697,344	2,550,859	6,753,866	6,317,429
General office salaries and expenses	745,966	688,541	1,353,628	1,346,030	802,587	734,833	1,324,909	1,236,293	411,692	359,722	1,536,671	1,443,033	4,075,859	3,773,883
General services and licenses	258,784	243,510	438,447	418,319	193,572	183,003	372,860	344,690	101,652	93,756	467,465	430,721	1,135,549	1,052,170
All other operating expenses	986,226	998,905	1,466,011	1,424,922	492,335	516,382	1,011,871	952,456	264,623	248,318	836,839	867,580	2,607,668	2,564,736
Operating expenses	13,129,356	12,179,685	21,798,159	20,537,785	9,765,513	9,334,473	18,152,376	17,076,518	5,272,136	4,935,949	22,282,449	20,994,794	55,472,474	52,341,734
INCOME ITEMS:														
Net operating revenues	6,868,340	6,383,182	11,189,113	10,156,725	3,853,459	3,374,623	9,929,020	9,117,857	2,078,770	1,819,088	11,858,024	10,149,031	27,719,273	24,460,599
Rent from lease of operating property	-	-	-	-	-	-	100	100	235	233	303	303	638	636
Rent for lease of operating property	-	-	-	-	-	-	15,783	27,952	-	-	349	362	16,132	28,314
Net operating income before tax deduction	6,868,340	6,383,182	11,189,113	10,156,725	3,853,459	3,374,623	9,913,337	9,090,005	2,079,005	1,819,321	11,857,978	10,148,972	27,703,779	24,432,921
Operating taxes	2,537,418	2,307,283	4,006,758	3,557,884	1,388,713	1,174,395	3,074,885	2,973,816	909,705	814,357	4,526,254	3,454,963	9,899,557	8,417,531
Net operating income	4,330,922	4,075,899	7,182,355	6,598,841	2,464,746	2,200,228	6,838,452	6,116,189	1,169,300	1,004,964	7,331,724	6,694,009	17,804,222	16,015,390
Ratio of expenses to revenues (%)	65.65	65.61	66.08	66.91	71.71	73.45	64.64	65.19	71.72	73.07	65.27	67.41	66.68	68.15
CHANGES IN CAPITAL ITEMS:														
Increase during period:														
In "Telephone plant"	1,094,059	926,305	2,523,283	1,174,149	988,736	660,413	1,976,092	1,271,292	793,992	462,808	2,209,743	1,076,396	5,968,563	3,470,909
In "Capital stock"	d 1,061,589	-	d 1,061,589	-	-	-	-	-	-	-	-	-	-	-
In "Funded debt"	d 844,500	d 2,500	d 985,000	d 2,500	-	-	d 47,844,511	d 952,300	-	-	29,550,000	d 884,000	d 18,294,511	d 1,836,300

d Deficit or other reverse item.
1/ Returns in this column reflect adjustments covering estimated refunds.

Geographical Groupings

The United States has been subdivided into three districts which have been further subdivided into nine regions as follows:

EASTERN DISTRICT

NEW ENGLAND REGION - This region comprises the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

MIDDLE ATLANTIC REGION - This region comprises the following States: Delaware, New Jersey, New York, and Pennsylvania.

GREAT LAKES REGION - This region comprises the following States: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

SOUTHERN DISTRICT

CHESAPEAKE REGION - This region comprises the following States and Territory: District of Columbia, Maryland, Virginia, and West Virginia.

SOUTHEASTERN REGION - This region comprises the following States: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

WESTERN DISTRICT

NORTH CENTRAL REGION - This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

SOUTH CENTRAL REGION - This region comprises the following States: Arkansas, Kansas, Missouri, Oklahoma, and Texas (except El Paso County).

MOUNTAIN REGION - This region comprises the following States: Arizona, Colorado, Idaho (south of Salmon River), Montana, Nevada, New Mexico, Texas (El Paso County), Utah, and Wyoming.

PACIFIC REGION - This region comprises the following States: California, Idaho (north of Salmon River), Oregon, and Washington.

O U. S. GOVERNMENT PRINTING OFFICE 1936

TABLE XII.--FEDERAL COMMUNICATIONS COMMISSION

APRIL, 1936

ACCOUNTING, STATISTICAL, AND TARIFF DEPT.

WASHINGTON, D. C.

OPERATING DATA FROM MONTHLY REPORTS OF TELEGRAPH CARRIERS

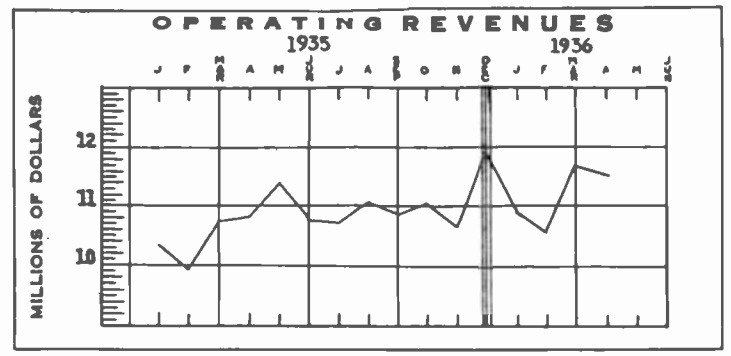
Compilations, subject to revision, from reports of revenues and expenses of telegraph, cable, and radiotelegraph carriers, each having annual operating revenues of $50,000 or more.

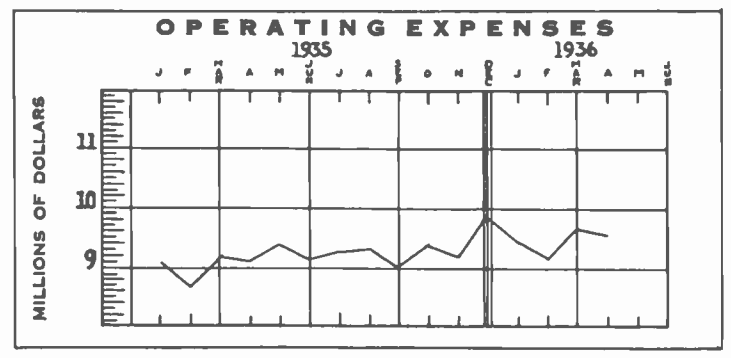
FOR THE MONTH OF APRIL, 1936 AND 1935.

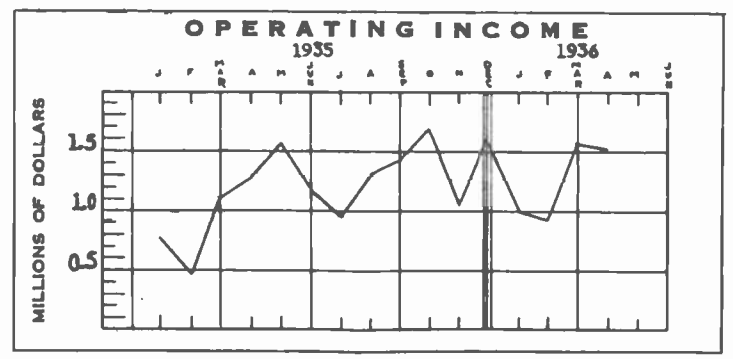
Name of carrier	Revenues from transmission-telegraph and cable		Revenues from operations other than transmission		Contract revenues--Dr.		Total telegraph and cable operating revenues		Total telegraph and cable operating expenses		Net telegraph and cable operating revenues	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Northern Telegraph Co.	$3,610	$3,499	$1,525	$1,520	-	-	$5,135	$5,019	$3,983	$3,961	$1,152	$1,058
Postal Telegraph-Cable Co. (Land Line System)	1/ 1,873,579	1/ 1,806,734	125,959	107,035	$1,988	$2,258	1/ 1,997,550	1/ 1,913,511	1,751,508	1,706,703	246,042	206,808
Western Union Telegraph Co.	2/ 7,426,132	2/ 7,007,196	693,446	571,526	121,005	115,243	2/ 7,998,575	2/ 7,463,479	6,404,247	6,083,544	1,594,328	1,379,935
Total - Telegraph Carriers	9,303,321	8,819,429	820,932	680,081	122,993	117,501	10,001,260	9,382,009	8,159,738	7,794,208	1,841,522	1,587,801
All America Cables, Inc.	359,771	358,338	4,679	5,799	-	-	364,450	364,137	299,157	297,039	65,293	67,098
Commercial Cable Co. (N.Y. & Limited)	327,724	307,870	92	107	-	-	327,816	307,977	272,885	278,564	54,931	29,413
Commercial Pacific Cable Co.	64,361	77,851	206	77	-	-	64,567	77,928	61,965	62,456	2,602	15,470
French Telegraph Cable Co.	35,805	29,807	4,471	3,939	6,842	6,725	33,434	27,021	34,138	20,343	d 704	6,678
Mexican Telegraph Co.	26,918	25,787	708	736	-	-	27,626	26,523	20,846	20,928	6,780	5,595
Total - Cable Carriers	814,579	799,653	10,156	10,658	6,842	6,725	817,893	803,586	688,991	679,332	128,902	124,254
Globe Wireless, Ltd.	35,058	28,492	78	28	-	-	35,136	28,520	26,156	25,384	8,980	3,136
Mackay Radio & Telegraph Co. (Calif.)	78,280	84,253	3,410	2,922	-	-	81,690	87,175	74,492	75,714	7,198	11,461
Mackay Radio & Telegraph Co. (Del.)	70,666	63,432	4,709	3,426	-	-	75,375	66,858	93,638	86,193	d 18,263	d 19,335
Mutual Telephone Co. (Wireless Dept. - Hawaii)	4,547	4,207	-	-	-	-	4,547	4,207	3,541	3,696	1,006	511
Press Wireless, Inc.	34,033	29,780	-	-	-	-	34,033	29,780	30,722	29,133	3,311	647
R. C. A. Communications, Inc.	352,676	330,306	2,930	3,298	-	-	355,606	333,604	339,179	315,178	16,427	18,426
Radiomarine Corp. of America	37,515	35,033	41,878	41,033	-	-	79,393	76,066	63,636	62,865	15,757	13,201
Southern Radio Corp.	2,789	4,092	-	-	-	-	2,789	4,092	4,561	5,877	d 1,772	d 1,785
Tropical Radio Telegraph Co.	50,551	57,464	-	-	-	-	50,551	57,464	45,066	48,129	5,485	9,335
U. S. - Liberia Radio Corp.	4,516	5,006	-	-	-	-	4,516	5,006	4,739	4,662	d 223	344
Total - Radiotelegraph Carriers	670.631	642,065	53,005	50,707	-	-	723,636	692,772	685,730	656,831	37,906	35,941
Grand total	10,788,531	10,261,147	884,093	741,446	129,835	124,226	11,542,769	10,878,367	9,534,459	9,130,371	2,008,330	1,747,996

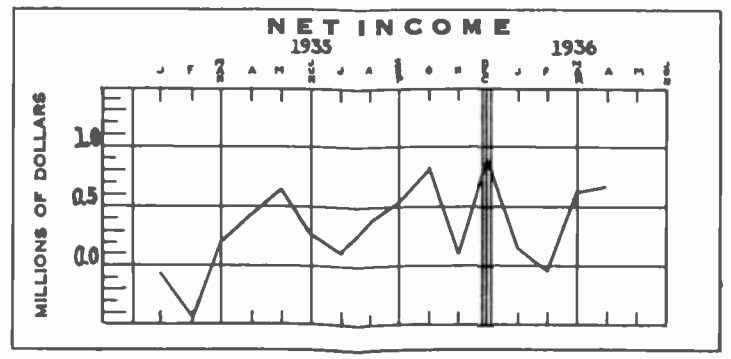
Name of carrier	Net deductions 3/		Operating income		Nonoperating income		Gross income		Deductions from gross income		Net income	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Northern Telegraph Co.	$360	$259	$792	$799	$117	$239	$909	$1,038	$34	$33	$875	$1,005
Postal Telegraph-Cable Co. (Land Line System)	47,500	56,666	198,542	150,142	3,365	2,126	201,907	152,268	236,118	227,531	d 34,211	d 75,263
Western Union Telegraph Co.	386,192	335,532	1,206,136	1,044,403	169,356	168,103	1,377,492	1,212,506	683,295	691,307	694,197	521,199
Total - Telegraph Carriers	434,052	392,457	1,407,470	1,195,344	172,838	170,468	1,580,308	1,365,812	919,447	918,871	660,861	446,941
All America Cables, Inc.	28,578	24,711	36,715	42,387	11,468	18,704	48,183	61,091	14,478	14,875	33,705	46,216
Commercial Cable Co. (N.Y. & Limited)	10,895	13,402	44,036	16,011	60,773	22,960	104,809	38,971	105,275	106,677	d 466	d 67,706
Commercial Pacific Cable Co.	1,948	5,973	654	9,497	17,515	17,059	18,169	26,556	3,500	5,910	14,669	20,646
French Telegraph Cable Co.	1,891	1,505	d 2,595	5,173	4,500	4,500	1,905	9,673	4,798	4,794	d 2,893	4,879
Mexican Telegraph Co.	1,309	808	5,471	4,787	-	-	5,471	4,787	2,916	2,916	2,555	1,871
Total - Cable Carriers	44,621	46,399	84,281	77,855	94,256	63,223	178,537	141,078	130,967	135,172	47,570	5,906
Globe Wireless, Ltd.	d 2,193	266	11,173	2,870	185	19	11,358	2,889	4,116	78	7,242	2,811
Mackay Radio & Telegraph Co. (Calif.)	d 284	7,125	7,482	4,336	311	284	7,793	4,620	14,726	14,402	d 6,933	d 9,782
Mackay Radio & Telegraph Co. (Del.)	935	331	d 19,198	d 19,666	1,473	1,917	d 17,725	d 17,749	32,057	32,100	d 49,782	d 49,849
Mutual Telephone Co. (Wireless Dept. - Hawaii)	469	430	537	81	-	-	537	81	-	-	537	81
Press Wireless, Inc.	620	-	2,691	647	-	-	2,691	647	-	-	2,691	647
R. C. A. Communications, Inc.	22,729	17,659	d 6,302	767	45,701	49,539	39,399	50,306	28,712	35,124	10,687	15,182
Radiomarine Corp. of America	3,696	3,016	12,061	10,185	56	396	12,117	10,581	-	-	12,117	10,581
Southern Radio Corp.	26	24	d 1,798	d 1,809	-	-	d 1,798	d 1,809	70	5	d 1,868	d 1,814
Tropical Radio Telegraph Co.	d 13	d 73	5,498	9,408	4,474	4,457	9,972	13,865	1,716	1,743	8,254	12,122
U. S. - Liberia Radio Corp.	d 26	169	d 197	175	-	-	d 197	175	-	-	d 197	175
Total - Radiotelegraph Carriers	25,959	28,947	11,947	6,994	52,200	56,612	64,147	63,606	61,399	63,452	d 17,252	d 19,846
Grand total	504,632	467,803	1,503,698	1,280,193	319,294	290,303	1,822,992	1,570,496	1,131,813	1,137,495	691,179	433,001

d Deficit or other reverse item.
1/ Includes revenues from telephone operations amounting to $56,842 for April 1936; and $52,575 for April 1935, respectively.
2/ Includes "Revenues from transmission-cable" amounting to $479,766 for April 1936, and $447,378 for April 1935, respectively.
3/ Includes "Net revenues from miscellaneous operations" and deductions for "Uncollectible operating revenues" and "Taxes assignable to operations."









FEDERAL COMMUNICATIONS COMMISSION

APRIL, 1936

ACCOUNTING, STATISTICAL, AND TARIFF DEPT.

WASHINGTON, D. C.

OPERATING DATA FROM MONTHLY REPORTS OF TELEGRAPH CARRIERS

Compilations, subject to revision, from reports of revenues and expenses of telegraph, cable, and radiotelegraph carriers, each having annual operating revenues of $50,000 or more.

FOR THE FOUR MONTHS ENDED WITH APRIL, 1936 AND 1935.

Name of carrier	Revenues from transmission-telegraph and cable		Revenues from operations other than transmission		Contract revenues--Dr.		Total telegraph and cable operating revenues		Total telegraph and cable operating expenses		Net telegraph and cable operating revenues	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Northern Telegraph Co.	$14,833	$14,551	$6,063	$6,032	-	-	$20,896	$20,583	$14,290	$14,313	$6,606	$6,270
Postal Telegraph-Cable Co. (Land Line System)	1/ 7,074,016	1/ 6,792,260	471,190	398,568	$7,261	$7,248	1/ 7,537,945	1/ 7,183,580	6,997,073	6,775,992	540,872	407,588
Western Union Telegraph Co.	2/ 28,546,800	2/ 26,464,710	2,610,003	2,266,442	451,240	418,714	2/ 30,705,563	2/ 28,312,438	25,286,930	24,004,870	5,416,633	4,307,568
Total - Telegraph Carriers	35,635,649	33,271,521	3,087,256	2,671,042	458,501	425,962	38,264,404	35,516,601	32,300,293	30,795,175	5,964,111	4,721,426
All America Cables, Inc.	1,511,007	1,479,156	20,496	25,201	-	-	1,531,503	1,504,357	1,179,900	1,180,667	351,603	323,690
Commercial Cable Co. (N.Y. & Limited)	1,407,604	1,265,852	8,038	2,869	-	-	1,415,642	1,268,721	1,123,074	1,127,951	292,568	140,770
Commercial Pacific Cable Co.	283,196	352,466	752	361	-	-	283,948	352,827	243,652	243,030	40,296	109,797
French Telegraph Cable Co.	150,853	122,598	10,548	8,195	28,622	28,656	132,779	102,097	95,177	76,174	37,602	25,923
Mexican Telegraph Co.	116,724	104,031	2,999	2,843	-	-	119,723	106,874	81,802	84,597	37,921	22,277
Total - Cable Carriers	3,469,384	3,324,063	42,833	39,469	28,622	28,656	3,483,595	3,334,876	2,723,605	2,712,419	759,990	622,457
Globe Wireless, Ltd.	142,812	109,687	994	820	-	-	143,806	110,507	110,124	92,231	33,682	18,276
Mackay Radio & Telegraph Co. (Calif.)	310,248	313,202	13,021	11,101	-	-	323,269	324,303	296,755	303,174	26,514	21,129
Mackay Radio & Telegraph Co. (Del.)	282,596	242,994	18,414	13,960	-	-	301,010	256,954	376,208	350,934	d 75,198	d 93,980
Mutual Telephone Co. (Wireless Dept. - Hawaii)	17,664	16,418	-	-	-	-	17,664	16,418	14,780	14,979	2,884	1,439
Press Wireless, Inc.	137,079	114,790	-	-	-	-	137,079	114,790	121,989	110,636	15,090	4,154
R. C. A. Communications, Inc.	1,468,720	1,331,428	12,268	11,832	-	-	1,480,988	1,343,260	1,339,297	1,238,974	141,691	104,286
Radiomarine Corp. of America	145,302	132,583	179,373	161,484	-	-	324,675	294,067	254,061	246,701	70,614	47,366
Southern Radio Corp.	12,509	15,574	-	-	-	-	12,509	15,574	18,468	23,766	d 5,959	d 8,192
Tropical Radio Telegraph Co.	258,511	233,006	-	-	-	-	258,511	233,006	191,785	189,191	66,726	43,815
U. S. - Liberia Radio Corp.	18,496	21,101	-	-	-	-	18,496	21,101	18,762	18,636	d 266	2,465
Total - Radiotelegraph Carriers	2,793,937	2,530,783	224,070	199,197	-	-	3,018,007	2,729,980	2,742,229	2,589,222	275,778	140,758
Grand total	41,898,970	39,126,367	3,354,159	2,909,708	487,123	454,618	44,766,006	41,581,457	37,766,127	36,096,816	6,999,879	5,484,641

Name of carrier	Net deductions 3/		Operating income		Nonoperating income		Gross income		Deductions from gross income		Net income	
	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936	1935
Northern Telegraph Co.	$1,600	$1,335	$5,006	$4,935	$486	$820	$5,492	$5,755	$136	$131	$5,356	$5,624
Postal Telegraph-Cable Co. (Land Line System)	190,000	226,666	350,872	180,922	10,307	3,656	361,179	184,578	940,040	903,147	d 578,861	d 718,569
Western Union Telegraph Co.	1,530,962	1,331,475	3,885,671	2,976,093	523,231	520,650	4,408,902	3,496,743	2,750,019	2,771,444	1,658,883	725,299
Total - Telegraph Carriers	1,722,562	1,559,476	4,241,549	3,161,950	534,024	525,126	4,775,573	3,687,076	3,690,195	3,674,722	1,085,378	12,354
All America Cables, Inc.	114,114	98,878	237,489	224,812	73,354	74,151	310,843	298,963	57,601	62,026	253,242	236,937
Commercial Cable Co. (N.Y. & Limited)	42,408	53,526	250,160	87,244	123,615	132,050	373,775	219,294	420,031	425,367	d 46,256	d 206,073
Commercial Pacific Cable Co.	13,199	26,522	27,097	83,275	59,106	60,442	86,203	143,717	9,220	16,121	76,983	127,596
French Telegraph Cable Co.	7,090	4,949	30,512	20,974	18,000	18,000	48,512	38,974	19,192	19,175	29,320	19,799
Mexican Telegraph Co.	5,837	3,233	32,084	19,044	-	1,022	32,084	20,066	11,666	11,666	20,418	8,400
Total - Cable Carriers	182,648	187,108	577,342	435,349	274,075	285,665	851,417	721,014	517,710	534,355	333,707	186,659
Globe Wireless, Ltd.	3,440	929	30,242	17,347	336	67	30,578	17,414	4,204	119	26,374	17,295
Mackay Radio & Telegraph Co. (Calif.)	3,966	9,760	22,548	11,369	1,415	1,364	23,963	12,733	58,909	56,822	d 34,946	d 44,089
Mackay Radio & Telegraph Co. (Del.)	2,408	515	d 77,606	d 94,495	6,189	11,150	d 71,417	d 83,345	135,564	128,479	d 206,981	d 211,824
Mutual Telephone Co. (Wireless Dept. - Hawaii)	1,713	1,615	1,171	d 176	-	-	1,171	d 176	-	-	1,171	d 176
Press Wireless, Inc.	2,920	830	12,170	3,324	-	-	12,170	3,324	-	-	12,170	3,324
R. C. A. Communications, Inc.	96,414	66,036	45,277	38,250	166,744	174,415	212,021	212,665	135,831	144,466	76,190	68,199
Radiomarine Corp. of America	15,383	11,304	55,231	36,062	361	1,727	55,612	37,789	-	-	55,612	37,789
Southern Radio Corp.	94	175	d 6,053	d 8,367	32	-	d 6,021	d 8,367	158	7	d 6,179	d 8,374
Tropical Radio Telegraph Co.	1,048	2,226	65,678	41,589	19,470	17,806	85,148	59,395	6,996	7,100	78,152	52,295
U. S. - Liberia Radio Corp.	169	741	d 435	1,724	-	-	d 435	1,724	-	-	d 435	1,724
Total - Radiotelegraph Carriers	127,555	94,131	148,225	46,627	194,567	206,529	342,790	253,156	341,662	336,993	1,128	d 83,837
Grand total	2,032,765	1,840,715	4,967,114	3,643,926	1,002,666	1,017,320	5,969,780	4,661,246	4,549,567	4,546,070	1,420,213	115,176

d Deficit or other reverse item.
1/ Includes revenues from telephone operations amounting to $222,949 for period in 1936, and $202,885 for period in 1935, respectively.
2/ Includes "Revenues from transmission-cable" amounting to $2,062,901 for period in 1936, and $1,836,165 for period in 1935, respectively.
3/ Includes "Net revenues from miscellaneous operations" and deductions for "Uncollectible operating revenues" and "Taxes assignable to operations."

SUMMARY OF MONTHLY REPORTS OF LARGE TELEPHONE CARRIERS RELATIVE TO AVAILABLE DATA CONCERNING TELEGRAPH OPERATIONS

Compilations, subject to revision, from reports of revenues of twenty-six Bell System Carriers

Item	April, 1936		April, 1935	
	Total Operating Revenues	Amounts Appl. to Respondents' Telegraph Operations 1/	Total Operating Revenues	Amounts Appl. to Respondents' Telegraph Operations 1/
OPERATING REVENUES:				
Subscribers' station revenues	$51,879,143	$10,687	$49,278,361	$5,084
Public telephone revenues	3,649,793	-	3,408,072	-
Miscellaneous local service revenues	904,321	209,069	827,461	203,670
Message tolls	22,608,568	450,039	20,026,511	311,590
Miscellaneous toll service revenues	2,691,320	1,319,719	2,354,655	1,168,608
Revenues from general services and licenses	1,089,089	-	1,007,475	-
Sundry miscellaneous revenues	3,213,428	-	3,077,689	-
Uncollectible operating revenues - Dr.	262,517	1,980	316,877	1,362
Total	85,773,145	1,987,594	79,663,547	1,690,570

Item	1936 Cumulative Figures		1935 Cumulative Figures	
	Total Operating Revenues	Amounts Appl. to Respondents' Telegraph Operations 1/	Total Operating Revenues 2/	Amounts Appl. to Respondents' Telegraph Operations 1/
OPERATING REVENUES:				
Subscribers' station revenues	$205,795,197	$42,769	$195,195,559	$30,561
Public telephone revenues	14,491,345	-	13,685,705	-
Miscellaneous local service revenues	3,571,360	820,722	3,274,237	787,618
Message tolls	87,221,202	1,710,205	76,314,287	1,120,146
Miscellaneous toll service revenues	10,781,709	5,373,630	9,584,822	4,772,264
Revenues from general services and licenses	4,398,955	-	4,162,405	-
Sundry miscellaneous revenues	12,899,448	-	12,059,206	-
Uncollectible operating revenues - Dr.	1,130,708	5,188	1,294,803	5,541
Total	336,028,508	7,942,138	312,981,418	6,705,048

1/ Reflects only items which are readily available from carriers' accounts.
2/ Returns in this column reflect adjustments covering estimated refunds.

O U. S. GOVERNMENT PRINTING OFFICE : 1936

there were 282,500 employees in service—110,600 male and 171,900 female. Salaries and wages paid to employees amounted to approximately $435,000,000, or an average of more than $1,500 per employee per annum.

Tables and charts contained in the appendix.—As elsewhere mentioned in this report, there are contained in the appendix many tables and charts showing financial and other statistical data relative to communication carriers and one table showing the intercorporate relations between communication carriers and holding companies. With some exceptions, the tables and charts are separated into (1) those relating exclusively to telephone carriers, (2) those relating exclusively to telegraph carriers, and (3) those relating to both telephone and telegraph carriers. Brief comment is made in the appendix concerning each of these tables and charts.

TECHNICAL DEVELOPMENTS IN THE TELEPHONE ART

During the past year many technical developments were effected in telephone communication, the most important of which are as follows:

WIRE TELEPHONY

Carrier systems.—In telephonic carrier-transmission a number of telephone circuits are obtained on a single pair of conductors through the use of frequencies above the voice range. The wider the frequency range the greater the number of telephone channels that can be operated on the same conductor. New developments have been carried on for the purpose of widening the frequency range and thus obtaining more telephone circuits on a single pair of conductors.

From these developments, three new carrier systems have been evolved and, because of the wide band of frequencies on which they transmit, these are all classed as broad-band systems.

One system, for cables, the development of which has been almost completed, using frequencies up to 60000 cycles, will give 12 two-way telephone circuits on two pairs of cable conductors. A commercial cable is now being installed on which it is contemplated to employ this carrier system.

Another system for open-wire lines. which is also nearing completion, will provide 12 telephone circuits and can be employed with three channels of the existing Type-C carrier system and one voice-frequency talking circuit. This will allow a maximum of 16 talking circuits to be employed on one pair of wires. The top frequency of this system is 140000 cycles. This will be ready for use on a transcontinental line on a limited basis about the middle of 1938 and will be generally available in the early part of 1939.

Coaxial systems.—The third system comprises the coaxial cable, the construction of which was authorized by the Commission to extend between New York and Philadelphia, a distance of 94½ miles, and has been licensed to be operated experimentally for telephone, telegraph, and television purposes. The cable was in place and ready for field experiments in December 1936. It is expected that this cable will have a capacity of either 240 telephone channels or more than 2,000 telegraph channels, and may permit a single high-grade transmission of television.

In preparation for the trial operation of transmission over this cable, "over-all" tests and adjustments have been made, and on April 19, 1937, 27 circuits were routed over this coaxial system—16 New York to Philadelphia circuits and 11 circuits extending from New York via Philadelphia to other points.

While the above-mentioned circuits were being used temporarily for commercial telephone operation, some tests were made in which a voice-frequency telegraph system was superposed on a spare coaxial channel looped at Philadelphia. Some telephotographs were also

transmitted over a similar loop. Under the conditions of the test the performance of the coaxial system was reasonably satisfactory.

Each of these systems will fill an important place in the communication industry—the cable and the open-wire systems particularly where these lines already exist and the coaxial system where new structures are needed and on heavy traffic routes. All these systems require complicated equipment and in the immediate future will probably prove to be economical chiefly for transmission over long distances.

These systems have been made possible through extensive research and development of new types of vacuum tubes, amplifiers, copper-oxide modulators and demodulators, filters, automatic transmission-regulators controlled by pilot wires, etc.

Cross-bar switch.—During the year additional improvements were made in the cross-bar switch, which is a device for reducing considerably the amount of equipment and maintenance required for the operation of an automatic telephone exchange.

Protectors.—New protectors have been developed for the purpose of guarding communication lines and equipment against damage and interruptions due to power and lightning interference.

Buried wire.—The use of buried telephone wire with loading coils and cases and a new method of laying the buried wire have been developed. It is expected that this form of construction will eliminate a large number of pole lines now carrying a small number of telephone wires.

Equipment.—Many improvements of desk stands and ringing apparatus in connection with telephone subscriber equipment have been announced. Along with many other developments and improvements in connection with toll and exchange equipment have been the development and use of unattended dial central offices in a number of villages throughout the country.

RADIOTELEPHONY

Single sideband system.—The past year has seen much progress in the art of radiotelephony, especially in its application to transoceanic communications. New circuits have been connected to several countries not heretofore served, and new developments have been adapted to this type of service. The use of single-sideband transmission and reduced carrier power on high-frequency radiotelephone circuits has increased appreciably the efficiency and quality of the service. This single-sideband system also gives promise of reducing the number of radio-frequency channels needed for a certain number of circuits by the use of duplexing or multiplexing. Experimental work is now being carried on with the idea of using each side of a radio-frequency assignment for separate single-sideband channels to form a twin single-sideband arrangement allowing the use of two circuits on the same frequency.

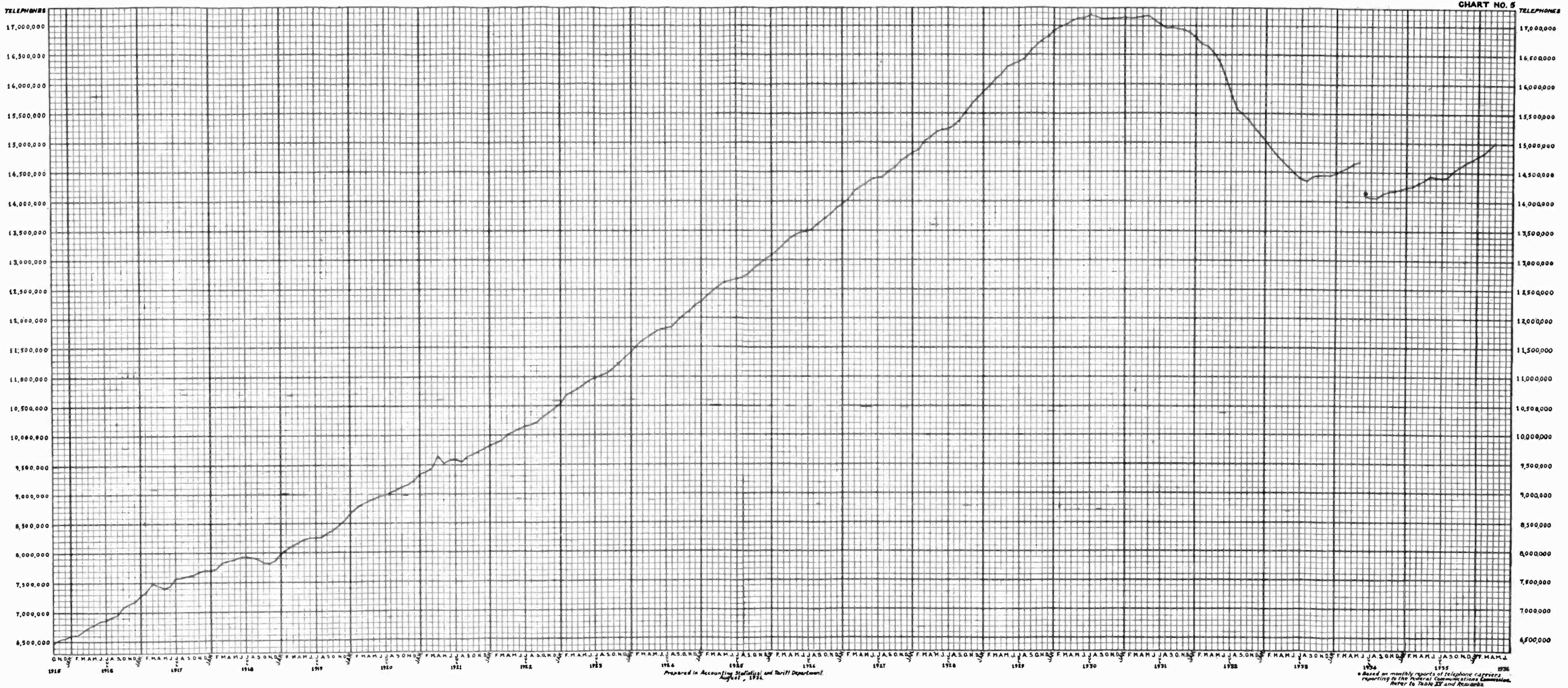
Antenna development.—In the development of receiving apparatus the use of the multiple-unit steerable antenna is perhaps the most outstanding commercial innovation of this period. By using several directional receiving antennas of the rhombic type all in a row, and by steering the vertical receiving angle for best reception, it is pos-

sible to get a high degree of signal strength with good quality and with little or no frequency- or phase-distortion. This type of antenna system is being experimentally used on the transatlantic circuits, where reliable reception at all times is essential because of the large volume of traffic. It may be adapted later to other radiotelephone circuits when their volume of business justifies the slightly higher cost of installation for this type.

CHART SHOWING THE NUMBER OF TELEPHONES IN SERVICE IN THE UNITED STATES

BASED ON REPORTS RECEIVED FROM LARGE TELEPHONE CARRIERS REPORTING TO THE INTERSTATE COMMERCE COMMISSION FROM OCTOBER, 1915 TO MAY, 1934, AND TO THE FEDERAL COMMUNICATIONS COMMISSION FROM JUNE, 1934 TO APRIL, 1936.

CHART NO. 5



Prepared in Accounting Statistical and Tariff Department August, 1936.

* Based on monthly reports of telephone carriers reporting to the Federal Communications Commission. Refer to Table XI and Remarks.

APPENDIXES

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APPENDIX A—STATISTICAL DATA CONCERNING TELEPHONE AND TELEGRAPH CARRIERS AND HOLDING COMPANIES

APPENDIX K

APPENDIX A

Financial and Other Statistical Data Concerning Telephone and Telegraph Carriers and Holding Companies

Arrangement of charts and tables relating to telephone and telegraph carriers.—There are contained in this appendix tables and charts showing statistical data concerning telephone and telegraph carriers and holding companies, based principally on annual and monthly reports filed with the Commission. For convenience, the tables and charts which relate to telephone and telegraph carriers are divided into two groups. The first group contains statistical data based principally on the annual reports filed with the Commission by these carriers and the second group contains statistical data based principally on monthly reports filed with the Commission. With some exceptions, the tables and charts contained in these two groups are further subdivided to show: First, those relating to telephone carriers; second, those relating to telegraph carriers; and third, those relating both to telephone and telegraph carriers.

Intercorporate relations.—Following the two groups of tables and charts relating to telephone and telegraph carriers, there is included in this appendix a table showing the intercorporate relations between holding companies and telephone and telegraph carriers and containing an index to all such companies.

Statistics cover preponderance of the industry.—The telephone and telegraph carriers embraced in the annual-report statistics contained in this appendix are listed in Tables I and V, respectively, and represent a preponderance of the telephone and telegraph industries. A number of telephone carriers having average operating revenues exceeding $50,000 per annum do not file annual reports since they claim exemption from the jurisdiction of the Commission, but the reporting telephone carriers receive approximately 95 percent of all telephone operating revenues in the United States. The telephone carriers embraced in the monthly report statistics are listed in table XXII and the telegraph carriers filing monthly reports are shown in table XXVIII.

Bell System statistics limited.—Unless otherwise stated, the statistical data shown in this appendix for Bell System carriers exclude returns from the Cincinnati and Suburban Bell Telephone Co. and the Southern New England Telephone Co.

Geographical groupings of telephone carriers.—For statistical purposes, telephone carriers are grouped geographically into three districts. These districts, in turn, are further subdivided into a total of nine regions. These districts and regions are as follows:

EASTERN DISTRICT

New England region.—This region comprises the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Middle Atlantic region.—This region comprises the following States: Delaware, New Jersey, New York, and Pennsylvania.

Great Lakes region.—This region comprises the following States: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

SOUTHERN DISTRICT

Chesapeake region.—This region comprises the following States and Territory: District of Columbia, Maryland, Virginia, and West Virginia.

Southeastern region.—This region comprises the following States: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

WESTERN DISTRICT

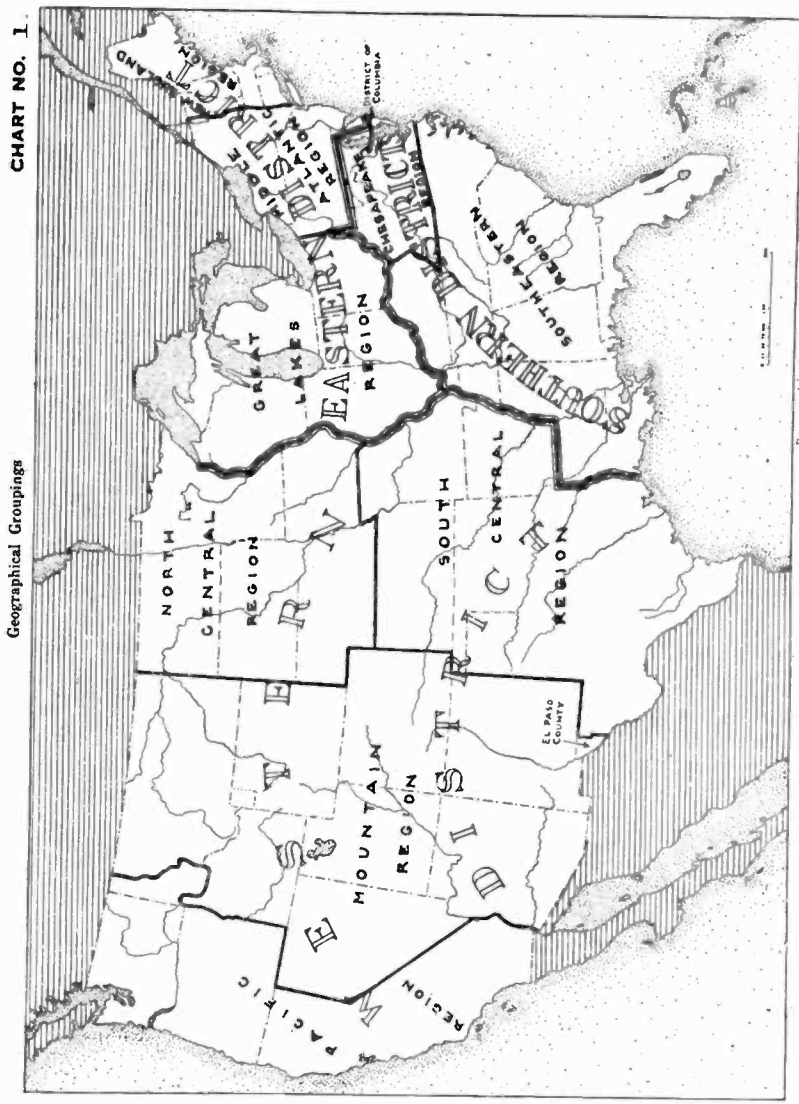
North Central region.—This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

South Central region.—This region comprises the following States: Arkansas, Kansas, Missouri, Oklahoma, and Texas (except El Paso County).

Mountain region.—This region comprises the following States: Arizona, Colorado, Idaho (south of Salmon River), Montana, Nevada, New Mexico, Texas (El Paso County), Utah, and Wyoming.

Pacific region.—This region comprises the following States: California, Idaho (north of Salmon River), Oregon, and Washington.

The geographical groupings of telephone carriers are shown by chart 1.



GROUP 1.—STATISTICS BASED PRINCIPALLY ON ANNUAL REPORTS FILED WITH THE COMMISSION.

TELEPHONE STATISTICS (BASED ON ANNUAL REPORTS)

Telephone carriers filing reports.—Approximately 45 carriers that filed annual reports in 1935 did not file annual reports for 1936 because they claimed to be subject only to the provisions of sections 201–205 of the act, while 5 carriers

making similar claims, voluntarily filed annual reports with the Commission.

In table I, which follows, are shown the names of telephone carriers that filed annual reports with the Commission for the calendar year 1936. These reports are included in the statistics of telephone carriers based principally on annual reports.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1936 showing classification*[1] *and geographical region to which the carriers have been assigned for statistical purposes*

Name of carrier	Class of carrier	Geographical region
American Telephone Co	A	South Central.
*American Telephone & Telegraph Co	A	Middle Atlantic.
*Bell Telephone Co. of Nevada	A	Mountain.
*Bell Telephone Co. of Pennsylvania	A	Middle Atlantic.
Bluefield Telephone Co	A	Chesapeake.
Carolina Telephone & Telegraph Co	A	Southeastern.
Champaign Telephone Co	B	Great Lakes.
Chenango & Unadilla Telephone Corporation	A	Middle Atlantic.
*Chesapeake & Potomac Telephone Co	A	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	A	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	A	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	A	Do.
*Christian-Todd Telephone Co	A	Southeastern.
Cincinnati & Suburban Bell Telephone Co	A	Great Lakes.
Claar Telephone Co.[2]	B	Middle Atlantic.
Colusa County Telephone Co	B	Pacific.
*Crown Point Telephone Co	B	Great Lakes.
*Dakota Central Telephone Co	A	North Central.
Del Rio & Winter Garden Telephone Co	A	South Central.
*Diamond State Telephone Co	A	Middle Atlantic.
Eastern Kansas Telephone Co	B	South Central.
*Eastern Telephone & Telegraph Co. (Maine)	A	New England.
Eastern Telephone & Telegraph Co. (Pennsylvania)	A	Middle Atlantic.
*Emporia Telephone Co.[3]	A	South Central.
*Fulda Telephone Co.[4]	B	North Central.
Home Telephone Co. of Ridgway	A	Middle Atlantic.
Home Telephone & Telegraph Co. (Indiana)	A	Great Lakes.
Home Telephone & Telegraph Co. of Virginia	B	Chesapeake.
*Illinois Bell Telephone Co	A	Great Lakes.
Indiana Associated Telephone Corporation	A	Do.
*Indiana Bell Telephone Co	A	Do.
Inter-Mountain Telephone Co	A	Southeastern.
Interstate Telegraph Co	A	Pacific.
Interstate Telephone Co	A	Do.
Jamestown Telephone Corporation	A	Middle Atlantic.
Kansas State Telephone Co	B	South Central.
Kansas Telephone Co	A	Do.
Keystone Telephone Co. of Philadelphia	A	Middle Atlantic.
LaCrosse Telephone Corporation	A	Great Lakes.
*Lebanon Telephone Co	B	Do.
Lee Telephone Co	B	Chesapeake.
Lincoln Telephone & Telegraph Co	A	North Central.
Meadville Telephone Co	A	Middle Atlantic.
Michigan Associated Telephone Co	A	Great Lakes.
*Michigan Bell Telephone Co	A	Do.
Middle States Telephone Co. of Illinois	A	Do.
Middle States Utilities Co. of Iowa	B	North Central.
Middle States Utilities Co. of Missouri	A	South Central.
*Moosehead Telephone & Telegraph Co	B	New England.
*Mountain States Telephone & Telegraph Co	A	Mountain.
Nebraska Continental Telephone Corporation	A	North Central.
*New England Telephone & Telegraph Co	A	New England.
*New Jersey Bell Telephone Co	A	Middle Atlantic.
New Jersey Telephone Co	A	Do.
*New York Telephone Co	A	Do.
*Nicollet County Telephone & Telegraph Co	B	North Central.
Norfolk & Carolina Telephone & Telegraph Co	A	Southeastern.
North-West Telephone Co	A	Great Lakes.
North-Western Indiana Telephone Co	A	Do.
Northern States Power Co	A	North Central.
Northwestern Bell Telephone Co	A	Do.

*Represents carriers included in the Bell System.

[1] Telephone carriers filing annual reports are classified as follows: Class A—Carriers having average annual operating revenues exceeding $100,000; Class B—Carriers having average annual operating revenues exceeding $50,000, but not more than $100,000. Telephone carriers having average annual operating revenues ton exceeding $50,000 are not required to file annual reports.

[2] Merged with United Telephone Co. of Pennsylvania as of July 1, 1936.

[3] Merged with the Southwestern Bell Telephone Co. as of July 31, 1936.

[4] Merged with the Tri-State Telephone & Telegraph Co. as of August 31, 1936.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1936 showing classification and geographical region to which the carriers have been assigned for statistical purposes*—Continued

Name of carrier	Class of carrier	Geographical region
Northwestern Telephone Co	A	Great Lakes.
Ohio Associated Telephone Co	A	Do.
*Ohio Bell Telephone Co	A	Do.
Ohio Telephone Service Co	A	Do.
Oregon Washington Telephone Co	A	Pacific.
Oxnard Home Telephone Co	B	Do.
Ozark Central Telephone Co	A	South Central.
*Pacific Telephone & Telegraph Co	A	Pacific.
Pennsylvania Telephone Corporation	A	Middle Atlantic.
*Peoples Telephone Co.[6]	B	North Central.
Platte Valley Telephone Corporation	A	Do.
Public Utilities California Corporation	A	Pacific.
Red River Valley Telephone Co	B	North Central.
*Rio Grande Valley Telephone Co.[6]	A	South Central.
Rochester Telephone Corporation	A	Middle Atlantic.
San Angelo Telephone Co	A	South Central.
Santa Barbara Telephone Co	A	Pacific.
Santa Paula Home Telephone Co	B	Do.
Southeast Missouri Telephone Co	A	South Central.
*Southern Bell Telephone & Telegraph Co	A	Southeastern.
*Southern California Telephone Co	A	Pacific.
Southern New England Telephone Co	A	New England.
Southwest Telephone Co. (Kansas)	A	South Central.
Southwestern Associated Telephone Co	A	Do.
*Southwestern Bell Telephone Co	A	Do.
Tri-State Associated Telephone Corporation	B	Middle Atlantic.
*Tri-State Telephone & Telegraph Co	A	North Central.
Union Telephone Co. (Indiana)	A	Great Lakes.
*United Telephone Co. (Kansas)	A	South Central.
United Telephone Co. (Missouri)	A	Do.
United Telephone Co. (Wisconsin)	B	Great Lakes.
United Telephone Companies, Inc	A	Do.
United Telephone Co. of Pennsylvania	A	Middle Atlantic.
West Coast Telephone Co	A	Pacific.
*Westerly Automatic Telephone Co	A	New England.
Western Arkansas Telephone Co	B	South Central.
*Western New England Telephone Co	B	New England.
Western Telephone Corporation	A	South Central.
Western Telephone Corporation of Oklahoma	A	Do.
Western Telephone Corporation of Texas [7]	B	Do.
*White River Valley Telephone Co	B	New England.
*Wisconsin Telephone Co	A	Great Lakes.

[6] Merged with the Tri-State Telephone & Telegraph Co. as of June 30, 1936.
[6] Merged with the Southwestern Bell Telephone Co. as of December 31, 1936.
[7] Telephone property purchased by the Southwestern Associated Telephone Co. as of October 1, 1936.

Telephone statistics by geographic divisions.—Selected statistics for the year ended December 31, 1936, obtained from the annual reports filed by 80 class A telephone carriers and 23 class B telephone carriers are shown classified by geographic divisions in table II below. The summary includes operating data for the period of operations during 1936 for two merged class A carriers and four merged class B carriers.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic divisions*

[Year ended Dec. 31, 1936]

No.	Item	All carriers				Bell System carriers			
		United States	Eastern District [1]	Southern District	Western District	United States	Eastern District [1]	Southern District	Western District
1	Number of carriers	103	46	12	45	38	18	6	14
2	Investment in telephone plant	$4,554,142,260	$3,035,904,362	$402,290,204	$1,115,947,694	$4,262,460,626	$2,814,379,751	$391,861,419	$1,056,219,456
3	Investments other than telephone plant	2,647,931,284	2,419,130,996	18,462,615	210,337,673	2,640,179,303	2,414,351,650	18,390,909	207,436,744
4	Cash	186,056,402	170,889,275	4,306,625	10,860,502	179,771,782	166,653,683	3,803,457	9,314,642
5	Material and supplies	54,751,127	37,950,240	4,286,318	12,514,569	50,364,503	35,201,808	4,100,352	11,062,343
6	Total current assets	543,645,657	471,052,024	21,446,456	51,147,177	519,342,578	452,976,683	20,306,688	46,059,207
7	Capital stock	4,310,451,317	3,316,477,013	214,780,500	779,193,804	4,172,028,137	3,207,886,865	210,156,400	753,984,872
8	Funded debt	979,805,850	767,220,765	66,011,200	146,573,885	902,416,900	713,060,600	65,006,200	124,350,100
9	Total long-term debt	1,236,343,703	904,309,844	97,307,069	234,726,790	1,148,227,217	842,510,065	96,145,243	209,571,909
10	Total current liabilities	231,445,606	198,254,124	10,128,908	23,062,574	220,051,840	189,007,453	9,628,167	21,416,220
11	Total accrued liabilities not due	128,426,045	98,599,533	7,818,784	22,007,728	122,490,393	93,688,958	7,572,816	21,228,619
12	Depreciation reserve	1,191,631,042	800,996,793	94,667,013	295,967,236	1,125,753,009	751,049,611	91,412,601	283,290,797
13	Total surplus	387,006,427	337,428,873	17,939,970	31,637,584	370,968,555	325,159,795	16,583,217	29,225,543
	Operating revenues:								
14	Local service	709,007,128	463,991,223	68,522,944	176,492,961	665,738,608	429,768,722	66,861,997	169,107,889
15	Toll service	318,993,949	218,190,261	27,066,575	73,737,113	306,457,252	210,176,622	25,979,746	70,300,884
16	Miscellaneous	54,818,257	40,656,608	4,313,974	9,847,675	52,532,778	38,832,967	4,246,535	9,453,276
17	Uncollectible. Dr.	3,406,392	2,111,890	292,579	1,001,923	3,201,809	1,983,848	277,158	940,803
18	Total operating revenues	1,079,412,942	720,726,202	99,610,914	259,075,826	1,021,526,829	676,794,463	96,811,120	247,921,246
	Operating expenses:								
19	Depreciation and extraordinary retirements	170,992,781	113,044,578	15,967,767	41,980,436	161,140,869	105,564,090	15,520,371	40,056,408
20	All other maintenance	192,262,817	129,601,220	16,736,115	45,925,482	182,222,994	121,699,174	16,356,803	44,167,017
21	Traffic	148,470,785	95,196,625	15,658,864	37,615,296	139,665,344	88,618,845	15,195,878	35,850,621
22	Commercial	82,346,721	53,507,635	7,768,744	21,070,342	78,322,203	50,522,877	7,625,055	20,174,271
23	General office salaries and expenses	58,688,237	42,095,888	4,010,155	12,582,194	55,356,042	39,663,682	3,801,381	11,890,979
24	Other	71,263,569	54,397,614	5,598,594	11,267,361	68,849,176	52,488,801	5,497,030	10,863,345
25	Total operating expenses	724,024,910	487,843,560	65,740,239	170,441,111	685,556,628	458,557,469	63,996,518	163,002,641
26	Operating ratio—percent	67.08	67.69	66.00	65.79	67.11	67.75	66.10	65.75

[1] Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the eastern district inasmuch as only aggregate figures are reported.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic divisions*—Continued

No.	Item	All carriers				Bell System carriers			
		United States	Eastern District	Southern District	Western District	United States	Eastern District	Southern District	Western District
	Operating taxes:								
27	Other than U. S. Government	$87,736,026	$57,354,156	$8,795,250	$21,586,620	$84,076,649	$54,773,818	$8,504,322	$20,798,509
28	U. S. Government	33,818,411	22,076,881	3,361,114	8,380,416	32,319,183	20,922,642	3,245,800	8,150,741
29	Total operating taxes	121,554,437	79,431,037	12,156,364	29,967,036	116,395,832	75,696,460	11,750,122	28,949,250
30	Net operating income	233,786,734	153,451,604	21,714,312	58,620,818	219,528,572	142,540,533	21,064,481	55,923,558
31	Other income	189,878,940	177,992,915	384,562	11,501,463	189,472,099	177,766,121	371,021	11,334,957
32	Interest deductions	59,339,268	46,373,992	4,232,635	8,732,641	54,949,592	43,364,812	4,174,498	7,410,282
33	Net income	362,664,863	284,046,252	17,678,907	60,939,704	352,659,334	276,050,587	17,076,241	59,532,506
	Dividends declared:								
34	Preferred stock	12,904,340	4,589,750	166,116	8,148,474	10,728,762	3,303,790	91,200	7,333,772
35	Common stock	333,860,864	269,115,463	16,436,731	48,308,670	327,207,931	263,326,868	15,942,428	47,938,635
36	Miles of wire in cable	79,042,477	53,912,013	6,814,632	18,315,832	74,862,237	50,277,520	6,710,063	17,874,654
37	Miles of aerial wire	4,418,077	1,948,507	744,296	1,725,274	3,889,958	1,697,868	703,939	1,488,151
38	Total miles of wire	83,460,554	55,860,520	7,558,928	20,041,106	78,752,195	51,975,388	7,414,002	19,362,805
39	Miles of pole line	511,827	216,288	53,825	241,714	406,907	172,377	49,315	185,215
40	Miles of underground conduit (single duct)	126,656	90,166	8,379	28,111	116,715	80,679	8,311	27,725
	Central offices, type of switchboard:								
41	Magneto, manual	4,564	1,545	772	2,247	3,502	1,189	745	1,568
42	Common battery, manual	2,840	1,258	473	1,109	2,417	1,062	428	927
43	Auto, manual	12	6		6	6	4		2
44	Dial (automatic) system	1,273	680	195	398	1,046	575	120	351
45	Total central offices	8,689	3,489	1,440	3,760	6,971	2,830	1,293	2,848
46	Company telephones	15,762,918	9,437,779	1,802,747	4,522,392	14,471,141	8,492,740	1,739,959	4,238,442
47	Service telephones	297,216	48,841	40,606	207,769	250,877	38,472	38,060	174,345
48	Private line telephones	83,569	52,357	5,779	25,433	81,052	50,166	5,759	25,127
49	Total, telephones	16,143,703	9,538,977	1,849,132	4,755,594	14,803,070	8,581,378	1,783,778	4,437,914
50	Other stations	21,733	15,258	1,376	5,099	21,339	14,871	1,376	5,092
	Company telephones by type of switchboard:								
51	Magneto, manual	817,939	388,970	135,160	293,809	630,120	302,264	131,387	196,469
52	Common battery, manual	7,456,817	4,432,487	1,008,035	2,016,295	6,814,835	3,967,176	960,081	1,887,578

53	Auto, manual	7,621	4,897	----------	2,724	3,915	3,829	----------	86
54	Dial (automatic) system	7,480,513	4,611,397	659,552	2,209,564	7,022,243	4,219,443	648,491	2,154,309
	Company telephones by type of customer:								
55	Business	6,238,344	3,709,697	737,882	1,700,765	5,782,166	3,453,736	714,603	1,613,827
56	Residential	9,524,574	5,638,082	1,064,865	2,821,627	8,688,975	5,039,004	1,025,356	2,624,615
	Company telephones by class:								
57	Main	11,190,486	6,550,600	1,281,332	3,348,554	10,184,395	5,851,845	1,230,821	3,101,729
58	P. B. X	3,027,336	1,962,239	328,940	736,157	2,864,212	1,820,597	323,833	719,782
59	Extension	1,555,096	924,940	192,475	437,681	1,422,534	820,298	185,305	416,931
	Average number of calls originated per month:								
60	Local calls	2,303,997,208	1,190,113,230	344,624,387	769,259,591	2,107,818,397	1,053,133,525	332,772,137	721,912,735
61	Toll calls	73,056,450	48,182,294	6,643,671	18,230,485	67,926,773	44,548,518	6,351,477	17,026,778
62	Average number of company and service telephones	15,553,012	9,211,893	1,763,319	4,577,800	14,246,459	8,281,740	1,700,557	4,264,162
	Private line service revenues: [3]								
63	Commercial, broadcasting	$6,578,956	$5,886,371	$177,114	$515,471	$6,536,901	$5,844,584	$177,114	$515,203
64	Commercial, miscellaneous	17,424,929	16,838,975	59,454	526,500	17,345,524	16,763,012	58,962	523,550
65	Government	832,475	787,679	40,542	4,254	832,205	787,409	40,542	4,254
66	Press	3,900,009	3,799,079	142	100,788	3,897,650	3,796,990	142	100,518
	Telegraph stations:								
	Private line Morse:								
67	Number	3,608	3,197	7	401	3,600	3,193	6	401
68	Revenue	$7,200,612	$6,737,464	$83,021	$380,127	$7,167,537	$6,722,073	$80,652	$364,812
	Private line teletypewriter:								
69	Number	7,510	6,084	264	1,162	7,350	5,952	262	1,136
70	Revenue	$10,732,589	$8,733,501	$236,904	$1,762,184	$10,635,565	$8,651,820	$233,642	$1,750,103
	Teletypewriter exchange service:								
71	Number	10,643	5,977	1,108	3,558	10,389	5,726	1,108	3,555
72	Revenue	$5,645,415	$4,085,261	$289,707	$1,270,447	$5,560,484	$4,003,841	$289,707	$1,266,936
73	Telephotograph service: Revenue	$467,338	$404,783	$288	$62,267	$467,338	$404,783	$288	$62,267
74	Other telegraph service: Revenue	$120,164	$65,194	$506	$54,464	$119,962	$64,992	$506	$54,464
75	Number of employees at close of June	277,686	168,085	31,917	77,684	258,534	155,054	30,826	72,654
76	Number of employees at close of year	282,507	170,866	32,989	78,652	263,287	157,719	31,822	73,746
77	Male employees	110,624	68,518	11,774	30,332	103,003	63,056	11,356	28,591
78	Female employees	171,883	102,348	21,215	48,320	160,284	94,663	20,466	45,155
79	Total compensation for year	$434,528,650	$288,467,278	$39,708,447	$106,352,925	$410,532,315	$269,955,667	$38,616,454	$101,960,194
80	Compensation chargeable to operating expenses	$376,262,066	$252,391,028	$32,929,325	$90,941,713	$355,994,602	$236,974,675	$32,003,744	$87,016,183

[2] Excludes 28 telephones of American Telephone & Telegraph Co. which were not connected with exchange offices.
[3] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region [1]	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
1	Number of carriers	7	17	22	7	5	12	20	2	11
2	Investment in telephone plant	$392,972,538	$1,778,757,879	$864,173,945	$153,300,096	$248,990,108	$185,194,892	$367,645,714	$106,203,183	$456,903,905
3	Investments other than telephone plant	7,375,387	2,400,586,454	11,169,155	342,557	18,120,058	30,989,490	12,694,434	397,695	166,256,054
4	Cash	2,467,040	154,832,363	13,589,872	759,322	3,547,303	1,288,941	5,963,242	570,792	3,037,527
5	Material and supplies	3,460,452	24,220,747	10,269,041	1,516,710	2,769,608	2,599,337	3,595,964	1,318,452	5,000,816
6	Total current assets	17,377,347	400,412,444	53,262,233	6,896,844	14,549,612	8,640,005	18,285,904	4,112,225	20,108,953
7	Capital stock	174,325,565	2,611,867,653	530,283,795	85,452,100	129,328,400	121,955,538	209,076,073	52,899,700	395,262,493
8	Funded debt	94,149,300	615,639,100	57,432,365	4,305,700	61,705,500	5,009,900	54,380,885		87,183,100
9	Total long-term debt	124,320,849	687,868,666	92,120,329	23,573,743	73,733,326	37,418,208	63,406,634	19,980,958	113,920,990
10	Total current liabilities	5,248,091	174,513,188	18,492,845	4,274,794	5,854,114	4,189,354	8,418,980	1,736,638	8,717,602
11	Total accrued liabilities not due	3,738,771	68,217,780	26,642,982	2,328,200	5,490,584	3,966,587	6,499,826	2,901,957	8,639,358
12	Depreciation reserve	101,969,444	483,888,976	215,138,373	34,540,194	60,126,819	52,728,067	93,297,862	31,878,134	118,063,173
13	Total surplus	12,218,774	276,231,304	48,978,795	11,056,476	6,883,494	4,947,744	19,113,465	1,449,418	6,126,957
	Operating revenues:									
14	Local service	64,275,806	246,390,312	153,325,105	29,898,590	38,624,354	29,371,189	56,446,599	15,147,678	75,527,495
15	Toll service	21,966,219	154,174,314	42,049,728	8,396,066	18,670,509	11,509,965	26,207,926	7,237,196	28,782,026
16	Miscellaneous	2,858,051	30,769,963	7,028,594	1,793,826	2,520,148	2,021,084	4,228,600	902,960	2,695,031
17	Uncollectible, Dr	162,005	1,551,567	398,318	109,103	183,476	178,736	343,454	62,566	417,167
18	Total operating revenues	88,938,071	429,783,022	202,005,109	39,979,379	59,631,535	42,723,502	86,539,671	23,225,268	106,587,385
	Operating expenses:									
19	Depreciation and extraordinary retirements	15,005,541	66,519,940	31,519,097	6,202,455	9,765,312	6,819,126	13,887,425	3,927,997	17,345,888
20	All other maintenance	18,019,148	77,423,307	34,158,765	6,725,799	10,010,316	8,308,470	13,967,575	3,776,680	19,872,757
21	Traffic	15,225,356	50,546,763	29,424,506	6,468,490	9,190,374	6,631,637	12,636,533	3,861,778	14,485,348
22	Commercial	6,976,625	30,997,815	15,533,195	3,590,244	4,178,500	3,523,077	6,760,375	2,290,364	8,496,526
23	General office salaries and expenses	3,931,377	28,664,388	9,500,123	1,873,834	2,136,321	2,481,769	3,965,588	1,269,553	4,865,284
24	Other	4,006,481	41,446,733	8,944,400	1,935,499	3,663,095	2,086,907	4,084,204	1,111,833	3,984,417
25	Total operating expenses	63,164,528	295,598,946	129,080,086	26,796,321	38,943,918	29,850,986	55,301,700	16,238,205	69,050,220
26	Operating ratio.....percent	71.02	68.78	63.90	67.03	65.31	69.87	63.90	69.92	64.78

	Operating taxes:									
27	Other than U. S. Government	$5,783,617	$31,408,310	$20,162,229	$3,000,745	$5,794,505	$2,878,833	$6,547,846	$2,110,806	$10,049,135
28	U. S. Government	2,150,415	12,017,032	7,909,434	1,464,943	1,896,171	1,429,354	2,809,706	647,412	3,493,944
29	Total operating taxes	7,934,032	43,425,342	28,071,663	4,465,688	7,690,676	4,308,187	9,357,552	2,758,218	13,543,079
30	Net operating income	17,839,511	90,758,733	44,853,360	8,717,371	12,996,941	8,564,330	21,833,369	4,229,231	23,993,888
31	Other income	271,778	176,942,074	779,063	58,854	325,708	490,223	779,496	42,495	10,189,249
32	Interest deductions	5,772,324	36,086,921	4,514,747	970,481	3,262,154	1,224,701	2,755,482	1,007,143	3,745,315
33	Net income	12,017,050	231,011,536	41,017,666	7,784,535	9,894,372	7,747,999	19,720,759	3,263,420	30,207,526
	Dividend declared:									
34	Preferred stock	----------	3,560,721	1,029,029	80,268	85,848	883,825	2,037,718	----------	5,226,931
35	Common stock	11,230,562	218,926,280	38,958,621	6,946,058	9,490,673	6,135,357	15,899,399	4,007,664	22,266,250
36	Miles of wire in cable	6,661,064	30,460,668	16,790,281	2,601,081	4,213,551	2,693,371	6,466,922	1,286,757	7,868,782
37	Miles of aerial wire	259,539	1,095,968	593,000	142,488	601,808	447,315	628,819	286,713	362,427
38	Total miles of wire	6,920,603	31,556,636	17,383,281	2,743,569	4,815,359	3,140,686	7,095,741	1,573,470	8,231,209
39	Miles of pole line	34,922	84,380	96,986	14,412	39,413	83,439	81,432	40,874	35,969
40	Miles of underground conduit (single duct)	10,780	50,123	29,263	3,998	4,381	4,197	8,147	1,964	13,803
	Central offices, type of switchboard:									
41	Magneto, manual	398	456	691	150	622	592	852	295	508
42	Common battery, manual	234	564	460	159	314	246	399	195	269
43	Auto, manual	----------	----------	6	----------	----------	----------	3	----------	3
44	Dial (automatic) system	97	359	224	67	128	82	126	18	172
45	Total central offices	729	1,379	1,381	376	1,064	920	1,380	508	952
46	Company telephones	1,504,545	4,489,033	3,444,291	743,699	1,059,048	862,086	1,477,748	454,758	1,727,800
47	Service telephones	1,965	19,493	27,383	8,254	32,352	64,325	82,351	14,889	46,204
48	Private line telephones	5,903	32,094	14,360	4,040	1,739	2,984	5,328	1,428	15,693
49	Total telephones	1,512,413	4,540,620	3,485,944	755,993	1,093,139	929,395	1,565,427	471,075	1,780,697
50	Other stations	1,553	9,429	4,276	494	882	465	1,373	395	2,866
	Company telephones by type of switchboard: [1]									
51	Magneto, manual	119,497	116,478	152,995	34,744	100,416	91,471	128,979	32,150	41,209
52	Common battery, manual	745,255	1,858,054	1,829,178	424,915	583,120	409,473	604,638	294,190	707,994
53	Auto, manual	----------	----------	1,897	----------	----------	----------	376	----------	2,348
54	Dial (automatic) system	639,793	2,514,473	1,457,131	284,040	375,512	361,142	743,755	128,418	976,249
	Company telephones by type of customer:									
55	Business	531,863	1,976,849	1,290,935	294,601	443,281	279,591	554,042	181,971	685,161
56	Residential	972,682	2,512,184	2,153,216	449,098	615,767	582,495	923,706	272,787	1,042,639

[1] Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the eastern district inasmuch as only aggregate figures are reported.

[2] Excludes 28 telephones of American Telephone & Telegraph Co. which were not connected with exchange offices

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
	Company telephones by class:									
57	Main	1,124,355	2,925,053	2,501,192	486,810	794,522	677,587	1,116,354	338,896	1,215,717
58	P. B. X	221,962	1,086,618	653,659	168,815	160,125	111,862	211,038	70,501	342,756
59	Extension	158,228	477,362	289,350	88,074	104,401	72,637	150,356	45,361	169,327
	Average number of calls originated per month:									
60	Local calls	192,544,984	541,428,396	456,139,850	103,419,726	241,204,661	148,257,182	305,996,424	69,701,180	245,304,805
61	Toll calls	9,190,451	26,878,845	12,112,998	3,465,440	3,178,231	2,240,038	5,347,010	1,333,293	9,310,144
62	Average number of company and service telephones	1,482,138	4,388,161	3,341,594	721,853	1,041,466	907,064	1,519,158	450,238	1,701,340
	Private line service revenues: [1]									
63	Commercial, broadcasting	$63,078	$5,561,492	$261,801	$60,831	$116,283	$80,011	$136,101	$34,513	$264,846
64	Commercial, miscellaneous	237,441	16,326,309	275,225	22,465	36,989	39,084	97,597	2,345	387,474
65	Government		786,890	789	4,653	35,889	522		3,732	
66	Press		3,796,990	2,089		142	270			100,518
	Telegraph stations:									
	Private line Morse:									
67	Number	144	2,361	692	3	4	18	135	36	212
68	Revenue	$32,725	$6,220,338	$184,401	$25,342	$57,679	$30,207	$103,075	$62,357	$184,488
	Private line teletypewriter:									
69	Number	548	4,344	1,192	153	111	96	260	23	783
70	Revenue	$270,595	$7,447,069	$1,015,837	$100,307	$136,597	$58,440	$268,331	$215,343	$1,220,070
	Teletypewriter exchange service:									
71	Number	861	2,724	2,392	338	770	356	978	336	1,888
72	Revenue	$197,632	$2,796,936	$1,090,693	$81,663	$208,044	$109,447	$287,671	$85,331	$787,998
73	Telephotograph service: Revenue	$180	$395,390	$9,213	$288		$486	$1,040	$23,154	$37,587
74	Other telegraph service: Revenue	$6,248	$4,490	$54,456	$506			$2,830		$51,634
75	Number of employees at close of June	25,054	89,390	53,641	12,316	19,601	14,699	26,770	7,692	28,523
76	Number of employees at close of year	25,511	90,234	55,121	12,536	20,453	14,323	26,540	8,063	29,726
77	Male employees	9,425	38,694	20,399	4,435	7,339	5,658	9,539	3,091	12,044
78	Female employees	16,086	51,540	34,722	8,101	13,114	8,665	17,001	4,972	17,682
79	Total compensation for year	$40,494,445	$167,978,199	$79,994,634	$17,122,970	$22,585,477	$18,920,387	$32,205,872	$9,705,332	$45,521,334
80	Compensation chargeable to operating expenses	$34,753,834	$146,996,173	$70,641,021	$14,587,444	$18,341,881	$16,029,965	$27,766,375	$8,082,601	$39,062,772

[1] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

Proportion of the telephone industry covered by annual reports to the Federal Communications Commission.—In table III, which follows, are shown data from the annual reports of carriers reporting to the Interstate Commerce Commission for the year 1932, data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1936, and data from annual reports filed with the Federal Communications Commission for 1936; compared with similar data concerning all telephone systems and lines compiled for the year 1932 by the Bureau of the Census in the "Census of Electrical Industries: Telephones and Telegraphs."

While the number of telephone carriers reporting to the Federal Communications Commission for 1936, as shown in this table, is less than one-fourth of 1 percent of the number of telephone systems and lines reported by the Bureau of the Census for 1932, the relatively few carriers reporting to the Federal Communications Commission, as shown by this table, own the preponderance of telephone plant and perform most of the telephone operations in the United States.

TABLE III.—*Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census for 1932, and reports filed with the Interstate Commerce Commission for 1932,*[1] *and the Federal Communications*

Item	Census figures, 1932	Interstate Commerce Commission, 1932		Federal Communications Commission, 1936			
				1932 [2]		1936	
		Amount	Percent of census figures	Amount	Percent of census figures	Amount	Percent of census figures
Number of systems and lines	44,828	295	0.7	113	0.25	103	0.23
Investment in telephone plant	$4,791,902,525	$4,660,662,997	97.3	$4,441,546,189	92.7	$4,554,142,260	95.0
Operating revenues	$1,061,530,140	$1,049,757,095	98.9	$1,013,923,755	95.5	$1,079,412,942	101.7
Central offices	19,228	11,139	57.9	8,654	45.0	8,689	45.2
Total telephones	17,424,406	16,148,115	92.7	15,084,135	86.6	16,143,703	92.6
Number of employees	334,085	300,485	89.9	285,798	85.5	282,507	84.6
Total compensation	$458,116,677	(3)	-------	(3)	-------	$434,528,650	94.9

[1] Comparison is made both with statistics of all telephone carriers reporting to the Interstate Commerce Commission in 1932, and with only those carriers reporting to the Interstate Commerce Commission in 1932 and also to the Federal Communications Commission in 1936.

[2] Represents data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1936.

[3] Data not reported.

Development of class A telephone carriers from 1926 to 1936.—Selected data of class A telephone carriers which reported to the Federal Communications Commission for the year 1936, showing the development of such carriers through the years 1926 to 1936, inclusive, are shown in table IV below. The trends of selected items for these class A telephone carriers are reflected in chart 2 which folows table IV. Of particular significance is the increase, over the period, in investment in telephone plant from $2,979,000,000 to $4,548,000,000.

TABLE IV.—*Selected data showing the development through the years 1926 to 1936, inclusive, of class A telephone carriers which reported for the year 1936* [1]

Year	Investment in telephone plant	Depreciation reserve	Net book investment	Ratio of depreciation to investment
				Percent
1926	$2,978,605,980	$602,307,533	$2,376,298,447	20.22
1927	3,221,105,044	625,518,439	2,595,586,605	19.42
1928	3,490,080,222	675,453,577	2,814,626,645	19.35
1929	3,871,639,622	725,232,583	3,146,407,039	18.73
1930	4,228,754,381	762,993,261	3,465,761,120	18.04
1931	4,396,334,333	815,021,911	3,581,312,422	18.54
1932	4,435,203,513	847,122,365	3,588,081,148	19.10
1933 [2]	4,444,610,621	930,651,854	3,513,958,767	20.94
1934	4,453,829,451	1,009,119,626	3,444,709,825	22.66
1935	4,470,875,855	1,104,199,029	3,366,676,826	24.70
1936	4,547,768,755	1,189,658,769	3,358,109,986	26.16

Year	Total telephone capital	Capital stock	Funded debt	Ratio of debt to capital	Total surplus
				Percent	
1926	$3,574,972,985	$2,584,564,794	$990,408,191	27.70	$345,178,089
1927	3,843,376,476	2,865,949,381	977,427,095	25.43	477,996,409
1928	4,162,702,335	3,183,914,087	978,788,248	23.51	545,760,357
1929	4,472,615,510	3,323,288,557	1,149,326,953	25.70	631,779,709
1930	5,194,480,291	4,093,275,086	1,101,205,205	21.20	638,545,298
1931	5,307,980,679	4,279,912,061	1,028,068,618	19.37	639,670,962
1932	5,222,326,409	4,220,769,607	1,001,556,802	19.18	589,661,617
1933 [2]	5,251,662,016	4,257,104,243	994,557,773	18.94	523,033,808
1934	5,268,213,221	4,276,535,633	991,677,588	18.82	459,694,781
1935	5,296,783,823	4,276,777,886	1,020,005,937	19.26	412,291,221
1936	5,286,217,825	4,308,007,775	978,210,050	18.50	386,852,840

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Net operating income
			Percent		
1926	$880,770,543	$590,215,254	67.01	$73,362,780	$211,808,473
1927	949,644,851	638,249,490	67.21	79,568,964	225,896,434
1928	1,033,799,086	692,241,570	66.96	84,907,050	250,200,222
1929	1,134,428,449	767,231,913	67.63	87,199,666	272,617,338
1930	1,168,809,945	805,470,227	68.91	89,869,853	264,203,113
1931	1,138,770,401	769,725,950	67.59	94,087,170	265,825,761
1932	1,012,647,187	691,310,165	68.27	89,733,637	218,325,425
1933 [2]	934,703,113	667,773,246	71.44	87,971,066	178,857,878
1934	946,106,390	666,535,039	70.45	92,669,662	186,812,760
1935	998,613,821	703,456,158	70.44	99,083,327	196,006,367
1936	1,077,951,314	722,873,513	67.06	121,439,551	233,591,388

Year	Miles of wires [3]	Total telephones	Number of employees	Total compensation	Average compensation per employee per anunm
1926	54,663,477	14,412,386	323,195	(4)	
1927	60,508,634	15,228,262	328,502	(4)	
1928	65,952,961	16,081,596	350,686	(4)	
1929	73,741,919	17,036,125	387,850	(4)	
1930	80,650,647	17,159,502	347,139	(4)	
1931	84,422,271	16,863,513	315,492	(4)	
1932	85,993,421	15,042,335	285,162	(4)	
1933	82,438,035	14,349,949	267,876	$369,922,803	$1,381
1934	82,211,367	14,675,383	268,490	386,506,246	1,440
1935	82,562,316	15,172,549	265,649	402,658,982	1,516
1936	83,389,098	16,101,981	281,822	433,919,299	1,540

[1] Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

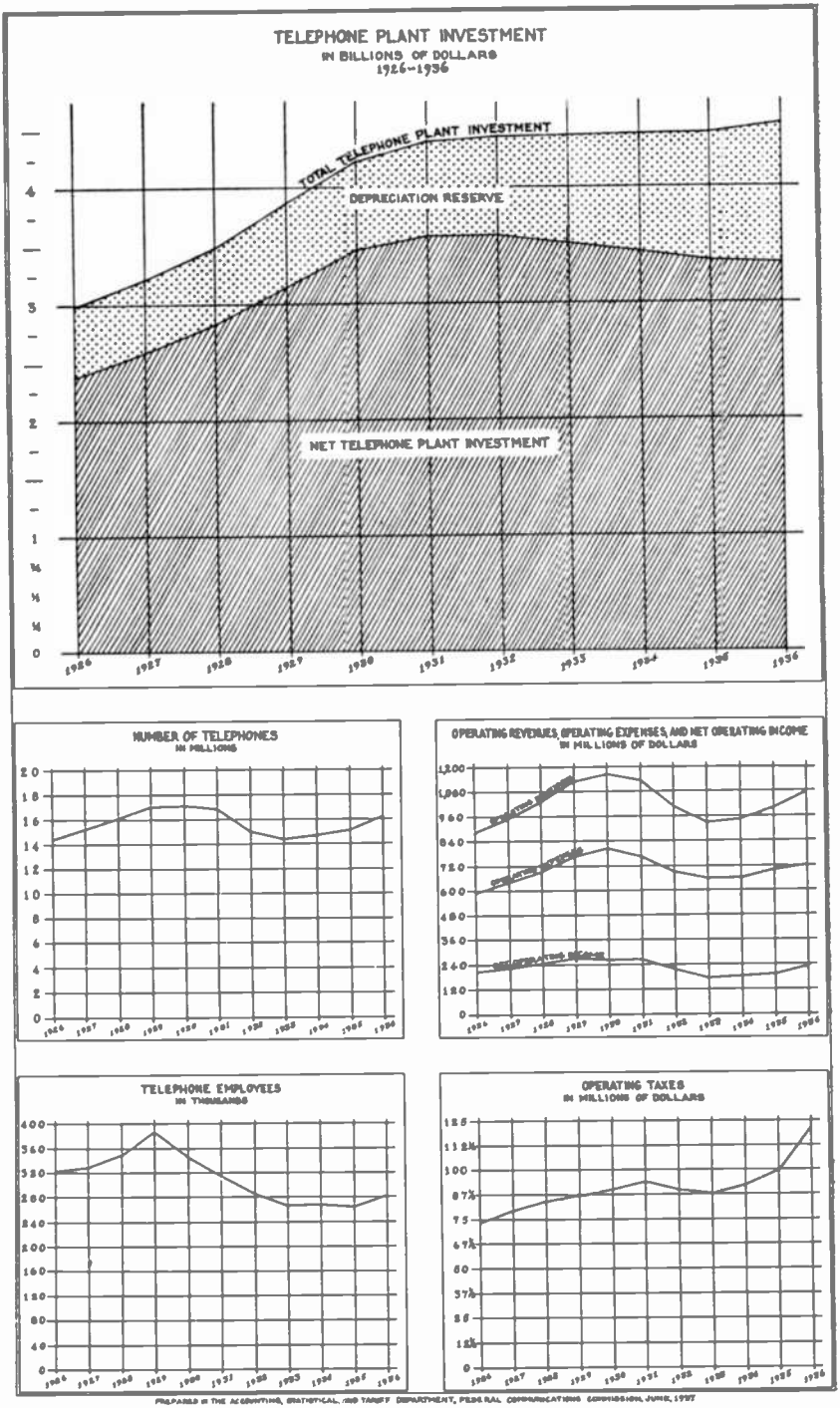
[2] In comparing data in this table, consideration should be given to the effect of the revision of the Uniform System of Accounts, effective as of Jan. 1, 1933, which resulted in certain changes and rearrangements of both the balance sheet and the income statement.

[3] The revision of the instructions in 1933 concerning the reporting of wire mileage by telephone carriers accounts for most of the decrease shown for that year.

[4] Data not reported.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

CHART NO. 2.



PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION, JUNE, 1937

Membership dues and contributions paid by telephone carriers to nonbusiness organizations.—The following statement relates to the membership dues and contributions paid during 1936 by telephone carriers to nonbusiness organizations such as chambers of commerce, boards of trade, social and athletic clubs, professional and scientific societies, and other organizations of a like nature. These statistics include all telephone carriers reporting to the Commission on an annual basis. This information was required of telephone carriers for the first time in 1936.

Item	Amount
Number of memberships	8,309
Number of organizations	5,668
Amount of dues and contributions	$534,272

List of telegraph carriers filing reports.—A list of of telegraph carriers filing annual reports with the Commission for the calendar year 1936 is shown in table V, which follows:

TABLE V.—*List of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission for the year 1936* [1]

Name of carrier	Type of carrier
All America Cables, Inc.	Ocean cable.
Canadian Pacific Ry. Co.	Land line telegraph.
Central Radio Telegraph Co.	Radiotelegraph.
City of Seattle, Harbor Department	Do.
Colorado & Wyoming Telegraph Co.	Land line telegraph.
Commercial Cable Co.	Ocean cable.
Commercial Pacific Cable Co.	Do.
Continental Telegraph Co.	Land line telegraph.
French Telegraph Cable Co.	Ocean cable.
Globe Wireless, Ltd.	Radiotelegraph.
Great North Western Telegraph Co. of Canada	Land line telegraph.
Hearst Radio, Inc.	Radiotelegraph.
Interstate Telephone & Telegraph Co.	Land line telegraph.
Mackay Radio & Telegraph Co. (California)	Radiotelegraph.
Mackay Radio & Telegraph Co. (Delaware)	Do.
Magnolia Radio Corporation	Do.
Mexican Telegraph Co.	Ocean cable.
Michigan Wireless Telegraph Co.	Radiotelegraph.
Minnesota & Manitoba R. R.	Land line telegraph.
Mountain Telegraph Co.	Do.
Northern Telegraph Co.	Do.
Olympic Radio Co.	Radiotelegraph.
Pere Marquette Radio Corporation	Do.
Postal Telegraph-Cable Co. (land line system)	Land line telegraph.
Press Wireless, Inc.	Radiotelegraph.
R. C. A. Communications, Inc.	Do.
Radiomarine Corporation of America	Do.
South Porto Rico Sugar Co. (of Puerto Rico)	Do.
Southern Radio Corporation	Do.
Tidewater Wireless Telegraph Co.	Do.
Tropical Radio Telegraph Co.	Do.
United States-Liberia Radio Corporation	Do.
Wabash Radio Corporation	Do.
Western Radio Telegraph Co.	Do.
Western Union Telegraph Co.	Land line telegraph and ocean cable.

[1] The report of the Central Idaho Telegraph & Telephone Co. for 1936 was not received in time to include the statistics of that carrier in this appendix.

Statistics of telegraph carriers, 1936.—A summary of selected statistics concerning 15 wire telegraph carriers and 20 radiotelegraph carriers filing annual reports for the year 1936, is shown in table VI below:

TABLE VI.—*Statistics of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission classified by kinds of carriers*

[Year ended Dec. 31, 1936]

No.	Item	Wire telegraph carriers (Land line and ocean cable)	Radio-telegraph carriers	Total
1	Number of carriers	15	20	35
2	Investment in plant and equipment	$501,900,869	$31,352,900	$533,253,769
3	Other investments	$55,201,539	$13,388,734	$68,590,273
4	Cash	$18,683,782	$1,435,493	$20,119,275
5	Material and supplies	$8,795,918	$820,510	$9,616,428
6	Total working assets	$66,215,165	$5,172,096	$71,387,261
7	Capital stock	$166,249,603	$8,694,757	$174,944,360
8	Unmatured funded debt	$114,250,913	$967,808	$115,218,721
9	Total long-term debt	$167,314,941	$1,765,828	$169,080,769
10	Total current liabilities	$41,183,438	$16,645,168	$57,828,606
11	Reserve for accrued depreciation	$106,651,205	$16,648,193	$123,299,398
12	Total corporate surplus	$109,668,802	$1,959,898	$111,628,700
13	Telegraph operating revenues	$132,697,992	$8,842,520	$141,540,512
14	Telegraph operating expenses	$109,988,619	$8,303,268	$118,291,887
15	Other operating revenues	----------	$1,858,432	$1,858,432
16	Other operating expenses	----------	$1,796,771	$1,796,771
	Operating taxes:			
17	Other than U. S. Government	$4,653,817	$193,721	$4,847,538
18	U. S. Government	585,769	202,945	788,714
19	Total operating taxes	5,239,586	396,666	5,636,252
20	Operating income	$16,817,512	$172,018	$16,989,530
21	Total interest deductions	$8,479,926	$703,347	$9,174,273
22	Net income	$6,927,888	[1] *$45,768*	$6,882,120
23	Dividends declared	$1,845,035	$542,637	$2,387,672
	Miles of wire:			
24	In cable	[2] 570,354	----------	[1] 570,354
25	Aerial wire	1,855,460	----------	1,855,460
26	Total miles of wire	2,425,814	----------	2,425,814
27	Miles of pole line	252,386	----------	252,386
28	Miles of underground conduit (single duct)	6,793	----------	6,793
	Telegraph offices:			
29	United States [3]	25,822	136	25,958
30	Foreign	182	27	209
31	Total telegraph offices	26,004	163	26,167
	Telegraph revenue messages transmitted:			
32	Domestic	190,415,286	3,220,147	193,635,433
33	Foreign	10,055,436	4,459,853	14,515,289
34	Mobile	----------	741,092	741,092
35	Total	200,470,722	8,421,092	208,891,814
	Number of employees:			
36	Close of June	69,998	3,026	73,024
37	Close of year	73,343	3,047	76,390
38	Total compensation for year	$78,483,418	$4,569,308	$83,052,726
39	Amount of compensation chargeable to operating expenses	$70,679,193	$4,131,508	$74,810,701

[1] Deficit or other reverse item.
[2] Includes 59,345 nautical miles of wire.
[3] Includes Territories and possessions of the United States except the Philippine Islands.

Selected telegraph data for the years 1934 to 1936, inclusive.—A summary of selected data relative to telegraph carriers, further subdivided as between wire telegraph and radiotelegraph carriers, covering the years 1934 to 1936, inclusive, is contained in table VII which follows. This table includes returns for the years 1935 and 1936 from the Minnesota and Manitoba Railroad, which carrier did not report for the year 1934; however, the amounts involved are relatively small. The volume of business of wire telegraph and radiotelegraph carriers, as reflected by operating revenues, as well as by revenue messages transmitted, showed substantial gains in 1935 and 1936.

TABLE VII.—*Summary of selected data from annual reports of wire-telegraph and radiotelegraph carriers classified by kinds of carriers*

[Years 1934 to 1936, inclusive]

Item	1936	1935	1934
Total, all carriers			
Number of carriers	35	36	35
Investment in plant and equipment	$533,253,769	$532,561,389	$532,659,535
Capital stock	$174,944,360	$174,069,065	$173,864,680
Unmatured funded debt	$115,218,721	$130,381,076	$130,353,000
Reserve for accrued depreciation	$123,299,398	$121,838,544	$120,831,566
Total corporate surplus	$111,625,700	$107,266,043	$111,256,833
Operating revenues	$141,540,512	$130,170,934	$126,481,408
Operating expenses	$118,291,887	$110,419,170	$109,825,695
Operating income	$16,989,530	$14,150,956	$11,189,969
Dividends declared	$2,387,672	$6,216,031	$2,096,498
Total miles of wire	2,425,814	2,400,624	2,399,039
Revenue messages transmitted	208,891,814	190,645,697	165,786,459
Number of employees at end of June	73,024	68,987	70,983
Total compensation for year	$83,052,726	$76,376,532	$77,170,766
Wire telegraph carriers (land line and ocean cable)			
Number of carriers	15	16	15
Investment in plant and equipment	$501,900,869	$501,141,370	$501,753,560
Capital stock	$166,249,603	$166,402,308	$166,398,823
Unmatured funded debt	$114,250,913	$126,237,036	$126,564,000
Reserve for accrued depreciation	$106,651,205	$106,111,956	$106,036,082
Total corporate surplus	$109,668,802	$105,369,020	$107,178,422
Operating revenues	$132,697,992	$122,207,928	$119,053,078
Operating expenses	$109,988,619	$102,575,187	$102,802,369
Operating income	$16,817,512	$14,426,334	$11,024,120
Dividends declared	$1,845,035	$4,816,031	$1,796,498
Total miles of wire	2,425,814	2,400,624	2,399,039
Revenue messages transmitted	200,470,722	183,769,723	160,700,029
Number of employees at end of June	69,998	66,172	68,621
Total compensation for year	$78,483,418	$72,171,075	$73,129,228
Radiotelegraph carriers			
Number of carriers	20	20	20
Investment in plant and equipment	$31,352,900	$31,420,019	$30,905,975
Capital stock	$8,694,757	$7,666,757	$7,465,857
Unmatured funded debt	$967,808	$4,144,040	$3,789,000
Reserve for accrued depreciation	$16,648,193	$15,726,588	$14,795,484
Total corporate surplus	$1,959,898	$1,897,023	$4,078,411
Operating revenues	[1] 8,842,520	$7,963,006	$7,428,330
Operating expenses	$8,303,268	$7,843,983	$7,023,326
Operating income	$172,018	[1] *$375,578*	$165,849
Dividends declared	$542,637	$1,400,000	$300,000
Total miles of wire			
Revenue messages transmitted	8,421,092	6,875,974	5,086,430
Number of employees at end of June	3,026	2,815	2,362
Total compensation for year	$4,569,308	$4,205,457	$4,041,538

[1] Deficit or other reverse item.

Selected statistics of telephone and telegraph carriers, 1936.—A summary of selected data for the year 1936 from the annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission is shown in table VIII which follows. It will be noted from this table that communication carriers reporting to the Commission have an investment in plant and equipment in excess of $5,000,000,000; that their operating revenues for the year 1936 were over $1,200,000,000; and that employees received more than $517,000,000 in salaries and wages during the year.

TABLE VIII.—*Summary of selected data from annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Federal Communications Commission*

[Year ended Dec. 31, 1936]

Item	Telephone carriers	Wire telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Number of carriers	103	15	20	138
Investment in plant and equipment	$4,554,142,260	$501,900,869	$31,352,900	$5,087,396,029
Capital stock	$4,310,451,317	$166,249,603	$8,694,757	$4,485,395,677
Funded debt	$979,815,850	$114,250,913	$967,808	$1,095,024,571
Depreciation reserve	$1,191,631,042	$106,651,205	$16,648,193	$1,314,930,440
Total surplus	$387,006,427	$109,668,802	$1,959,848	$498,635,127
Operating revenues	$1,079,412,642	$132,697,992	$8,842,520	$1,220,953,454
Operating expenses	$724,024,910	$109,988,619	$8,303,268	$842,316,797
Operating taxes:				
Other than U. S. Government	$87,736,026	$4,653,817	$193,721	$92,583,564
U. S. Government taxes	$33,818,411	$585,769	$202,945	$34,607,125
Total operating taxes	$121,554,437	$5,239,586	$396,666	$127,190,689
Net operating income	$233,786,734	$16,817,512	$172,018	$250,776,264
Dividends declared	$346,765,204	$1,845,035	$542,637	$349,152,876
Miles of wire	83,460,554	2,425,814		85,886,368
Number of employees (Dec. 31)	282,507	73,343	3,047	358,897
Total compensation for year	$434,528,650	$78,483,418	$4,569,308	$517,581,376

Averages and ratios of selected data concerning telephone and telegraph carriers.—Some averages and ratios of selected data concerning telephone and wire-telegraph carriers for 1936 are shown in table IX which follows. As shown by this table, the average investment by telephone carriers in all telephone plant per company telephone was $289 at December 31, 1936, and the average amount of revenue per telephone (including toll and miscellaneous revenue) amounted to $6.94 per month during 1936. During this year, about 35 percent of the operating revenues of telephone carriers was paid out directly to employees as salaries or wages, while more than 53 percent of the operating revenues of wire-telegraph carriers was used for this purpose.

TABLE IX.—*Averages and ratios of selected data of telephone and wire-telegraph carriers* [1]

[Year ended Dec. 31, 1936]

Item	Amount
TELEPHONE CARRIERS	
Investment in telephone plant:	
Per mile of wire	[2] $54.57
Per dollar of revenue	[2] $4.22
Per company telephone	[2] $288.91
Depreciation reserve, ratio to investment in telephone plant—percent	[2] 26.17
Operating revenues per telephone per month	$6.94
Operating expenses per telephone per month	$4.66
Operating ratio—percent	67.08
Depreciation expense:	
Ratio to investment in telephone plant—percent	3.75
Percent of operating revenues	15.84
Percent of operating expenses	23.62

[1] For basic data underlying the computations in this table, see tables II and VI.
[2] This computation is based on the total book value of all operating plants as reported to the Commission by the carriers concerned.

TABLE IX.—*Averages and ratios of selected data of telephone and wire-telegraph carriers*—Continued

[Year ended Dec. 31, 1936]

Item	Amount
Wire mileage:	
Percent in cable	94.71
Percent of aerial wire	5.29
Calls originated per telephone per month:	
Local	148.14
Toll	4.70
Employees, percent of total:	
Male	39.16
Female	60.84
Average compensation per employee per annum	[3] $1,538.12
Compensation chargeable to operating expenses:	
Percent of operating revenues	34.86
Percent of operating expenses	51.97
WIRE TELEGRAPH CARRIERS [4]	
Land line and ocean cable	
Investment in plant and equipment:	
Per mile of wire	[2] $206.90
Per dollar of revenue	[2] $3.78
Reserve for accrued depreciation, ratio to investment in plant and equipment.....percent	[2] 21.25
Operating ratio.....percent	82.89
Depreciation expense:	
Ratio to investment in plant and equipment.....percent	1.56
Percent of operating revenues	5.88
Percent of operating expenses	7.10
Wire mileage:	
Percent in cable	23.51
Percent of aerial wire	76.49
Average compensation per employee per annum	[3] $1,070.09
Compensation chargeable to operating expenses:	
Percent of operating revenues	53.26
Percent of operating expenses	64.26

[2] This computation is based on the total book value of all operating plants as reported to the Commission by the carriers concerned.

[3] Represents total compensation for the year divided by the number of employees as of the close of the year.

[4] Excludes radiotelegraph carriers.

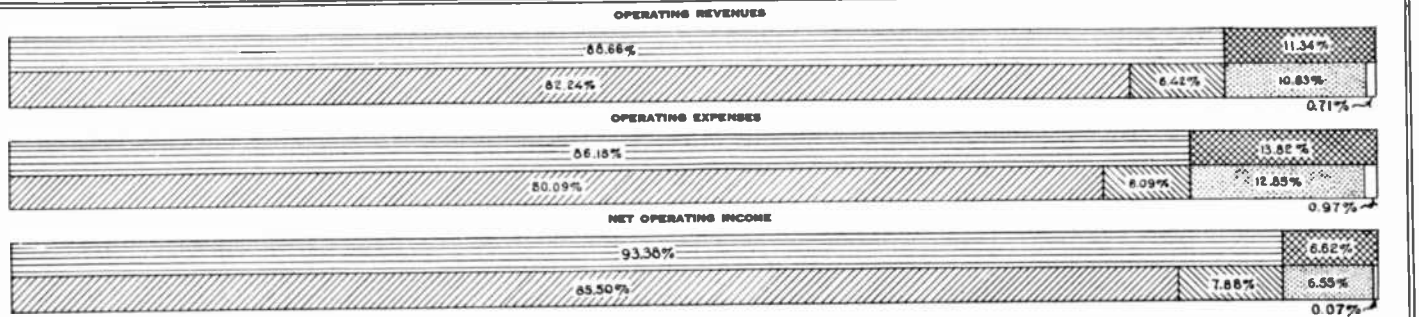
Analysis of operating statistics of communication carriers.—An analysis of the operating revenues, operating expenses, and net operating income of all telephone, wire-telegraph, and radiotelegraph carriers filing annual reports for the year 1936 is shown in chart 3, which follows. This chart also includes returns from 39 telephone carriers which claimed to be subject only to the provisions of sections 201–205 of the act and which filed monthly reports but did not file annual reports.

The 142 telephone carriers filing annual or monthly reports, or both, with the Commission, had operating revenues for 1936 in the amount of $1,101,300,000, as shown by chart 3. The 15 wire telegraph carriers included in this chart had operating revenues amounting to $132,000,000, and the 20 radiotelegraph carriers had operating revenues amounting to $8,800,000. The total operating revenues of all these carriers amounted to $1,242,100,000.

Under the uniform system of accounts prescribed for telephone carriers "Uncollectible operating revenues," are deducted from the gross operating revenues before transferring the latter amount to the income statement; whereas, under the uniform system of accounts prescribed for telegraph carriers "Uncollectible operating revenues," are not deducted from gross operating revenues before transferring the latter amount to the income statement, but are subsequently deducted from "Net telegraph and cable operating revenues." For comparative purposes, the operating revenues of wire-telegraph and radiotelegraph carriers have been adjusted, in chart 3, to exclude "Uncollectible operating revenues," which amounted to $709,876 for the year 1936.

OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME FOR THE YEAR 1936
OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION

CHART NO. 3



	OPERATING REVENUES		OPERATING EXPENSES		NET OPERATING INCOME	
BELL SYSTEM CARRIERS	$1,021,586,089		$605,956,628		$219,589,572	
OTHER THAN BELL SYSTEM CARRIERS	79,754,974		92,133,814		20,286,800	
ALL TELEPHONE CARRIERS		$1,101,201,743		$737,690,442		$239,755,372
WIRE TELEGRAPH CARRIERS	132,020,345		109,988,619		16,817,532	
RADIOTELEGRAPH CARRIERS	8,810,891		8,309,868		172,018	
ALL WIRE TELEGRAPH & RADIOTELEGRAPH CARRIERS		140,830,636		118,298,487		16,989,550
ALL REPORTING CARRIERS		1,242,112,379		855,988,929		256,744,902

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

AUGUST 1937

Distribution of operating revenues.—Distribution of the operating revenues on a percentage basis among the major groups of operating expense accounts, operating taxes, and other deductions, and the net operating income of all telephone, wire-telegraph, and radiotelegraph carriers reporting on an annual basis for 1936 is shown in table X which follows. The distribution of each $100 of operating revenues on the same basis is reflected in chart 4 which follows table X. These data show operating ratios of 67.1 percent for telephone carriers and 83.6 percent for wire-telegraph and radiotelegraph carriers. Telephone carriers deducted 11.3 percent of their operating revenues for taxes while the wire-telegraph and radiotelegraph carriers deducted 4 percent for this purpose.

TABLE X.—*Distribution of operating revenues showing operating expenses, operating taxes, and other deductions, and net operating income of telephone, wire-telegraph, and radiotelegraph carriers for the year 1936*

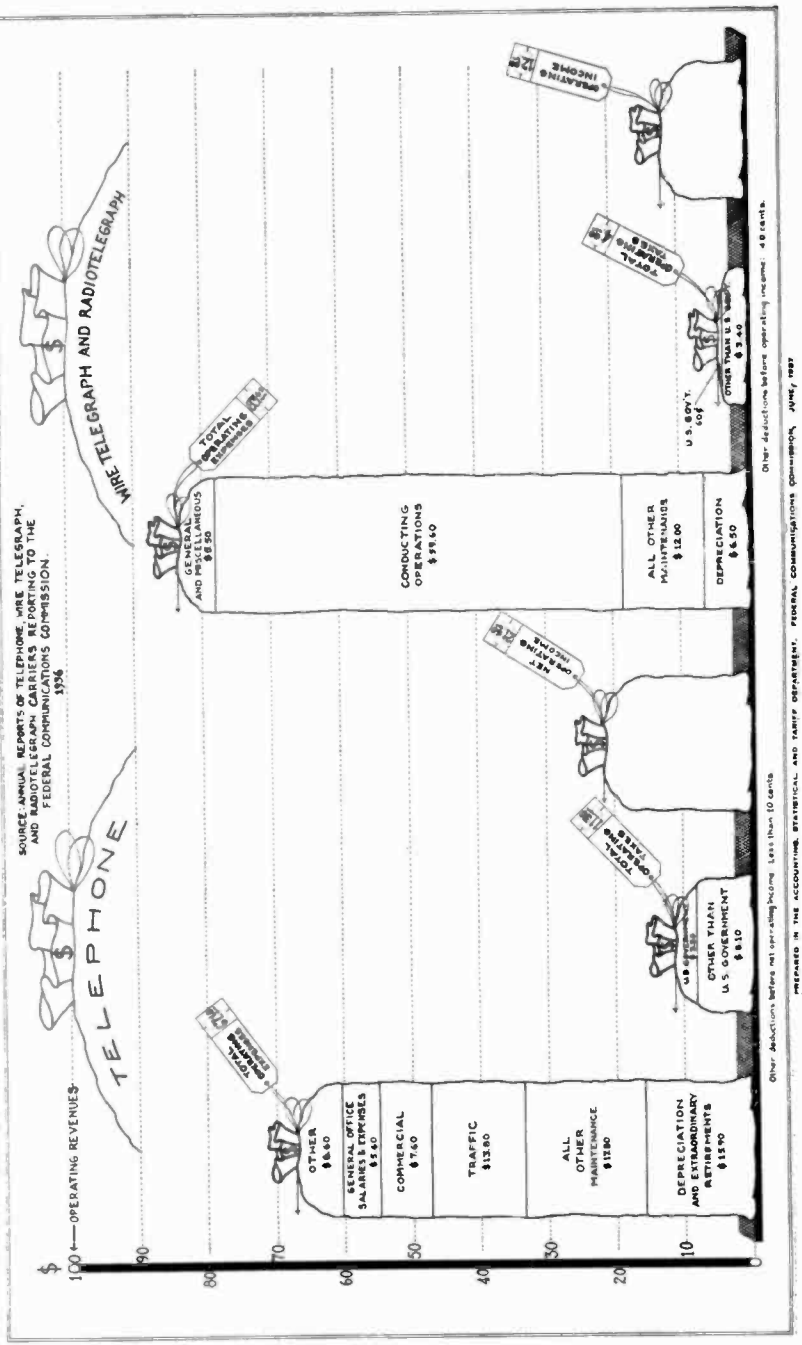
TELEPHONE CARRIERS

Item	Amount	Percent of operating revenues
Operating revenues	$1,079,412,942	100.0
Operating expenses:		
Depreciation and extraordinary retirements	170,992,781	15.9
All other maintenance	192,262,817	17.8
Traffic	148,470,785	13.8
Commercial	82,346,721	7.6
General office salaries and expenses	58,688,237	5.4
Other	71,263,569	6.6
Total operating expenses	724,024,910	67.1
Operating taxes:		
Other than U. S. Government	87,736,026	8.1
U. S. Government	33,818,411	3.2
Total operating taxes	121,554,437	11.3
Other deductions before net operating income	46,861	(1)
Net operating income	233,786,734	21.6

WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [2]

Operating revenues	$141,540,512	100.0
Operating expenses:		
Depreciation	9,267,127	6.5
All other maintenance	16,928,469	12.0
Conducting operations	84,368,340	59.6
General and miscellaneous	7,727,951	5.5
Total operating expenses	118,291,887	83.6
Operating taxes:		
Other than U. S. Government	4,847,538	3.4
U. S. Government	788,714	.6
Total operating taxes	5,636,252	4.0
Other deductions before operating income	622,843	.4
Operating income	16,989,530	12.0

[1] Less than 1/10 of 1 percent.
[2] Wire-telegraph carriers comprise land lines and ocean cables.


DISTRIBUTION OF EACH $100 OF OPERATING REVENUES SHOWING OPERATING EXPENSES, OPERATING TAXES AND NET OPERATING INCOME
CHART NO. 4
SOURCE: ANNUAL REPORTS OF TELEPHONE, WIRE TELEGRAPH, AND RADIOTELEGRAPH CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION. 1936
TELEPHONE
WIRE TELEGRAPH AND RADIOTELEGRAPH
OPERATING REVENUES
$
100
90
80
70
60
50
40
30
20
10
0
OTHER $6.60
GENERAL OFFICE SALARIES & EXPENSES $5.60
COMMERCIAL $7.60
TRAFFIC $13.80
ALL OTHER MAINTENANCE $11.80
DEPRECIATION AND EXTRAORDINARY RETIREMENTS $15.90
TOTAL OPERATING EXPENSES 81%
GENERAL AND MISCELLANEOUS $8.50
CONDUCTING OPERATIONS $51.60
ALL OTHER MAINTENANCE $12.00
DEPRECIATION $6.50
TOTAL OPERATING EXPENSES 78%
OPERATING INCOME 22%
TOTAL OPERATING TAXES 13%
U.S. GOVT. 10%
OTHER THAN U.S. GOVERNMENT $8.10
TOTAL OPERATING TAXES 13%
U.S. GOVT. 10%
OTHER THAN U.S. GOVERNMENT $3.40
OPERATING INCOME 12%
Other deductions before net operating income: Less than 10 cents
Other deductions before net operating income: 40 cents
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION, JUNE, 1937

Operating tax accruals by States and Federal Government.—The operating tax accruals, by States and the Federal Government, as reported by class A and class B telephone carriers for the year 1936, are shown in table XI which follows. Tax accruals to be paid to State governments and subdivisions of State governments amounted to approximately $87,700,000, as compared with approximately $33,800,000 to be paid to the United States Government. These data exclude excise taxes collected by telephone carriers from persons using telephone service.

TABLE XI.—*Operating tax accruals, by States and the Federal Government, of telephone carriers reporting on an annual basis to the Commission*

[Year ended Dec. 31, 1936]

State	Class A carriers	Class B carriers	Total
Total, United States	[1] $121,438,058	$114,886	[1] $121,552,944
Alabama	598,178		598,178
Arizona	386,521		386,521
Arkansas	352,793	6,528	359,321
California	7,240,308	10,506	7,250,814
Colorado	729,191		729,191
Connecticut	782,495		782,495
Delaware	76,838	75	76,913
Florida	537,383		537,383
Georgia	642,354		642,354
Idaho	269,423		269,423
Illinois	9,893,892		9,893,892
Indiana	2,147,505	9,026	2,156,531
Iowa	925,155	4,211	929,366
Kansas	929,325	11,437	940,762
Kentucky	757,096		757,096
Louisiana	1,103,713		1,103,713
Maine	356,287	2,651	358,938
Maryland	1,339,196		1,339,196
Massachusetts	4,430,105	5,382	4,435,487
Michigan	2,903,441		2,903,441
Minnesota	953,894	4,455	958,349
Mississippi	648,479		648,479
Missouri	1,878,480	28	1,878,508
Montana	270,276		270,276
Nebraska	705,302		705,302
Nevada	151,372		151,372
New Hampshire	390,756		390,756
New Jersey	4,449,324		4,449,324
New Mexico	110,932		110,932
New York	20,194,469	6,666	20,201,135
North Carolina	885,442	1,396	886,838
North Dakota	187,428	1,655	189,083
Ohio	4,786,245	5,332	4,791,577
Oklahoma	1,145,112	29	1,145,141
Oregon	975,897		975,897
Pennsylvania	3,270,957	525	3,271,482
Rhode Island	234,339		234,339
South Carolina	470,608		470,603
South Dakota	249,585		249,585
Tennessee	818,704		818,704
Texas	2,521,179	2,399	2,523,578
Utah	320,996		320,996
Vermont	114,302	1,876	116,178
Virginia	701,509	8,315	709,824
Washington	1,758,266		1,758,266
West Virginia	584,782		584,782
Wisconsin	1,820,846	4,906	1,825,752
Wyoming	134,048		134,048
District of Columbia	512,412		512,421
U. S. Government	33,790,923	27,488	33,818,411

[1] Excludes $1,493 Canadian taxes.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues in excess of $100,000; class B telephone carriers are those carriers having average annual operating revenues exceeding $50,000 but not more than $100,000.

Operating tax accruals and excise taxes.—In table XII, which follows, is shown, in summary form, for all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission for the year 1936, the operating tax accruals and the excise taxes collected from persons using communication service. These carriers reported more than $127,000,000 in operating taxes, and, in addition, collected approximately $25,000,000 in excise taxes, to be paid to the Federal Government or State governments, from persons using communication service.

TABLE XII.—*Operating tax accruals and excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers which filed annual reports with the Commission*

[Year ended Dec. 31, 1936]

Kind of tax	Telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Operating taxes:				
Other than U. S. Government	$87,736,026	$4,653,817	$193,721	$92,583,564
U. S. Government	33,818,411	585,769	202,945	34,607,125
Total operating taxes	[1] 121,554,437	5,239,586	396,666	[1] 127,190,689
Excise taxes collected from persons using communication service:				
Other than U. S. Government	2,714,129	57,903	2,790	2,774,822
U. S. Government	15,846,954	6,453,967	117,651	22,418,572
Total excise taxes collected	18,561,083	6,511,870	120,441	25,193,394
Total taxes accounted for during the year:				
Other than U. S. Government	90,450,155	4,711,720	196,511	95,358,386
U. S. Government	49,665,365	7,039,736	320,596	57,025,697
Grand total	[1] 140,115,520	11,751,456	517,107	[1] 152,384,083

[1] Includes $1,493 Canadian-taxes.

Advertising expenses.—The distribution of advertising expenses of class A telephone carriers and of wire-telegraph and radiotelegraph carriers reporting to the Commission for 1936 is shown in table XIII which follows. The table shows, among other things, that telephone carriers reporting to the Commission spent about $5,900,000 for advertising and that the greater portion of this amount was used for advertising in newspapers and periodicals. Wire-telegraph and radiotelegraph carriers reported $385,000 in advertising expenses.

TABLE XIII.—*Distribution of advertising expenses of class A telephone carriers and of wire-telegraph and radiotelegraph carriers*

[Year ended Dec. 31, 1936]

Item	Amount
TELEPHONE CARRIERS	
Salaries and wages	$860,254
Publicity and advertisements:	
Newspaper and periodical advertising:	
Advertising space newspapers, regular	2,015,631
Special newspaper advertising space and all other periodicals	1,120,706
Preparation cost	290,876
Unassigned expenses	364,644
Total newspaper and periodical advertising	3,791,857
Booklets, pamphlets, and bill inserts	376,531
Window display, exhibits, posters, and placards	221,879
Motion pictures	49,076

TABLE XIII.—*Distribution of advertising expenses of class A telephone carriers and of wire-telegraph and radiotelegraph carriers*—Continued

[Year ended Dec. 31, 1936]

Item	Amount
TELEPHONE CARRIERS—continued	
Publicity and advertisements—Continued.	
Other publicity and advertisements:	
General press service and special news stories	$30,704
Lectures, demonstrations, radio, central office visits, etc	251,827
Miscellaneous	87,739
Unassigned expenses	36,664
Total other publicity and advertisements	406,934
Total publicity and advertisements	4,846,277
Other expenses	178,067
Grand total—class A telephone carriers	5,884,598
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [1]	
Newspapers	19,560
Periodicals	39,103
Radio advertising	10,490
Contributions and donations charged to advertising	779
Advertising department salaries and expenses	6-, 921
All other advertising expenses	249,716
Grand total—Wire-telegraph and radiotelegraph carriers	384,569

[1] Wire-telegraph carriers comprise land lines and ocean cables.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Free and concession service of telephone carriers and frank service of telegraph carriers.—In tables XIV, XIV–A, and XIV–B, which follow respectively, are shown available data concerning: (1) The amount of free and concession service granted by Bell System telephone carriers during 1934, including both interstate and intrastate service; (2) the free and concession service reported by 81 class A telephone carriers during 1935, relating only to interstate service; and (3) data concerning telegraph frank service reported by wire-telegraph and radiotelegraph carriers during 1936.

Only Bell System carriers are included in the statistics for the year 1934 inasmuch as only two other carriers reported any free and concession service during that year. The tabulation for the year 1935 excludes intrastate free and concession service, inasmuch as carriers were not required to report such data to the Commission.

The telegraph data appearing in table XIV–B are confined to the year 1936, inasmuch as that is the first full year for which complete data were required of telegraph carriers. No frank service was granted by carriers exclusively engaged in ocean cable operations during the year 1936.

TABLE XIV.—*Amount of free and concession service granted by Bell System telephone carriers during 1934* [1]

[Interstate and intrastate service]

Types of service	Amount of free and concession service granted
Local	$3,993,466
Toll	795,351
Not classified	125,394
Total	4,914,211

[1] Includes returns from Cincinnati and Suburban Bell Telphone Co. and the Southern New England Telephone Co.

TABLE XIV–A.—*Amount of free and concession service granted by class A telephone carriers during 1935*

[Interstate service exclusively]

Recipients of free and concession service	Amount of free and concession service granted	
	Bell System [1]	Total
Individuals connected with the reporting carrier	$638,048	$638,917
Individuals connected with other carriers	136,616	136,616
Less offset	2,635	2,035
Total, individuals	772,629	773,498
Corporations and others	34,735	34,785
Total, individuals, corporations, and others	807,364	808,283

[1] Includes returns from Cincinnati and Suburban Bell Telephone Co. and the Southern New England Telephone Co.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

TABLE XIV–B.—*Amount of frank service granted by telegraph carriers during 1936*

[Interstate and intrastate service]

Name of company	Number of franks outstanding	Number of messages transmitted	Revenue if charged
Globe Wirless Ltd	12	50	$114
Mackay Radio & Telegraph Co. (California and Delaware corporations)	761	2,021	3,946
Mutual Telephone Co. (Wireless Department—Hawaii)	40	156	315
Postal Telegraph-Cable Co. (land-line system)	385	4,513	4,023
Radiomarine Corporation of America	833	3,413	7,895
Tropical Radio Telegraph Co	110	575	1,704
Western Union Telegraph Co	5,389	88,952	64,937
Total	7,530	99,680	82,934

Telephone employees and their compensation.—The number of employees of class A telephone carriers classified with respect to character of service rendered and according to rate of compensation per week, at the close of the year 1936, is shown in table XV which follows. It will be noted that of the 171,000 female telephone employees reported, 61,000, or about 36 percent, were in the $18 to $23.99 per week class; 36,000, or about 21 percent, were in the $24 to $35.99 per week class; and 32,000, or about 19 percent, were in the $15 to $17.99 per week class. More than one-half of the male employees were receiving from $36 to $59.99 per week.

TABLE XV.—*Number of employees of class A telephone carriers classified with respect to character of service rendered and according to rate of compensation per week, at Dec. 31, 1936*

Class of employees	Number of employees at close of year			Number of employees classified according to rate of compensation per week at close of year															
				Less than $9		$9 to $11.99		$12 to $14.99		$15 to $17.99		$18 to $23.99		$24 to $35.99		$36 to $59.99		$60 and over	
	Male	Female	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
General officers and assistants	717	20	737	32	2	9	-------	8	-------	7	-------	10	-------	15	4	60	7	575	7
Operating officials and assistants	7,645	449	8,094	-------	-------	-------	-------	2	-------	1	2	4	12	143	185	2,353	224	5,142	26
Attorneys and right-of-way agents	521	1	522	3	-------	3	-------	-------	-------	1	-------	2	1	24	-------	255	-------	233	-------
Engineers	4,614	21	4,635	-------	-------	-------	-------	-------	-------	2	-------	3	-------	99	3	1,693	16	2,817	2
Draftsmen, surveyors, and student engineers	2,383	100	2,483	2	-------	1	-------	10	-------	62	2	184	13	470	32	1,351	43	303	10
Accountants	1,302	23	1,325	1	-------	-------	-------	-------	-------	-------	1	2	7	63	9	477	5	759	1
Clerical employees	11,676	41,957	53,633	57	97	38	230	306	2,070	643	5,672	932	13,946	2,510	17,354	6,428	2,532	762	56
Local managers	2,258	256	2,514	1	7	1	25	8	59	10	39	53	94	289	31	1,401	1	495	-------
Commercial agents	5,105	63	5,168	9	7	50	6	287	12	363	6	194	10	1,377	19	2,571	2	254	1
Experienced switchboard operators	182	106,782	106,964	37	3,089	27	4,540	21	13,425	28	21,982	35	45,312	17	16,916	15	1,440	2	78
Operators in training	7	14,709	14,716	3	1,404	3	2,948	1	6,997	-------	3,245	-------	115	-------	-------	-------	-------	-------	-------
Service inspectors	108	1,864	1,972	-------	1	-------	-------	-------	2	-------	27	-------	374	1	1,211	45	246	62	-------
Supervising foremen	1,042	2	1,044	-------	-------	-------	-------	-------	-------	-------	-------	6	-------	35	1	322	1	679	-------
Central office installation and maintenance men	21,013	46	21,059	2	-------	2	-------	47	6	178	5	388	9	2,578	24	15,916	2	1,902	-------
Line and station construction, installation, and maintenance men	33,578	-------	33,578	58	-------	51	-------	468	-------	1,017	-------	2,206	-------	7,200	-------	21,613	-------	965	-------
Cable and conduit construction and maintenance men	6,898	-------	6,898	-------	-------	1	-------	121	-------	344	-------	729	-------	1,661	-------	3,724	-------	318	-------
All other employees	11,311	5,169	16,480	506	839	261	426	599	896	645	1,071	1,472	1,207	4,617	550	3,103	174	108	6
Total employees	110,360	171,462	281,822	711	5,446	447	8,175	1,878	23,467	3,301	32,052	6,220	61,100	21,099	36,339	61,327	4,693	15,377	190
RECAPITULATION																			
Bell System carriers:																			
Full-time employees	101,967	152,005	253,972	33	349	166	4,927	1,621	19,858	2,834	29,219	5,025	57,711	18,646	35,274	58,834	4,486	14,808	18
Part-time employees	953	8,176	9,129	504	3,885	150	1,864	115	1,501	46	562	47	289	25	47	41	27	25	1

Other than Bell System carriers																		
Full-time employees	7,352	10,771	18,123	127	952	121	1,280	125	2,016	415	2,225	1,146	3,092	2,424	1,018	2,450	180	544	8
Part-time employees	88	510	598	47	260	10	104	17	92	6	46	2	8	4		2			
Total class A carriers:																			
Full-time employees	109,319	162,776	272,095	160	1,301	287	6,207	1,746	21,874	3,249	31,444	6,171	60,803	21,070	36,292	61,284	4,666	15,352	189
Part-time employees	1,041	8,686	9,727	551	4,145	160	1,968	132	1,595	52	608	49	297	29	47	43	27	25	1

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Telegraph employees and their compensation.—The number of employees of wire-telegraph and radiotelegraph carriers classified with respect to character of service rendered, together with the aggregate monthly rates of compensation by classes of employees, are shown in Table XVI which follows. Statistics are shown for June 30 and December 31, 1936, except in the case of aggregate compensation which is shown for December 31, 1936, only.

TABLE XVI.—*Number of employees of wire-telegraph and radiotelegraph carriers classified with respect to character of service rendered, together with the aggregate monthly rates of compensation by classes of employees*

[Year ended Dec. 31, 1936]

Class of employees	Wire-telegraph carriers [1]			Radiotelegraph carriers			Total		
	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year
	June	December		June	December		June	December	
General officers and staff	161	163	$97,233	109	111	$23,827	270	274	$121,060
General office clerks	1,139	1,137	212,802	118	129	15,940	1,257	1,266	228,742
Other officers and staff	544	537	157,861	56	54	13,880	600	591	171,741
Other officers' clerks	2,000	1,949	286,016	15	16	1,766	2,015	1,965	287,782
Managers	4,678	4,676	602,546	105	108	27,498	4,783	4,784	630,044
Solicitors	549	567	87,641	45	47	7,968	594	614	95,609
Chief operators	1,762	1,771	335,882	93	97	9,154	1,855	1,868	345,036
Operators	17,878	17,906	1,967,946	763	749	107,688	18,641	18,655	2,075,634
Office clerks	10,594	11,048	1,015,048	396	412	35,651	10,990	11,460	1,050,699
Other office employees	1,477	1,490	134,448	198	188	20,063	1,675	1,678	154,511
Messengers	22,019	24,866	951,543	346	375	16,579	22,365	25,241	968,122
Testing and regulating force	1,699	1,723	324,877	164	174	26,582	1,863	1,897	351,459
Equipment and power men	898	903	128,152	136	122	23,331	1,034	1,025	151,483
Section linemen and foremen of construction and maintenance	2,278	2,162	325,580	7	9	1,345	2,235	2,171	326,925
Linemen, laborers, teamsters, etc.	1,296	1,416	154,596	115	103	13,276	1,411	1,519	167,872
Others	1,076	1,029	106,483	360	353	31,720	1,436	1,382	138,203
Total	69,998	73,343	6,888,654	3,026	3,047	376,268	73,024	76,390	7,264,922

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Relief and pension data of communication carriers.—A summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers for the year 1936 is shown in table XVII which follows. This table shows that the reporting carriers paid $7,600,000 in benefits and $6,900,000 in pensions to employees and former employees during 1936, whereas the total relief and pension charges to operating expenses amounted to approximately $24,000,000 for the year. An unascertained portion of the latter sum, together with interest on approximately $170,000,000 in pension funds, were added to benefit and pension reserves and to pension funds held by trustees during 1936.

TABLE XVII.—*Summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers*

[Year ended Dec. 31, 1936]

Item	Class A telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radio telegraph carriers	Total
Benefits:				
Number of cases handled during year	49,799	8,053	131	57,983
Amount paid during year	$6,881,006	$715,479	$4,636	$7,601,121
Pensions:				
Number of cases being paid at end of year	7,147	2,748	3	9,898
Amount paid during year	$4,931,690	$1,973,164	$3,090	$6,907,944
Benefit and pension reserve at end of year	$1,274,073	$10,293,576	$143,978	$11,711,627
Pension funds held by outside trustees	$169,403,860	----------	$544,700	$169,948,560
Relief and pension charges to operating expenses [1]	$20,559,174	$3,395,635	$35,505	$23,990,314
Total number of employees	281,822	73,343	3,047	358,212
Total compensation for the year	$433,919,299	$78,483,418	$4,569,308	$516,972,025
Total operating revenues	$1,077,951,314	$132,697,992	$8,842,520	$1,219,491,826

[1] Consists of charges to account 672, "Relief and pensions" for telephone carriers, and charges to account 649 "Relief department and pensions," for telegraph, cable and radiotelegraph carriers.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Statistics of accidents.—In tables XVIII and XIX, which follow respectively, are shown, for class A telephone carriers, and for wire-telegraph and radiotelegraph carriers, the number of persons killed and injured in accidents during 1936.

TABLE XVIII.—*Persons killed or injured in accidents occurring in connection with the activities of class A telephone carriers*

[Year ended Dec. 31, 1936]

Class of employees	Employees and other persons killed or injured during year					
	Number of persons killed			Number of persons injured		
	Male	Female	Total	Male	Female	Total
General officers and assistants	----------	----------	----------	1	----------	1
Operating officials and assistants	----------	----------	----------	7	2	9
Attorneys and right-of-way agents	----------	----------	----------	3	----------	3
Engineers	----------	----------	----------	4	----------	4
Draftsmen, surveyors, and student engineers	----------	----------	----------	1	1	2
Accountants	----------	----------	----------	1	----------	1
Clerical employees	----------	----------	----------	13	82	95
Local managers	1	----------	1	13	2	15
Commercial agents	----------	----------	----------	71	----------	71
Experienced switchboard operators	----------	----------	----------	----------	436	436
Operators in training	----------	----------	----------	----------	19	19
Service inspectors	----------	----------	----------	3	12	15
Supervising foremen	----------	----------	----------	2	----------	2
Central office installation and maintenance men	1	----------	1	64	----------	64
Line and station construction, installation, and maintenance men	11	----------	11	469	----------	469
Cable and conduit construction and maintenance men	----------	----------	----------	100	----------	100
All other employees	3	----------	3	87	98	185
Total for employees	16	----------	16	839	652	1,491
Persons other than employees	64	18	82	1,765	1,135	2,900
Grand total—Employees and other persons	80	18	98	2,604	1,787	4,391

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

TABLE XIX.—*Employees killed or injured in accidents occurring in connection with the operations of wire-telegraph and radiotelegraph carriers* [1]

[Year ended Dec. 31, 1936]

Description of injury	Employees killed or injured			
	In plant work	In operation	Otherwise	Total
Killed:				
Male	1	4	10	15
Female				
Total	1	4	10	15
Injured:				
Male	329	1,652	2,023	4,004
Female		358	84	442
Total	329	2,010	2,107	4,446

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Receiverships and trusteeships.—In table XX, which follows, are shown a list of telephone carriers and holding companies in the hands of receivers or trustees; the names of the fiduciaries and the dates of their appointments; and the amounts of investment in telephone plant, capital stock, and matured and unmatured funded debt involved. No telegraph carrier was in receivership or trusteeship at December 31, 1936, and it may be noted from the table that only one telephone carrier was in receivership at this date. The amount of telephone plant investment involved in the one receivership was only $882,322. However, extensive communication interests, both telephone and telegraph, were under control by holding companies in receivership at December 31, 1936.

TABLE XX.—*Summary showing statistics of reporting communication carriers and holding companies in the hands of receivers and trustees*

[Year ended Dec. 31, 1936]

Name of company	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
TELEPHONE CARRIERS							
CLASS A							
Kansas Telephone Co., The	M. B. Gourley and M. F. Cosgrove	Receivers	Feb. 27, 1932	$882,322	[1] $5,000	$620,500	
HOLDING COMPANIES[a]							
Ann Arbor Railroad Co., The	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	do	Dec. 4, 1931[2]		7,250,000	9,164,341	$200
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	Walter J. Cummings and George I. Haight	Trustees	Jan. 1, 1936		[3] 224,440,761	463,404,856	13,192,862
Indiana Central Telephone Co	Christopher L. Ward, Jr	Trustee	June 25, 1935		[4] 1,000,000		1,700,000
Middle Western Telephone Co	Owen J. Nolan and Benjamin Brown	Trustees	([5])		[6] 755,545	1,148,500	
Postal Telegraph & Cable Corporation	Alfred E. Smith and George S. Gibbs	do	Dec. 24, 1935[7]		[8] 55,970,750	50,670,210	
United Telephone & Electric Co	William C. A. Henry	Trustee	([5])		[9] 12,053,050		
Wabash Railway Co	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers	Dec. 1, 1931[10]		138,120,767	131,945,126	2,200
Total, holding companies					439,590,873	656,333,033	14,895,262
Grand total				882,322	439,595,873	656,953,533	14,895,262

[a] Comprises companies controlling communication carriers.
[1] Represents book liability for 1,000 shares of common stock without par value.
[2] Norman B. Pitcairn appointed receiver, Oct. 20, 1933, to succeed Walter S. Franklin, resigned.
[3] Includes $105,133,461 book liability for 1,174,060 shares of common stock without par value.
[4] Represents book liability for 100 shares of common stock without par value.
[5] Data not reported.
[6] Represents book liability for 171,302 shares of common stock without par value.
[7] Date of temporary appointment, made permanent Jan. 27, 1936.
[8] Includes $25,441,250 book liability for 1,017,500 shares of common stock without par value.
[9] Includes $3,099,350 book liability for 36,178 shares of common stock without par value.
[10] Norman B. Pitcairn appointed receiver, Oct. 19, 1933, to succeed Walter S. Franklin, resigned.

Railway telegraph and telephone data.—In table XXI, which follows, are shown data of revenues and wire mileage pertaining to the telegraph and telephone operations of class I steam railways during 1936. The revenues and the mileage data were obtained from annual reports of the railway carriers filed with the Interstate Commerce Commission. The revenues shown in this table do not measure the value of telegraph and telephone services to the railway carriers concerned but are the amounts received by railway carriers for services and facilities furnished in connection with telegraph and telephone services performed for the public.

TABLE XXI.—*Telegraph and telephone revenues received and mileage operated by class I steam railways*

[Compiled from annual reports filed with the Interstate Commerce Commission for the year ended Dec. 31, 1936]

Name of railway	Operating revenues (account 138)			Mileage operated		
	Telegraph	Telephone	Total	Pole line	Telegraph wire	Telephone wire
Atchison, Topeka & Santa Fe Ry. Co.	$347,498	----------	$347,498	13,011	42,660	36,543
Baltimore & Ohio R. R. Co.	60,152	----------	60,152	5,778	16,683	18,730
Chicago, Burlington, & Quincy R. R. Co.	150,196	----------	150,196	8,728	26,337	17,676
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	42,719	----------	42,719	10,211	20,723	22,129
Duluth, Missabe & Northern Ry. Co.	2,925	$76,567	79,492	561	1,206	5,397
Great Northern Ry. Co.	119,937	----------	119,937	7,835	28,045	21,590
Louisville & Nashville R. R. Co.	49,543	----------	49,543	4,558	2,666	18,901
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	52,189	----------	52,189	4,101	15,783	817
New York, New Haven & Hartford R. R. Co.	33,819	----------	33,819	2,056	610	26,906
Northern Pacific Ry. Co.	90,062	----------	90,062	5,876	12,869	17,791
Pennsylvania R. R. Co.	131,009	----------	131,009	9,202	8,457	137,710
Southern Pacific Co.	416,803	25,006	441,809	8,399	23,673	19,032
Texas & New Orleans R. R. Co.	30,995	----------	30,995	4,323	7,932	10,645
Union Pacific R. R. Co.	284,118	----------	284,118	9,579	25,340	22,697
Other class I steam railways [1]	221,297	16,930	238,227	129,069	288,933	358,565
Total, United States	2,033,262	118,503	2,151,765	223,287	521,917	735,129
Copper River and Northwestern Ry. Co. (Alaska)	----------	2,383	2,383	194	----------	241
Grand total	2,033,262	120,886	2,154,148	223,481	521,917	735,370

[1] Represents returns from 67 class I steam railways in the United States, each having gross annual telegraph and telephone revenues less than $25,000.

GROUP 2.—STATISTICS BASED PRINCIPALLY ON MONTHLY REPORTS FILED WITH THE COMMISSION

TELEPHONE STATISTICS (BASED ON MONTHLY REPORTS)

Large telephone carriers reporting monthly.—The names of the carriers included in the statistics of large telephone carriers contained in this appendix are listed in table XXII below. The carriers included in the Bell System are marked with an asterisk. The carriers marked with a dagger claim to be subject only to the provisions of sections 201–205 of the act but are voluntarily filing monthly reports with the Commission for statistical purposes. The Rio Grande Valley Telephone Co. was merged by the Southwestern Bell Telephone Co. on December 31, 1936.

TABLE XXII.—*List of 81 large telephone carriers reporting on a monthly basis to the Commission showing geographical regions to which the carriers have been assigned for statistical purposes*

Name of carrier	Geographical region
American Telephone Co	South Central.
*American Telephone & Telegraph Co	Middle Atlantic.
†Ashland Home Telephone Co	Southeastern.
†Associated Telephone Co., Ltd	Pacific.
*Bell Telephone Co. of Nevada	Mountain.
*Bell Telephone Co. of Pennsylvania	Middle Atlantic.
Bluefield Telephone Co	Chesapeake.
Carolina Telephone & Telegraph Co	Southeastern.
*Chesapeake & Potomac Telephone Co	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	Do.
Cincinnati & Suburban Bell Telephone Co	Great Lakes
†Citizens Independent Telephone Co	Do.
†Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
†Commonwealth Telephone Co. (Wisconsin)	Great Lakes.
*Dakota Central Telephone Co	North Central.
†DeKalb-Ogle Telephone Co	Great Lakes.
*Diamond State Telephone Co	Middle Atlantic.
Home Telephone & Telegraph Co	Great Lakes.
*Illinois Bell Telephone Co	Do.
†Illinois Central Telephone Co	Do.
†Illinois Commercial Telephone Co	Do.
†Illinois Consolidated Telephone Co	Do.
†Illinois Telephone Co	Do.
Indiana Associated Telephone Corporation	Do.
*Indiana Bell Telephone Co	Do.
Inter-Mountain Telephone Co	Southeastern.
Interstate Telephone Co	Pacific.
†Intra State Telephone Co	Great Lakes.
†Jamestown Telephone Corporation	Middle Atlantic.
Keystone Telephone Co. of Philadelphia	Do.
†Kittanning Telephone Co	Do.
La Crosse Telephone Corporation	Great Lakes.
†Lexington Telephone Co	Southeastern.
†Lincoln Telephone & Telegraph Co	North Central.
†Lorain Telephone Co	Great Lakes.
†Mansfield Telephone Co	Do.
Michigan Associated Telephone Co	Do.
*Michigan Bell Telephone Co	Do.
Middle States Telephone Co. of Illinois	Do.
†Missouri Telephone Co	South Central.
*Mountain States Telephone & Telegraph Co	Mountain.
Nebraska Continental Telephone Co	North Central.
*New England Telephone & Telegraph Co	New England.
*New Jersey Bell Telephone Co	Middle Atlantic.
*New York Telephone Co	Do.
*Northwestern Bell Telephone Co	North Central.
Ohio Associated Telephone Co	Great Lakes.
*Ohio Bell Telephone Co	Do.
†Ohio Standard Telephone Co	Do.
*Pacific Telephone & Telegraph Co	Pacific.
†Peninsular Telephone Co	Southeastern.
†Portsmouth Home Telephone Co	Great Lakes.
Rochester Telephone Corporation	Middle Atlantic.
San Angelo Telephone Co	South Central.
Santa Barbara Telephone Co	Pacific.
Southeast Missouri Telephone Co	South Central.
*Southern Bell Telephone & Telegraph Co	Southeastern.
*Southern California Telephone Co	Pacific.
†Southern Continental Telephone Co	Southeastern.
Southern New England Telephone Co	New England.
†Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co	Do
*Southwestern Bell Telephone Co	Do.
†Southwestern States Telephone Co	Do.
†Star Telephone Co	Great Lakes.
†Texas Long Distance Telephone Co	South Central.
*Tri-State Telephone & Telegraph Co	North Central.
Two States Telephone Co	South Central.
†Union Telephone Co	Great Lakes.

See footnotes at end of table.

TABLE XXII.—*List of 81 large telephone carriers reporting on a monthly basis to the Commission showing geographical regions to which the carriers have been assigned for statistical purposes*—Continued

Name of carrier	Geographical region
*United Telephone Co. (Kansas)	South Central.
United Telephone Co. (Missouri)	Do.
United Telephone Companies, Inc.	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlantic.
†Upstate Telephone Corporation of New York	Do.
†Wabash Telephone Co.	Great Lakes.
Warren Telephone Co.	Do.
West Coast Telephone Co.	Pacific.
†Western Telephone Corporation of Missouri	South Central.
*Wisconsin Telephone Co.	Great Lakes.

*Represents carriers included in the Bell System.
†Represents carriers, subject only to the provisions of sections 201–205 of the Communications Act of 1934, which file reports for statistical purposes.

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.

Summary of monthly reports of large telephone carriers.—A summary of the monthly reports of large telephone carriers for the month of December, with cumulative figures for 12 months ended with December 1936, together with data for the corresponding periods in 1935, are shown in table XXIII below. Operating revenues of large telephone carriers for the month of December 1936 were slightly more than 10 percent greater than corresponding revenues for the previous December as indicated by this table, while the increase in net operating income was approximately 34 percent. The operating revenues for the entire year 1936 were 8 percent larger than the operating revenues for the preceding year; whereas, for the similar period, net operating income increased 19 percent.

TABLE XXIII.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*

MONTH OF DECEMBER

Item	1936	1935 [1]	Increase or decrease [2]	
			Amount	Ratio, percent
Number of company telephones in service at end of mounth	16,066,800	15,084,293	982,507	6.51
Operating revenues:				
Subscribers' station revenues	$57,986,417	$53,400,395	$4,586,022	8.59
Public telephone revenues	4,059,236	3,741,796	317,440	8.48
Miscellaneous local service revenues	1,003,755	912,210	91,545	10.04
Message tolls	26,340,405	22,620,028	3,720,377	16.45
Miscellaneous toll service revenues	2,801,365	2,575,176	226,189	8.78
Revenues from general services and licenses	1,189,853	1,105,615	84,238	7.62
Sundry miscellaneous revenues	3,557,383	3,483,272	74,111	2.13
Uncollectible operating revenues, Dr.	300,859	276,938	23,921	8.64
Operating revenues	96,637,555	87,561,554	9,006,001	10.37
Operating expenses:				
Depreciation and extraordinary retirements	12,627,784	14,883,929	[3] *2,256,145*	[3] *15.16*
All other maintenance	18,617,571	16,494,140	2,123,431	12.87
Traffic expenses	13,393,905	12,174,280	1,219,625	10.02
Commercial expenses	7,568,479	6,791.577	776,902	11.44
General office salaries and expenses	5,397,357	5,090,732	306,625	6.02
General services and licenses	1,169,585	1,082,112	87,473	8.08
All other operating expenses	5,116,759	5,052,378	64,381	1.27
Operating expenses	63,891,440	61,569,148	2,322,292	3.77

See footnotes at end of table.

TABLE XXIII.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*—Continued

MONTH OF DECEMBER—Continued

Item	1936	1935 [1]	Increase or decrease [2]	
			Amount	Ratio, percent
Income items:				
Net operating revenues	32,746,115	25,992,406	6,753,709	25.98
Rent from lease of operating property	337	374	[2] 37	[2] 9.89
Rent for lease of operating property	4,090	3,975	115	2.89
Net operating income before tax deduction	32,742,362	25,988,805	6,753,557	25.99
Operating taxes	8,920,136	8,159,331	760,805	9.32
Net operating income	23,822,226	17,829,474	5,992,752	33.61
Ratio of expenses to revenues, percent	66.11	70.32	[2] 4.21	
Changes in capital items:				
Increase during month in "telephone plant"	$51,389	$8,263,786		
Increase during month in "Capital stock"	[2] $6,221,102	$1,125		
Increase during month in "Funded debt"	[2] $51,917,470	[2] $5,229,100		

TWELVE MONTHS ENDED WITH DECEMBER

Item	1936 [3]	1935 [1]	Increase or decrease [2]	
			Amount	Ratio, percent
Operating revenues:				
Subscribers' station revenues	$661,271,317	$625,255,909	$36,015,408	5.76
Public telephone revenues	44,276,346	41,439,076	2,837,270	6.85
Miscellaneous local service revenues	11,621,357	10,687,729	933,628	8.74
Message tolls	288,188,029	254,732,757	33,455,272	13.13
Miscellaneous toll service revenues	32,983,795	29,553,153	3,430,642	11.61
Revenues from general services and licenses	13,595,448	12,788,162	807,286	6.31
Sundry miscellaneous revenues	41,420,299	38,834,871	2,585,428	6.66
Uncollectible operating revenues—Dr	3,450,981	4,129,629	[2] 678,648	[2] 16.43
Operating revenues	1,089,905,610	1,009,162,028	80,743,582	8.00
Operating expenses:				
Depreciation and extraordinary retirements	172,747,312	180,132,355	[2] 7,385,043	[2] 4.10
All other maintenance	193,899,713	183,438,972	10,460,741	5.70
Traffic expenses	149,513,835	138,918,133	10,595,702	7.63
Commercial expenses	83,032,874	78,073,793	4,959,081	6.35
General office salaries and expenses	59,313,278	56,447,320	2,865,958	5.08
General services and licenses	13,319,291	12,532,718	786,573	6.28
All other operating expenses	58,174,311	60,188,867	[2] 2,014,556	[2] 3.35
Operating expenses	730,000,614	709,732,158	20,268,456	2.86
Income items:				
Net operating revenues	359,904,996	299,429,870	60,475,126	20.20
Rent from lease of operating property	5,222	5,176	46	0.89
Rent for lease of operating property	49,312	70,241	[2] 20,929	[2] 29.80
Net operating income before tax deduction	359,860,906	299,364,805	60,496,101	20.21
Operating taxes	122,781,074	100,176,378	22,604,696	22.56
Net operating income	237,079,832	199,188,427	37,891,405	19.02
Ratio of expenses to revenues, percent	66.98	70.33	[2] 3.35	
Changes in capital items:				
Increase during period in "Telephone plant"	$78,444,953	$26,252,969		
Increase during period in "Capital stock"	$29,558,905	$1,549,400		
Increase during period in "Funded debt"	[2] $59,457,336	$32,469,230		

[1] Returns in this column reflect depreciation adjustments on property in Nebraska.
[2] Deficit or other reverse item.
[3] Returns in this column reflect adjustments covering estimated refunds.

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.

Proportion of the telephone industry covered by monthly reports to the Federal Communications Commission.—In the next following statement, statistics applicable to the year 1932, of telephone carriers reporting on a monthly basis to the Commission for the year 1936, are compared with statistics of all telephone carriers operating in the United States as reported by the Bureau of the Census in "Census of Electrical Industries: Telephones and Telegraphs, 1932," and with the statistics of telephone carriers reporting on a monthly basis to the Interstate Commerce Commission in 1932.

Item	Total operating revenues for year 1932	Number of telephones Dec. 31, 1932
Census of electrical industries; 44,828 systems and lines	$1,061,530,140	17,424,406
104 carriers reporting to the Interstate Commerce Commission	$1,031,429,879	[1] 15,142,489
Percent of census total	97.16	86.90
81 carriers reporting in 1936 to the Federal Communications Commission	$1,022,192,348	[1] 14,907,286
Percent of census total	96.29	85.55
Percent of Interstate Commerce Commission total	99.10	98.45

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

The difference in the number of telephone carriers reporting to the Interstate Commerce Commission for 1932 and the number reporting to the Federal Communications Commission for 1936 is accounted for, in part, by mergers and reorganizations. In addition, a few carriers are not reporting because they are claiming exemption under the act. These carriers have been requested to resume filing monthly reports for statistical purposes.

As reflected in the above statement, the operating revenues of the 81 telephone carriers now reporting on a monthly basis to the Commission were $1,022,192,348 for the year 1932, which amount is over 96 percent of the total telephone operating revenues of all systems and lines in the United States as reported by the Bureau of the Census for that year.

Operating statistics of telephone carriers, by months, January 1933 to June 1937, inclusive.—A summary of the operating revenues, operating expenses, and net operating income of large telephone carriers reporting on a monthly basis, from January 1933 to June 1937, inclusive, is shown in table XXIV, which follows, and the trends of the various items during this period are indicated in chart 5 which follows table XXIV. Among the facts of interest shown by the table is the increase from the month of June 1933 to the month of June 1937 in operating revenues from $80,000,000 to $96,700,000; in operating expenses from $55,700,000 to $65,800,000; and in net operating income from $16,000,000 to $18,900,000.

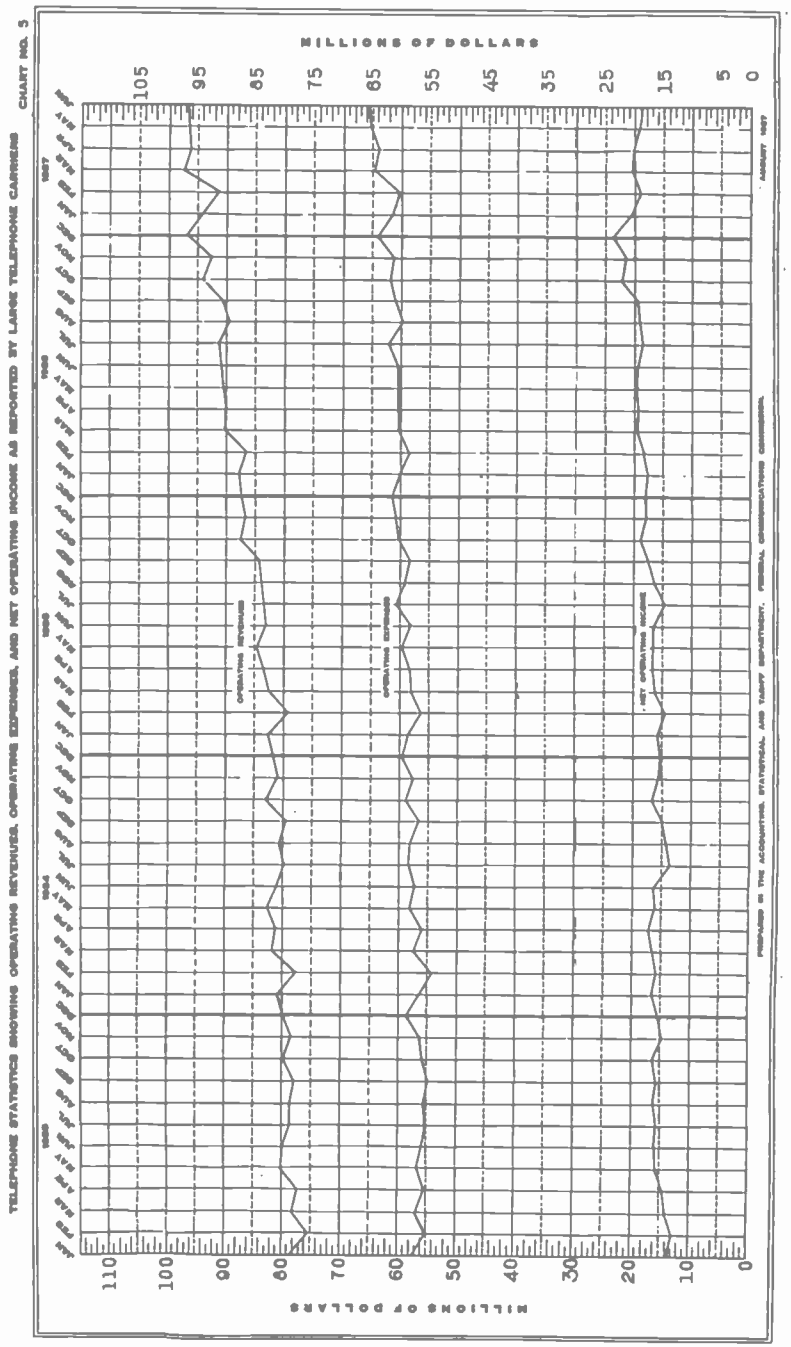
Refunds amounting to approximately $16,000,000 to Chicago coin-box subscribers, covering an 11-year period, were deducted during June 1934 by the Illinois Bell Telephone Company, but have been restored in chart 5 in order to preserve the consistency of the trend. The revised Uniform System of Accounts for telephone carriers became effective January 1, 1937, but the changes had only a minor effect on the operating returns.

TABLE XXIV.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1937, inclusive.*

Month	Operating revenues	Operating expenses	Net operating income
1933			
January	$79,009,225	$57,738,657	$13,838,315
February	75,359,589	55,105,584	12,911,515
March	78,240,075	56,928,953	14,062,004
April	77,361,079	55,212,904	14,701,534
May	80,085,242	56,843,095	15,795,445
June	79,989,802	55,729,966	16,004,495
July	78,717,113	55,023,776	15,755,871
August	78,641,773	55,244,936	16,181,489
September	77,905,490	54,828,078	15,622,388
October	79,705,631	55,754,758	16,394,682
November	78,547,076	56,318,756	14,825,835
December	79,986,324	58,525,801	15,237,317
Total	943,548,419	673,255,264	181,350,890
1934			
January	80,924,986	56,387,835	16,543,144
February	77,898,208	54,383,038	15,613,285
March	81,980,255	57,355,367	16,444,769
April	81,136,948	56,017,082	17,216,058
May	82,693,775	58,154,683	16,029,218
June	[1] 65,915,988	[1] 40,906,873	[1] 17,279,279
July	79,869,348	58,346,601	13,623,003
August	80,563,116	58,179,220	14,485,697
September	79,364,306	56,543,761	15,017,300
October	82,940,225	58,892,853	16,561,162
November	80,909,123	57,860,613	15,521,036
December	[1] 81,727,414	[1] 59,633,086	[1] 15,271,908
Total	[1] 955,923,692	[1] 672,661,012	[1] 189,605,859
1935			
January	82,807,143	58,647,929	15,760,916
February	[1] 79,169,909	[1] 56,218,551	[1] 14,631,270
March	82,547,774	58,114,415	16,184,715
April	83,486,740	58,332,729	16,616,852
May	84,761,475	59,887,801	16,451,940
June	83,127,634	58,278,595	16,433,424
July	83,428,884	60,535,018	14,771,409
August	83,738,403	59,090,556	16,431,131
September	84,060,990	58,242,896	17,388,035
October	87,725,236	60,209,029	18,898,205
November	[1] 86,746,286	[1] 60,605,491	[1] 17,791,056
December	87,561,554	[1] 61,569,148	[1] 17,829,474
Total	[1] 1,009,162,028	[1] 709,732,158	[1] 199,188,427
1936			
January	87,894,569	60,168,491	17,610,413
February	86,485,509	58,320,529	18,073,773
March	90,044,212	60,272,513	19,490,449
April	89,896,865	60,243,669	19,139,320
May	90,363,509	60,317,978	19,512,650
June	90,842,420	[2] 60,494,354	[2] 19,587,295
July	91,129,198	62,135,734	18,297,913
August	89,571,325	59,959,805	18,853,325
September	90,668,099	60,923,036	19,276,540
October	93,979,470	61,910,236	22,142,151
November	92,392,879	61,362,829	21,273,777
December	96,637,555	63,891,440	23,822,226
Total	1,089,905,610	[2] 730,000,614	[2] 237,079,832
1937			
January	94,277,491	[2] 61,453,124	[2] 20,774,218
February	91,263,251	60,300,793	19,072,490
March	97,048,975	64,861,971	20,043,358
April	96,133,405	63,958,807	20,106,125
May	96,414,872	65,034,699	19,150,739
June	96,677,900	65,760,618	18,933,672
Total	571,815,894	[2] 381,370,012	[2] 118,080,602

[1] These returns reflect adjustments covering estimated refunds.
[2] These returns reflect depreciation adjustments on property in Nebraska.

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.


TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS
CHART NO. 3
MILLIONS OF DOLLARS
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.
AUGUST 1947

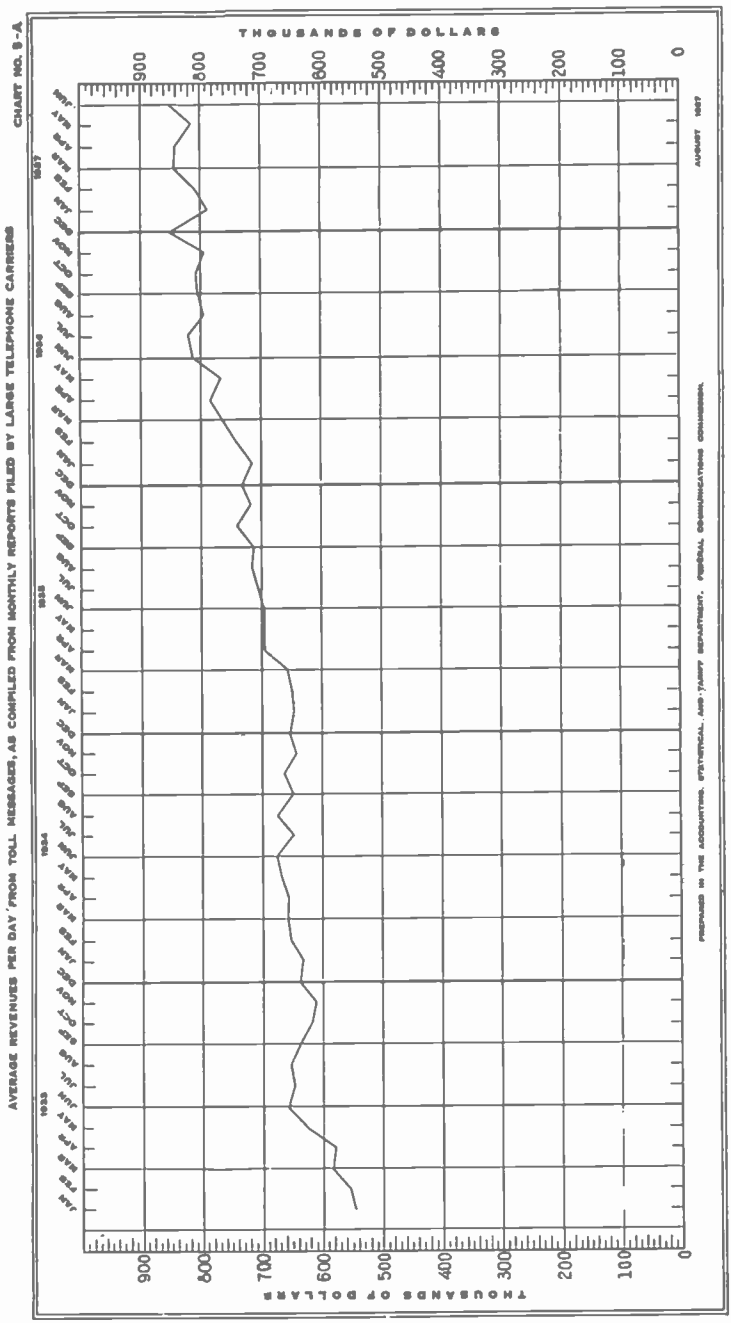
Monthly total and daily average message tolls.—In table XXV, which follows, are shown the monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1937, inclusive. The revenues received from "Toll private line services" and "Other toll service" are not included in this table. The table shows that the daily avarage toll message revenues increased from $658,000 in June 1933 to $858,000 in June 1937. Message tolls for the year 1933 amounted to $223,400,000 and increased to $288,-200,000 in 1936.

Chart 5–A, which follows table XXV below, indicates the trend of average revenues per day from toll messages of large telephone carriers for the period January 1933 to June 1937, inclusive.

TABLE XXV.—*Summary showing monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1937, inclusive*

Month	1933		1934		1935		1936		1937	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average Message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$16,925,143	$545,972	$19,555,736	$630,830	$20,042,020	$646,517	$22,099,465	$712,886	$24,420,129	$787,746
February	15,421,746	550,777	18,240,274	651,438	18,183,164	649,399	21,481,436	740,739	22,657,639	809,201
March	18,072,817	582,994	20,409,975	658,386	20,307,966	655,096	23,678,009	763,807	26,155,538	843,727
April	17,359,085	578,636	19,724,011	657,467	20,831,481	694,383	23,515,316	783,844	25,259,370	841,979
May	19,391,598	625,535	20,690,362	667,431	21,513,354	693,979	23,709,767	764,831	25,295,829	815,994
June	19,733,550	657,785	20,217,449	673,915	20,840,383	694,679	24,343,722	811,457	25,727,807	857,593
July	20,058,624	647,052	20,060,354	647,108	21,796,457	703,112	25,405,921	819,546		
August	20,181,118	651,004	20,883,494	673,661	22,467,697	724,764	24,692,246	796,524		
September	19,095,094	636,503	19,458,805	648,627	21,691,036	723,035	24,094,776	803,159		
October	19,130,289	617,106	20,520,762	661,960	22,936,688	739,893	24,983,636	805,924		
November	18,322,302	610,743	19,255,856	641,862	21,502,483	716,749	23,843,330	794,778		
December	19,714,240	635,943	20,177,107	650,874	22,620,028	729,678	26,340,405	849,690		
Year	223,405,606	612,070	239,194,185	655,327	254,732,757	697,898	288,188,029	787,399		

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.


AVERAGE REVENUES PER DAY FROM TOLL MESSAGES, AS COMPILED FROM MONTHLY REPORTS FILED BY LARGE TELEPHONE CARRIERS
CHART NO. 8-A
THOUSANDS OF DOLLARS
0
100
200
300
400
500
600
700
800
900
1933
1934
1935
1936
1937
AUGUST 1937
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Number of telephones in service.—The number of telephones in service, including all telephones except private line telephones and telephones of connecting lines for which local or switching services are rendered, as reported by large telephone carriers on a monthly basis from January 1933 to June 1937, is shown in table XXVI, which follows, and the trend during this period is reflected in chart 6, which follows table XXVI. These statistical representations indicate that the depression low in number of telephones in service for large telephone carriers was reached in August 1933, when 14,150,000 telephones were reported. Since that date there have been substantial increases during most months and the number of telephones in service in June 1937 reached approximately 16,640,000.

TABLE XXVI.—*Number of telephones in service in the United States as reported by large telephone carriers by months, from January 1933 to June 1937, inclusive* [1]

Month	1933	1934	1935	1936	1937
January	14,797,971	14,264,856	14,603,957	15,148,401	16,159,942
February	14,679,609	14,303,845	14,641,725	15,220,365	16,258,896
March	14,553,502	14,360,906	14,695,686	15,305,905	16,374,736
April	14,457,781	14,426,981	14,750,749	15,391,384	16,496,638
May	14,367,936	14,462,801	14,802,897	15,477,096	16,603,670
June	14,263,655	14,446,442	14,793,040	15,499,952	16,641,027
July	14,177,038	14,409,932	14,770,549	15,548,762	
August	14,151,046	14,419,782	14,799,676	15,622,260	
September	14,209,513	14,488,493	14,902,795	15,761,683	
October	14,225,119	14,525,177	14,971,898	15,880,057	
November	14,230,298	14,544,896	15,028,792	15,960,863	
December	14,241,702	14,566,811	15,084,293	16,066,800	

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.

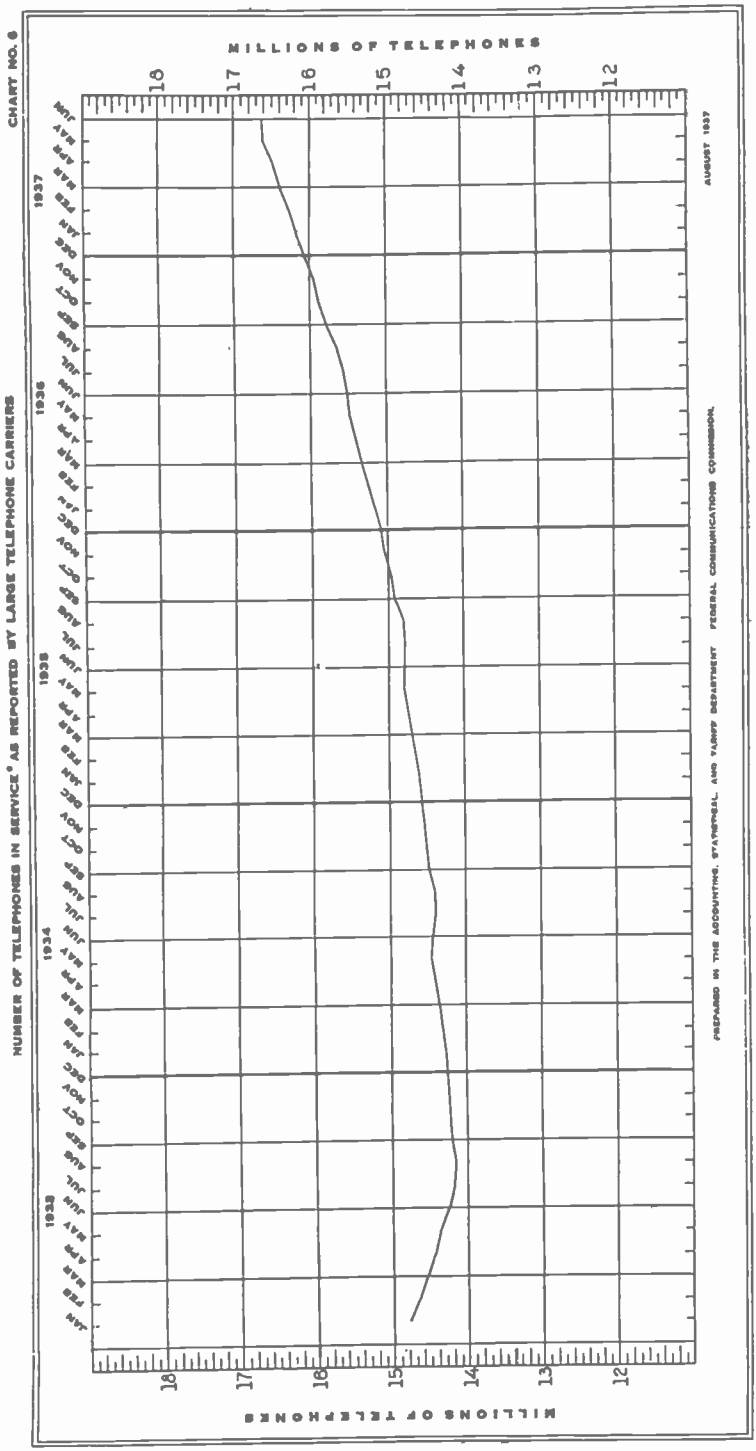


CHART NO. 6
NUMBER OF TELEPHONES IN SERVICE* AS REPORTED BY LARGE TELEPHONE CARRIERS
MILLIONS OF TELEPHONES
18
17
16
15
14
13
12
1933
1934
1935
1936
1937
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
AUGUST 1937
PREPARED IN THE ACCOUNTING, STATISTICAL AND RADIO DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION.

Averages per telephone per day of operating revenues and operating expenses.—The averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, further subdivided as between Bell System carriers and other than Bell System carriers are shown by geographical regions in table XXVII which follows. The data of the American Telephone & Telegraph Co. were excluded from the averages for the geographical regions inasmuch as the operations of the Long Lines Department of this carrier cover the entire country, but the data were included in a separate total for the United States. In computing these averages, the gross operating revenues and expenses were used. The averages are computed on the basis of 325 days to the year which basis is used by the Bureau of the Census in similar computation.

This table indicates, among other facts, that the gross operating revenues per telephone per day for Bell System carriers were $0.22 and for other than Bell System carriers were $0.14 in 1936. Gross operating expenses per telephone per day were $0.15 for Bell System carriers and $0.09 for other than Bell System carriers.

TABLE XXVII.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*

[Year ended Dec. 31, 1936]

ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$88,429,301	$62,782,820	1,470,397	$0.1850	$0.1314
Middle Atlantic region [1]	321,120,339	219,787,817	4,335,609	.2279	.1560
Great Lakes region	209,114,395	133,523,008	3,528,844	.1823	.1164
Eastern district [1]	618,664,035	416,093,645	9,334,850	.2039	.1372
Chesapeake region	39,755,311	26,636,330	710,960	.1721	.1153
Southeastern region	62,836,520	40,730,234	1,085,256	.1782	.1155
Southern district	102,591,831	67,366,564	1,796,216	.1757	.1154
North Central region	42,188,623	29,431,921	826,855	.1570	.1095
South Central region	87,204,090	55,650,913	1,448,035	.1853	.1183
Mountain region	23,225,269	16,238,205	436,631	.1637	.1144
Pacific region	109,110,978	70,371,432	1,731,082	.1939	.1251
Western district	261,728,960	171,692,471	4,442,603	.1813	.1189
United States [1]	982,984,826	655,152,680	15,573,669	.1942	.1294
United States [2]	1,089,905,610	730,000,614	15,573,669	.2153	.1442

BELL SYSTEM CARRIERS

New England region	$71,655,068	$50,932,217	1,157,415	$0.1905	$0.1354
Middle Atlantic region [1]	311,983,328	213,544,154	4,138,603	.2319	.1588
Great Lakes region	185,623,120	118,775,971	2,951,487	.1935	.1238
Eastern district [1]	569,261,516	383,252,342	8,247,505	.2124	.1430
Chesapeake region	39,325,381	26,356,162	702,919	.1721	.1154
Southeastern region	57,290,777	37,486,839	960,335	.1836	.1201
Southern district	96,616,158	63,843,001	1,663,254	.1787	.1181
North Central region	39,157,847	27,366,238	749,747	.1607	.1123
South Central region	82,046,690	52,269,460	1,322,577	.1909	.1216
Mountain region	23,225,269	16,238,205	436,631	.1637	.1144
Pacific region	103,276,339	66,901,884	1,585,399	.2004	.1298
Western district	247,706,145	162,775,787	4,094,354	.1862	.1223
United States [1]	913,583,819	609,871,130	14,005,113	.2007	.1340
United States [2]	1,020,504,603	684,719,064	14,005,113	.2242	.1504

See footnotes at end of table.

TABLE XXVII.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*—Continued

[Year ended Dec. 31, 1936]

OTHER THAN BELL SYSTEM CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$16,774,233	$11,850,603	312,982	$0.1649	$0.1165
Middle Atlantic region	9,137,011	6,243,663	197,006	.1427	.0975
Great Lakes region	23,491,275	14,747,037	577,357	.1252	.0786
Eastern district	49,402,519	32,841,303	1,087,345	.1398	.0929
Chesapeake region	429,930	280,168	8,041	.1645	.1072
Southeastern region	5,545,743	3,243,395	124,921	.1368	.0799
Southern district	5,975,673	3,523,563	132,962	.1353	.0815
North Central region	3,030,776	2,065,683	77,108	.1209	.0824
South Central region	5,157,400	3,381,453	125,458	.1265	.0829
Mountain region					
Pacific region	5,834,639	3,469,548	145,683	.1232	.0733
Western district	14,022,815	8,916,684	348,249	.1239	.0788
United States	69,401,007	45,281,550	1,568,556	.1361	.0888

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are not confined to one geographical region.
[2] Includes figures for American Telephone & Telegraph Co.

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more.

Summary of monthly reports of large telegraph carriers.—A summary of monthly reports of large wire-telegraph and radiotelegraph carriers, each having annual operating revenues of approximately $50,000, or more, for December 1936 and for 12 months ended with December 1936 is shown in table XXVIII which follows.

TABLE XXVIII.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*

FOR THE MONTH OF DECEMBER 1936

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co	$5,324	$3,568	$1,196	$1,293
Postal Telegraph-Cable Co. (land-line system)	2,263,005	1,953,300	258,099	19,402
Western Union Telegraph Co	9,630,282	7,946,537	1,222,943	904,544
Total, land-line telegraph carriers	11,898,611	9,903,405	1,482,238	925,239
All America Cables, Inc	488,397	379,778	80,810	132,726
Commercial Cable Co. (New York & Limited)	410,126	241,831	157,674	73,179
Commercial Pacific Cable Co	99,586	63,354	35,156	60,967
French Telegraph Cable Co	33,901	62,922	[1] 30,686	[1] 30,984
Mexican Telegraph Co	41,671	22,662	15,998	12,948
Total, ocean cable carriers	1,073,681	770,547	258,952	248,836
Globe Wireless, Ltd	37,451	34,707	[1] 1,527	[1] 2,498
Mackay Radio & Telegraph Co. (California)	99,529	83,196	14,045	[1] 575
Mackay Radio & Telegraph Co. (Delaware)	96,604	97,561	2,651	[1] 25,967
Mutual Telephone Co. (wireless department, Hawaii)	4,986	5,349	[1] 363	56
Press Wireless, Inc	38,297	36,460	1,250	1,250
R. C. A. Communications, Inc	492,205	330,040	109,551	135,000

[1] Deficit or other reverse item.

TABLE XXVIII.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*—Continued

FOR THE MONTH OF DECEMBER 1936—Continued

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Radiomarine Corporation of America	$87,464	$67,669	$13,286	$13,771
Southern Radio Corporation	3,564	12,169	[1] *8,658*	[1] *5,662*
Tropical Radio Telegraph Co	61,420	48,121	10,630	13,193
U. S., Liberia Radio Corporation	6,741	5,225	1,386	1,386
Total, radiotelegraph carriers	928,261	720,497	142,073	129,956
Grand total	13,900,553	11,294,449	1,883,263	1,304,031

FOR 12 MONTHS ENDED WITH DECEMBER 1936

Northern Telegraph Co	$60,589	$43,548	$12,791	$14,049
Postal Telegraph-Cable Co. (land-line system)	23,634,923	21,524,462	1,447,314	[1] *1,372,766*
Western Union Telegraph Co	98,420,220	80,229,275	13,460,690	7,199,120
Total, land-line telegraph carriers	122,115,732	101,797,285	14,920,795	5,840,403
All America Cables, Inc	4,656,562	3,558,968	757,978	786,598
Commercial Cable Co. (New York & Limited)	4,342,192	3,233,381	977,588	4,746
Commercial Pacific Cable Co	830,818	737,565	68,762	229,297
French Telegraph Cable Co	359,344	324,927	13,795	10,220
Mexican Telegraph Co	360,967	247,928	95,620	60,486
Total, ocean cable carriers	10,549,883	8,103,069	1,913,743	1,091,347
Globe Wireless, Ltd	420,980	369,715	35,195	34,822
Mackay Radio & Telegraph Co. (California)	1,023,338	907,929	92,441	[1] *83,345*
Mackay Radio & Telegraph Co. (Delaware)	985,364	1,136,416	[1] *153,205*	[1] *496,276*
Mutual Telephone Co. (wireless department, Hawaii)	58,088	47,995	5,115	5,434
Press Wireless, Inc	441,533	395,654	36,622	36,622
R. C. A. Communications, Inc	4,643,206	4,011,677	315,392	486,425
Radiomarine Corporation of America	1,038,587	800,634	184,789	186,967
Southern Radio Corporation	38,024	67,550	[1] *29,814*	[1] *28,074*
Tropical Radio Telegraph Co	651,479	610,050	30,672	59,663
U. S., Liberia Radio Corporation	57,773	58,776	[1] *2,607*	[1] *2,607*
Total, radio telegraph carriers	9,358,372	8,406,396	514,600	199,633
Grand total	142,023,987	118,306,750	17,349,138	7,131,383

NOTE.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

Telegraph operations of large telephone carriers.—A summary of the monthly reports received from 26 telephone carriers relative to revenues applicable to telegraph operations for December 1936 and for the 12 months ended with December 1936 is contained in table XXIX below. The summary comprises returns from 24 Bell System carriers and from the Cincinnati and Suburban Bell Telephone Co. and Southern New England Telephone Co. This summary reflects only items that are readily available from the carriers' accounts and makes comparison with similar data for 1935.

The volume of telegraph business of the 26 telephone carriers amounted to $20,900,000 in 1935 and increased to $24,300,000 in 1936 as shown by this table. Approximately $7,000,000 of the latter amount were derived from private line Morse service. Most of the balance of telegraph revenues received by telephone carriers was derived from private line teletypewriter and teletypewriter exchange service.

TABLE XXIX.—*Summary of monthly reports of telephone carriers [1] relative to available data concerning telegraph operations*

Item	December 1936		December 1935	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues [3]	Amounts applicable to respondents' telegraph operations [3]
OPERATING REVENUES				
Subscribers' station revenues	$54,862,001	$14,729	$50,487,166	$10,164
Public telephone revenues	4,005,628		3,702,810	
Miscellaneous local service revenues	947,753	230,746	857,663	203,404
Message tolls	25,369,072	557,783	21,726,702	371,656
Miscellaneous toll service revenues	2,784,983	1,379,855	2,512,232	1,297,593
Revenues from general services and licenses	1,189,143		1,104,896	
Sundry miscellaneous revenue	3,403,168	4,664	3,337,198	
Uncollectible operating revenues, Dr.	286,804	1,084	264,948	839
Total	92,274,944	2,186,693	83,463,719	1,881,978

Item	1936 cumulative figures		1935 cumulative figures	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues [3]	Amounts applicable to respondents' telegraph operations [3]
OPERATING REVENUES				
Subscribers' station revenues	$625,108,955	$146,457	$591,827,061	$99,160
Public telephone revenues	43,732,688		40,978,319	15,279
Miscellaneous local service revenues	10,959,093	2,541,028	10,053,269	2,345,370
Message tolls	276,817,267	5,694,311	244,765,139	3,903,002
Miscellaneous toll service revenues	32,757,831	15,911,347	29,295,375	14,568,714
Revenues from general services and licenses	13,582,542		12,774,878	
Sundry miscellaneous revenues	39,708,012	4,698	37,244,639	
Uncollectible operating revenues, Dr.	3,203,381	13,915	3,853,215	13,357
Total	1,039,463,007	24,283,926	963,085,465	20,918,168

[1] Comprises 24 Bell System carriers and the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.
[2] Reflects only items which are readily available from carriers' accounts.
[3] Returns in this column reflect adjustments covering estimated refunds.

Monthly operating statistics of large telegraph carriers, July 1934 to June 1937, inclusive.—The operating revenues, operating expenses, operating income, and net income of large wire-telegraph and radiotelegraph carriers, covering the period from July 1934 to June 1937, are included in table XXX, which follows, and the trends of these items during this period are indicated in chart 7 which follows table XXX. The table and chart indicate substantial gains in the volume of telegraph business during the period covered by the data. Total operating revenues of the telegraph carriers amounted to approximately $10,300,000 in July 1934 and to $12,500,000 in June 1937.

TABLE XXX.—*Monthly operating statistics showing revenues, expenses, operating income, and net income as reported by large telegraph carriers from July 1934 to June 1937, inclusive*

Month	Operating revenues	Operating expenses	Operating income	Net income
1934				
July	$10,288,243	$9,275,142	$527,309	[1] *$232,781*
August	10,886,673	9,326,337	*1,074,209*	244,478
September	10,178,062	9,028,709	668,071	[1] *169,840*
October	10,725,812	9,225,020	1,075,143	318,698
November	9,933,054	9,019,603	438,859	[1] *396,241*
December	11,004,971	9,458,110	1,330,026	[1] *207,065*
Total	63,016,815	55,332,921	5,113,617	[1] *442,751*
1935				
January	10,362,033	9,126,390	778,067	[1] *60,911*
February	9,611,350	8,686,579	470,181	[1] *463,886*
March	10,729,707	9,153,476	1,115,485	206,972
April	10,878,367	9,130,371	1,280,193	433,001
May	11,411,863	9,376,111	1,537,331	637,004
June	10,798,585	9,160,096	1,179,070	248,659
July	10,710,993	9,286,674	969,419	129,721
August	11,086,297	9,314,022	1,314,097	391,400
September	10,897,978	9,027,064	1,418,137	523,848
October	11,533,959	9,392,086	1,682,661	828,207
November	10,666,676	9,179,022	1,039,152	85,278
December	11,925,571	9,720,053	1,734,304	996,780
Total	130,613,379	110,551,944	14,518,097	3,956,073
1936				
January	10,911,897	9,420,527	981,459	131,091
February	10,585,074	9,159,483	919,278	[1] *24,895*
March	11,726,246	9,651,658	1,562,679	622,838
April	11,542,789	9,534,459	1,503,698	691,179
May	11,574,330	9,681,113	1,385,138	442,004
June	12,128,173	9,901,625	1,720,742	834,273
July	12,193,309	10,089,727	1,614,552	726,813
August	11,708,672	9,961,601	1,255,078	395,406
September	11,956,495	9,974,132	1,494,735	630,833
October	12,290,679	9,965,431	1,698,630	905,059
November	11,505,224	9,669,800	1,332,094	475,974
December	13,900,521	11,290,617	1,887,073	1,304,729
Total	142,023,409	118,300,173	17,355,156	7,135,304
1937				
January	12,140,972	10,229,801	1,216,273	406,098
February	11,368,311	9,817,436	878,489	43,463
March	13,253,361	10,557,492	1,961,059	1,247,171
April	12,313,839	10,463,338	1,154,025	422,284
May	12,198,308	10,802,599	709,725	[1] *138,857*
June	12,514,022	10,879,674	943,770	200,638
Total	73,788,813	62,750,340	6,863,341	2,180,817

[1] Deficit or other reverse item.

NOTE.—"Large telegraph carriers" comprises 3 land line telegraph carriers, 5 ocean cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

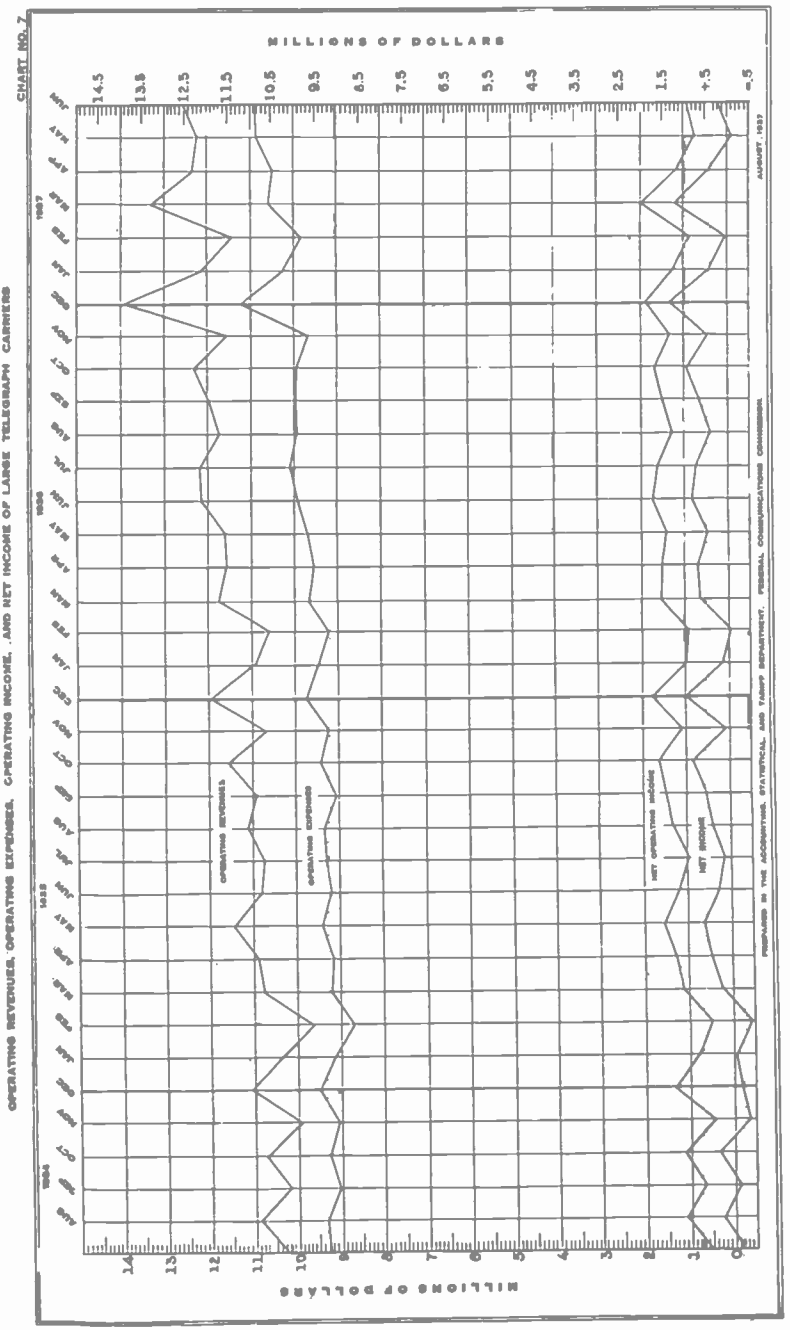


CHART NO. 7
OPERATING REVENUES, OPERATING EXPENSES, OPERATING INCOME, AND NET INCOME OF LARGE TELEGRAPH CARRIERS
MILLIONS OF DOLLARS
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
NET INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION
AUGUST, 1937

Percentage relationships of monthly operating revenues of telegraph carriers.—In tables XXXI and XXXII, which follow, respectively, are shown percentage relationships of monthly operating revenues computed from returns of large wire-telegraph and radiotelegraph carriers, respectively. The data for wire-telegraph carriers are based on the year 1929 for percentage computations only and indicate a substantial trend upward since 1933.

In the case of radiotelegraph carriers, the year 1934 is used as a base for statistical comparisons rather than 1929, inasmuch as data for radiotelegraph carriers for the years 1929 to 1933, inclusive, are not complete. However, the data reflect large increases in radiotelegraph business since 1934. The figure for the most recent month in the table shows that radiotelegraph operating revenues for June 1937 were about 37 percent greater than like data for June 1934.

TABLE XXXI.—*Percentage relationships between monthly operating revenues of large wire-telegraph carriers for all months from January 1930 to June 1937, inclusive, and the corresponding months in 1929*

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
January	100.00	95.47	80.77	63.84	51.22	61.99	61.01	64.13	71.39
February	100.00	96.61	81.96	67.34	52.96	63.09	61.65	67.46	72.34
March	100.00	92.62	79.84	65.23	58.17	63.13	60.13	65.66	73.80
April	100.00	96.31	81.79	60.97	54.22	60.97	63.35	67.29	71.06
May	100.00	92.71	76.69	57.73	60.27	62.17	63.75	64.65	67.76
June	100.00	94.90	80.94	61.38	65.04	64.23	62.88	70.62	72.23
July	100.00	87.80	75.05	51.37	61.78	57.85	60.40	68.76	----
August	100.00	84.10	69.32	55.36	58.58	59.68	60.90	64.18	----
September	100.00	88.29	73.30	58.27	59.62	57.89	62.02	68.02	----
October	100.00	82.11	67.27	50.85	54.09	56.33	60.46	64.38	----
November	100.00	82.63	69.59	55.84	60.79	60.83	65.29	70.20	----
December	100.00	87.89	72.56	56.36	61.54	62.65	67.98	79.03	----
For year	100.00	90.00	75.64	58.56	58.22	60.84	62.46	67.82	----

NOTE.—"Large wire-telegraph carriers" comprises 3 land line telegraph carriers and 5 ocean cable carriers, each having annual operating revenues of approximately $50,000 or more.

TABLE XXXII.—*Percentage relationships between monthly operating revenues of large radiotelegraph carriers for all months from January 1935 to June 1937, inclusive, and the corresponding months in 1934*

Month	1934	1935	1936	1937
	Percent	*Percent*	*Percent*	*Percent*
January	100.00	111.54	120.35	132.50
February	100.00	102.07	122.77	134.32
March	100.00	105.72	116.89	142.48
April	100.00	113.78	118.84	145.90
May	100.00	110.10	111.97	127.66
June	100.00	104.32	117.05	137.04
July	100.00	99.54	113.53	----
August	100.00	98.64	107.58	----
September	100.00	106.74	117.84	----
October	100.00	110.37	118.95	----
November	100.00	108.67	122.49	----
December	100.00	106.58	128.79	----
For year	100.00	106.42	118.06	----

NOTE.—"Large radiotelegraph carriers" comprises 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

TELEPHONE AND TELEGRAPH STATISTICS

Employees in service and their compensation.—The compensation of employees by months, and the number of employees in service at the end of the year, for the years 1935 and 1936 are shown in table XXXIII below. The summary relates to the large telephone, wire-telegraph, and radiotelegraph carriers that report to the Commission on a monthly basis, but the data were obtained from their annual reports. For telephone carriers, the amounts applicable to the

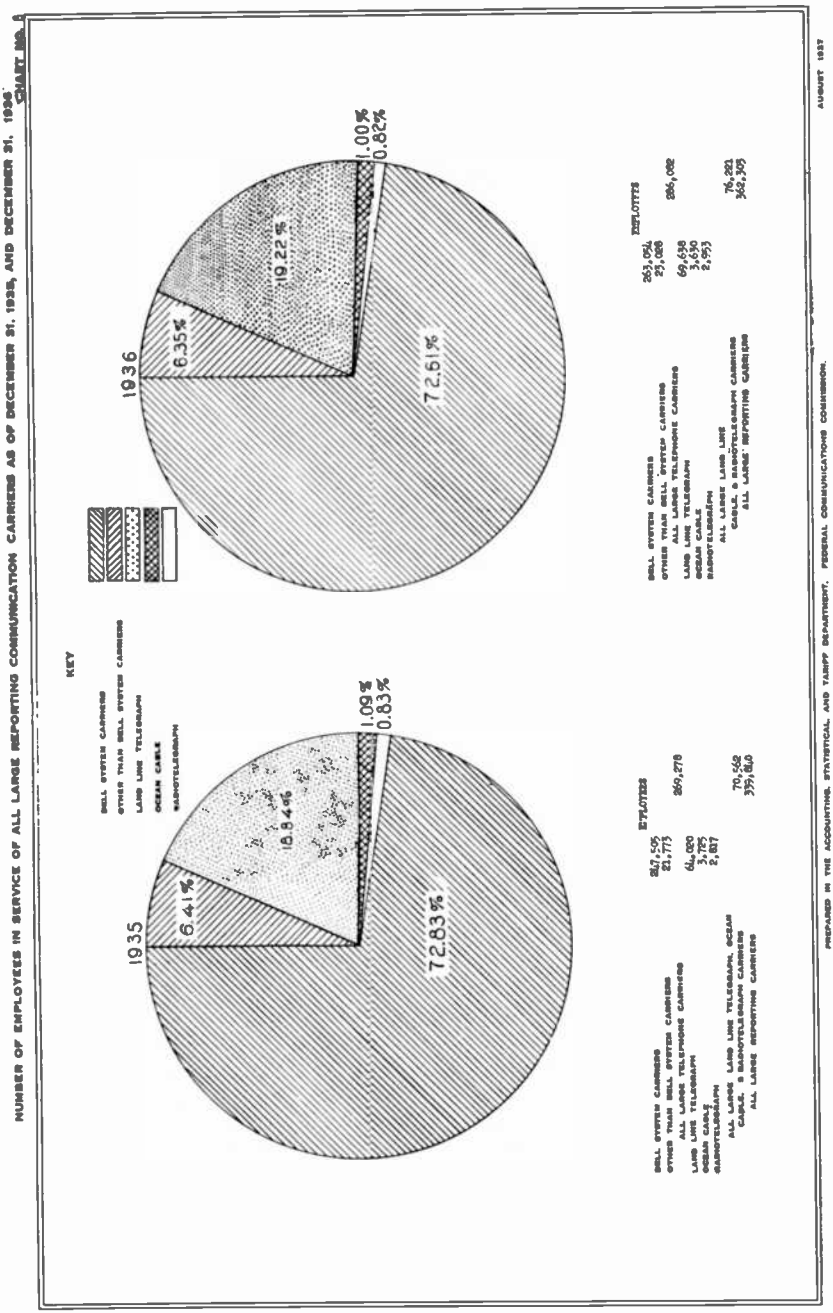
Bell System (excluding the Cincinnati and Suburban Bell Telephone Co. and the Southern New England Telephone Co.) and to the other than Bell System carriers are shown. The table shows substantial increases for 1936 as compared with 1935 both in the number of employees and amount of compensation paid to employees. Employees of all carriers increased in number from 339,840 at the end of 1935 to 362,303 at the end of 1936. The total compensation paid to all employees was about $482,000,000 for the year 1935, but increased to $521,000,000 in 1936.

A comparative study of the number of employees of large telephone, land-line telegraph, ocean cable, and radiotelegraph carriers for the years 1935 and 1936, is shown in chart 8, which follows table XXXIII, and the amount of compensation paid to such employees is shown in chart 9 which follows chart 8.

TABLE XXXIII.—*Compensation of employees by months, and number of employees in service at the end of the year, as reported by large telephone and telegraph carriers for the years 1935 and 1936*

Month	Telegraph carriers				Telephone carriers			Grand total
	Land line telegraph	Ocean cable	Radiotelegraph	Total	Bell system	Other than Bell system	Total	
1935								
January	$5,584,184	$381,068	$330,776	$6,296,028	$31,915,957	$2,144,533	$34,060,490	$40,536,518
February	5,177,774	380,339	324,172	5,882,285	29,327,863	1,974,217	31,302,080	37,184,365
March	5,552,495	383,126	334,506	6,270,127	30,783,277	2,096,432	32,879,709	39,149,836
April	5,563,922	382,121	339,400	6,285,443	31,003,517	2,118,013	33,121,530	39,406,973
May	5,732,341	378,168	349,059	6,459,568	32,543,873	2,196,048	34,739,921	41,199,489
June	5,584,818	379,324	341,402	6,305,544	30,611,689	2,097,287	32,708,976	39,014,520
July	5,726,054	377,819	351,608	6,455,481	33,054,371	2,260,451	35,314,822	41,770,303
August	5,775,926	372,908	349,732	6,498,566	32,164,126	2,193,739	34,357,865	40,856,431
September	5,528,900	368,333	343,815	6,241,048	31,632,702	2,144,042	33,776,744	40,017,792
October	5,764,265	369,277	347,785	6,481,327	32,717,780	2,228,614	34,946,394	41,427,721
November	5,547,895	375,963	347,586	6,271,444	31,942,032	2,141,442	34,083,474	40,354,918
December	6,071,254	382,438	351,855	6,805,547	32,694,773	2,216,365	34,911,138	41,716,685
Total	67,609,828	4,530,884	4,111,696	76,252,408	380,391,960	25,811,183	406,203,143	482,455,551
Number of employees in service as of Dec. 31, 1935	64,020	3,725	2,817	70,562	247,505	21,773	269,278	339,840
1936								
January	$5,787,500	$389,094	$357,961	$6,534,555	$33,332,968	$2,243,381	$35,576,349	$42,110,904
February	5,534,771	392,856	351,051	6,278,678	31,495,518	2,113,441	33,608,959	39,887,637
March	5,952,906	381,881	353,343	6,688,130	33,326,406	2,326,356	35,652,762	42,340,892
April	5,942,554	385,525	361,447	6,689,526	33,153,022	2,312,246	35,465,268	42,154,794
May	6,047,327	385,936	367,794	6,801,057	33,691,575	2,289,587	35,981,162	42,782,219
June	6,190,331	383,379	372,106	6,945,816	33,713,922	2,313,026	36,026,948	42,972,764
July	6,293,499	387,426	386,205	7,067,130	35,344,894	2,409,008	37,753,902	44,821,032
August	6,238,709	385,310	379,143	7,003,162	33,986,181	2,327,786	36,313,967	43,317,129
September	6,251,972	379,386	374,598	7,005,956	35,055,625	2,369,780	37,425,405	44,431,361
October	6,382,984	395,733	378,301	7,157,018	35,506,615	2,393,226	37,899,841	45,056,859
November	6,040,083	389,577	372,222	6,801,882	34,722,627	2,361,617	37,084,244	43,886,126
December	7,123,795	409,304	384,417	7,917,516	36,748,730	2,456,378	39,205,108	47,122,624
Total	73,786,431	4,665,407	4,438,588	82,890,426	410,078,083	27,915,832	437,993,915	520,884,341
Number of employees in service as of Dec. 31, 1936	69,638	3,630	2,953	76,221	263,051	23,028	286,082	362,303

NOTE.—"Large telephone carriers" comprises a group of 81 carriers, each having annual operating revenues of approximately $250,000 or more. "Large telegraph carriers" comprises 3 land line telegraph carriers, 5 ocean cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.


NUMBER OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS AS OF DECEMBER 31, 1935, AND DECEMBER 31, 1936
CHART NO.
KEY
BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
LAND LINE TELEGRAPH
OCEAN CABLE
RADIOTELEGRAPH
1935
6.41%
18.84%
72.83%
1.09%
0.83%
1936
6.35%
19.22%
72.61%
1.00%
0.82%
EMPLOYEES
BELL SYSTEM CARRIERS 247,595
OTHER THAN BELL SYSTEM CARRIERS 21,773
ALL LARGE TELEPHONE CARRIERS 269,278
LAND LINE TELEGRAPH 64,020
OCEAN CABLE 3,725
RADIOTELEGRAPH 2,827
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS 70,568
ALL LARGE REPORTING CARRIERS 339,840
EMPLOYEES
BELL SYSTEM CARRIERS 263,054
OTHER THAN BELL SYSTEM CARRIERS 21,038
ALL LARGE TELEPHONE CARRIERS 284,092
LAND LINE TELEGRAPH 69,638
OCEAN CABLE 3,650
RADIOTELEGRAPH 2,953
ALL LARGE LAND LINE CABLE, & RADIOTELEGRAPH CARRIERS 76,221
ALL LARGE REPORTING CARRIERS 360,313
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.
AUGUST 1937

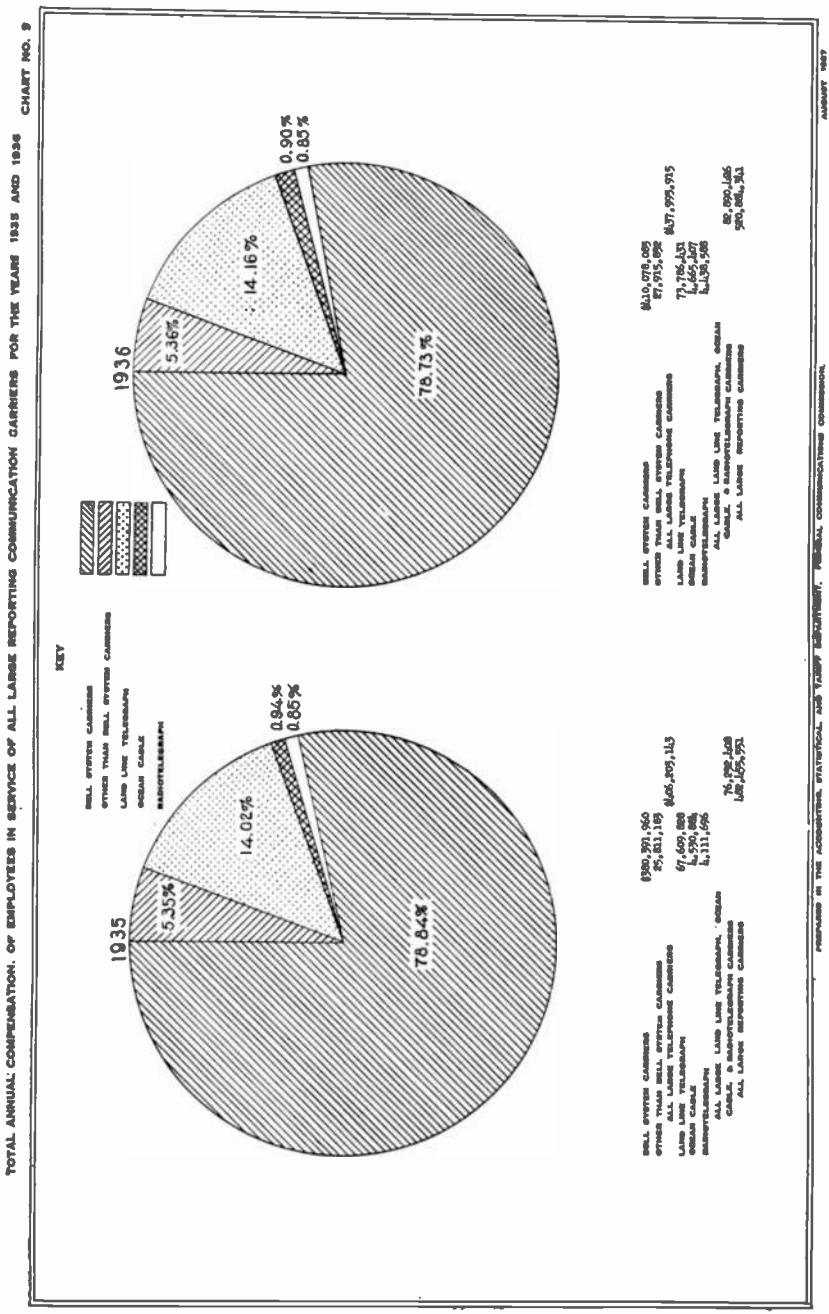

TOTAL ANNUAL COMPENSATION OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS FOR THE YEARS 1935 AND 1936 CHART NO. 9
KEY
BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
LAND LINE TELEGRAPH
OCEAN CABLE
RADIOTELEGRAPH
1935
5.35%
14.02%
0.84%
0.85%
78.84%
1936
5.36%
14.16%
0.90%
0.85%
78.73%
BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
ALL LARGE TELEPHONE CARRIERS
LAND LINE TELEGRAPH
OCEAN CABLE
RADIOTELEGRAPH
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS
ALL LARGE REPORTING CARRIERS
($80,391,960
25,811,185
$106,203,145
67,649,888
4,530,884
4,111,696
76,292,468
182,495,593
$110,078,085
27,915,892
$137,993,915
73,786,433
4,665,407
4,136,588
82,590,428
220,584,343
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.
AUGUST 1937

TABLE SHOWING INTERCORPORATE RELATIONS

Intercorporate relations of communication carriers and the controlling companies.—In table XXXIV, below, are shown the names of the telephone, wire-telegraph, and radiotelegraph carriers filing annual reports with the Commission for the year 1936, and the intercorporate relations between these carriers and the controlling companies. The returns were incomplete at the date of the preparation of this report and consequently the table does not show the names of all communication carriers and holding companies subject to the act.

The independent or top companies are arranged in alphabetical order and are shown flush with the margin. Each subsidiary is indented beneath the controlling company to indicate the intercorporate relation existing at December 31, 1936. An index, pertaining to intercorporate relations and listing alphabetically the names of all companies, appears at the end of this table for reference purposes. The number in the first column of the table opposite the name of each company corresponds with the number following the name of the same company in the index.

To assist in determining the nature of the companies listed, certain symbols appear in the third column of the table. The following is a key to the symbols used:

M–A—Class A telephone carriers filing annual report Form M.
M–B—Class B telephone carriers filing annual report Form M.
O—Wire-telegraph and radiotelegraph carriers filing annual report Form O.
H—Holding companies having large interests in communication carriers and filing annual report Form H.
Cir.—Holding companies having nominal interests in communication carriers and filing statistical circular No. 1.

The operating revenues of the communication carriers for the year 1936 are shown in the fourth column of the table.

TABLE XXXIV.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1936*

No.	Name of company	Form of annual report	Operating revenues
1	Alleghany Corporation	Cir.[1]	
2	Chesapeake Corporation	Cir.[1]	
3	Chesapeake & Ohio Ry. Co.	Cir.[1]	
4	Pere Marquette Ry. Co.	Cir.	
5	Central Land Co.	Cir.[1]	
6	Pere Marquette Radio Corporation	O	$9,948
7	American Newspapers, Inc.	Cir.	
8	Hearst Radio, Inc.	O	23,446
9	American Telephone & Telegraph Co.	M–A	106,920,784
10	Bell Telephone Co. of Pennsylvania	M–A	65,483,429
11	Chesapeake & Potomac Telephone Co.	M–A	10,597,013
12	Chesapeake & Potomac Telephone Co. of Baltimore City	M–A	13,995,545
13	Chesapeake & Potomac Telephone Co. of Virginia	M–A	8,833,167
14	Chesapeake & Potomac Telephone Co. of West Virginia	M–A	5,899,656
15	Diamond State Telephone Co.	M–A	2,079,955
16	Illinois Bell Telephone Co.	M–A	81,371,162
17	Crown Point Telephone Co.	M–B	54,442
18	Indiana Bell Telephone Co.	M–A	11,849,094
19	Lebanon Telephone Co.	M–B	48,952
20	Michigan Bell Telephone Co.	M–A	36,655,925
21	Mountain States Telephone & Telegraph Co.	M–A	22,191,272
22	New England Telephone & Telegraph Co.	M–A	71,655,068
23	Eastern Telephone & Telegraph Co. (Maine)	M–A	133,009
24	Moosehead Telephone & Telegraph Co.	M–B	91,165
25	Westerly Automatic Telephone Co.	M–A	143,547
26	Western New England Telephone Co.	M–B	89,316
27	White River Valley Telephone Co.	M–B	51,733
28	New Jersey Bell Telephone Co.	M–A	45,307,182
29	New York Telephone Co.	M–A	199,112,762
30	Northwestern Bell Telephone Co.	M–A	32,143,957
31	Dakota Central Telephone Co.	M–A	1,271,863
32	Tri-State Telephone & Telegraph Co.	M–A	5,742,027
33	Fulda Telephone Co.[1]	M–B	25,461
34	Nicollet County Telephone & Telegraph Co.	M–B	54,376
35	Peoples Telephone Co. (Minnesota)[1]	M–B	22,734
36	Ohio Bell Telephone Co.	M–A	39,270,876

See footnotes at end of table.

TABLE XXXIV.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1936*—Continued

No.	Name of company	Form of annual report	Operating revenues
	American Telephone & Telegraph Co.—Continued.		
37	Pacific Telephone & Telegraph Co	M-A	$62,552,656
38	Bell Telephone Co. of Nevada	M-A	1,033,996
39	Southern California Telephone Co	M-A	40,723,683
40	Southern Bell Telephone & Telegraph Co	M-A	57,290,777
41	Christian-Todd Telephone Co	M-A	194,962
42	Southwestern Bell Telephone Co	M-A	79,917,477
43	Emporia Telephone Co.[4]	M-A	112,530
44	Rio Grande Valley Telephone Co.[5]	M-A	437,452
45	United Telephone Co. (Kansas)	M-A	1,691,762
46	Wisconsin Telephone Co	M-A	16,476,062
	Bell System, total		1,021,526,829
47	American Utilities Service Corporation	Cir.[1]	
48	Bluefield Telephone Co	M-A	429,930
49	Bangor & Aroostook R. R. Co	Cir	
50	Northern Telegraph Co	O	60,589
51	Byllesby Corporation	Cir.[1]	
52	Byllesby, H. M., & Co	Cir.[1]	
53	Standard Power & Light Corporation [6]	Cir.[1]	
54	Standard Gas & Electric Co	Cir.[1]	
55	Northern States Power Co. (Delaware)	Cir.[1]	
56	Northern States Power Co. (Minnesota)[7]	M-A	109,339
57	Canadian Northern Ry. Co	Cir	
58	Canadian National Telegraph Co	Cir.[1]	
59	Great North Western Telegraph Co. of Canada	O	(8)
60	Minnesota & Manitoba R. R.[9]	O	6,701
61	Canadian Pacific Ry. Co. (lines in United States)	O	4,648
62	Carolina Telephone & Telegraph Co	M-A	1,402,050
63	Champaign Telephone Co	M-B	73,516
64	Chenango & Unadilla Telephone Corporation	M-A	221,895
65	Chicago, Milwaukee, St. Paul & Pacific R. R. Co. (in trusteeship).	Cir	
66	Continental Telegraph Co	O	16,256
67	Cincinnati & Suburban Bell Telephone Co	M-A	9,440,552
68	Citizens Utilities Co	Cir	
69	Public Utilities California Corporation	M-A	148,360
70	City of Seattle, harbor department	O	5,292
71	Colorado Fuel & Iron Corporation	Cir.[1]	
72	Colorado & Wyoming Telegraph Co	O	18,061
73	Colusa County Telephone Co	M-B	55,949
74	Commercial Pacific Cable Co.[10]	O	830,818
75	Del Rio & Winter Garden Telephone Co	M-A	231,544
76	Dollar, Robert, Co	Cir	
77	Globe Wireless Ltd	O	420,980
78	First-Chicago Corporation	Cir	
79	North-Western Indiana Telephone Co	M-A	146,152
80	Firestone Plantations Co	Cir	
81	United States-Liberia Radio Corporation	O	57,715
82	French Telegraph Cable Co	O	340,851
83	General Telephone Corporation	H	
84	Indiana Associated Telephone Corporation	M-A	1,205,039
85	Indiana Central Telephone Co. (in trusteeship)	H	
86	Interstate Telephone Co	M-A	779,976
87	Michigan Associated Telephone Co	M-A	1,120,785
88	Southwestern Associated Telephone Co	M-A	977,607
89	Ohio Associated Telephone Co	M-A	688,375
90	Pennsylvania Telephone Corporation	M-A	2,144,868
91	United Telephone Co. (Delaware)	H	
92	Tri-State Associated Telephone Corporation	M-B	96,133
	System total		7,012,783
93	General & Telephone Investments, Inc	H	
94	Gary, Theodore, & Co	H	
95	Telephone Bond & Share Co	H	
96	Continental Telephone Co	H	
97	Nebraska Continental Telephone Corporation	M-A	334,933
98	Home Telephone & Telegraph Co. (Indiana)	M-A	1,270,069
99	Imperial Securities Co	H	
100	Telephone Securities, Inc	H	
101	Keystone Telephone Co. of Philadelphia	M-A	1,822,687
102	Eastern Telephone & Telegraph Co. (Pennsylvania).	M-A	149,319
	System total		3,577,008
103	Greenville Telephone Co	M-B	89,485
104	Gulf Radio Service (George Collins Warner, Jr.)[11]	O	
105	Home Telephone Co. of Ridgway	M-A	155,723

See footnotes at end of table.

TABLE XXXIV.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1936*—Continued

No.	Name of company	Form of annual report	Operating revennes
106	Home Telephone & Telegraph Co. of Virginia	M-B	$99, 963
107	Inter-Mountain Telephone Co	M-A	606, 456
108	International Telephone & Telegraph Corporation	H	
109	All America Cables, Inc	O	4, 656, 562
110	Postal Telegraph & Cable Corporation (in trusteeship)	H.[1]	
111	Mackay Companies	H	
112	Commercial Cable Co	O	4, 342, 192
113	Mackay Radio & Telegraph Co. (California)	O	1, 023, 338
114	Postal Telegraph-Cable Co. (Land Line System)	O	23, 634, 923
115	Interstate Telephone & Telegraph Co. (Oregon)[12]	O	
116	Radio Communication Co., Inc.[12]		
117	Mackay Radio & Telegraph Co. (Delaware)	O	935, 364
	System total		34, 642, 379
118	Investments & Utilities Corporation	H [1]	
119	Loveland & Co., Ltd	H	
120	West Coast Utilities Corporation	H	
121	West Coast Telephone Co	M-A	1, 297, 953
122	Investors Telephone Co.[14]	H [1]	
123	Platte Valley Telephone Corporation	M-A	199, 247
124	Jamestown Telephone Corporation [7]	M-A	463, 935
125	Kansas State Telephone Co	M-B	47, 572
126	Lee Telephone Co	M-B	124, 105
127	Lincoln Telephone Securities Co	H [1]	
128	Lincoln Telephone & Telegraph Co.[7]	M-A	2, 695, 843
129	Mayor and City Council of Baltimore, Md	O	5, 732
130	Meadville Telephone Co	M-A	179, 756
131	Michigan Alkali Co	Cir.[1]	
132	Wyandotte Transportation Co., 50 percent (Michigan Wireless Telegraph Co)	Cir	
133		O	6, 707
134	Huron Portland Cement Co (Michigan Wireless Telegraph Co)	Cir.[1]	
135	Huron Transportation Co., 50 percent (Michigan Wireless Telegraph Co)	Cir	
136	Middle Western Telephone Co. (in trusteeship)	H	
137	La Crosse Telephone Corporation	M-A	319, 294
138	Middle States Telephone Co. of Illinois	M-A	395, 396
	System total		714, 690
139	Mid-West States Utilities Co. (in trusteeship)[7]		
140	Kansas Telephone Co. (in receivership)[7]	M-A	143, 590
141	Nevada-California Electric Corporation	Cir	
142	Interstate Telegraph Co	M-A	143, 175
143	Norfolk & Carolina Telephone & Telegraph Co	M-A	137, 290
144	North-West Telephone Co	M-A	178, 286
145	Northwestern Telephone Co	M-A	326, 376
146	Olympic Radio Co	O	1, 927
147	Oregon-Washington Telephone Co	M-A	166, 841
148	Oxnard Home Telephone Co	M-B	62, 042
149	Ozark Central Telephone Co	M-A	149, 923
150	Palestine Telephone Co	M-B	69, 388
151	Phillips Petroleum Co	Cir	
152	Western Radio Telegraph Co	O	26, 605
153	Press Wireless, Inc	O	438, 634
154	Radio Corporation of America	H	
155	R. C. A. Communications, Inc	O	4, 643, 206
156	Radiomarine Corporation of America	O	473, 428
	System total		5, 116, 634
157	Red River Valley Telephone Co	M-B	39, 331
158	Rochester Telephone Corporation	M-A	4, 761, 701
159	San Angelo Telephone Co	M-A	470, 100
160	Santa Barbara Telephone Co	M-A	605, 913
161	Santa Paula Home Telephone Co	M-B	50, 837
162	Socony-Vacuum Oil Co., Inc	Cir	
163	Magnolia Petroleum Co	Cir	
164	Magnolia Radio Corporation	O	3, 912
165	South Porto Rico Sugar Co. (New Jersey)	Cir	
166	South Porto Rico Sugar Co. (of Puerto Rico)	O	7, 012
167	Southeast Missouri Telephone Co	M-A	703, 703
168	Southern New England Telephone Co	M-A	16, 774, 233
169	Southwest Telephone Co. (Kansas)	M-A	173, 874
170	Standard Oil Co. (New Jersey)	Cir	
171	Southern Radio Corporation	O	38, 024
172	Telephone Utility & Investment Co	Cir.[1]	
173	Eastern Kansas Telephone Co.[7]	M-B	70, 756
174	Tidewater Wireless Telegraph Co	O	5, 618

See footnotes at end of table.

TABLE XXXIV.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1936*—Continued

No.	Name of company	Form of annual report	Operating revenues
175	Two States Telephone Co	M-A	$280,311
176	United Fruit Co	Cir	
177	Tropical Radio Telegraph Co	O	651,479
178	United States Rubber Co	Cir.[1]	
179	Meyer Rubber Co	Cir	
180	Central Idaho Telegraph & Telephone Co.[16]	O [1]	
181	United States Steel Corporation [16]		
182	Michigan Limestone & Chemical Co	Cir	
183	Central Radio Telegraph Co	O	8,881
184	United Telephone Co. (Texas)	M-B	88,166
185	United Telephone Co. (Wisconsin)	M-B	85,199
186	United Telephone & Electric Co. (in trusteeship) [17]	H	
187	Claar Telephone Co.[16]	M-B	28,685
188	New Jersey Telephone Co	M-A	136,368
189	United Telephone Co. of Pennsylvania	M-A	717,840
190	United Telephone & Telegraph Co	H	
191	American Telephone Co	M-A	445,190
192	United Telephone Co. (Missouri)	M-A	365,310
193	United Telephone & Telegraph Corporation	H	
194	Interstate Telephone & Telegraph Co. (Indiana)	H	
195	Ohio Telephone Service Co	M-A	214,754
196	United Telephone Cos., Inc	M-A	657,780
197	United Telephone Investment Corporation	H	
198	Union Telephone Co. (Indiana)	M-A	157,023
	System total		2,722,950
199	Utilities Holding Corporation	H	
200	Middle States Utilities Co. (Delaware)	H	
201	Middle States Utilities Co. of Iowa	M-B	84,391
202	Middle States Utilities Co. of Missouri	M-A	148,535
	System total		232,926
203	Victor-American Fuel Co	Cir	
204	Mountain Telegraph Co	O	8,204
205	Wabash Ry. Co. (in receivership)	Cir	
206	Ann Arbor R. R. Co. (in receivership)	Cir	
207	Wabash Radio Corporation	O	11,004
208	Western Arkansas Telephone Co	M-B	70,662
209	Western Light & Telephone Co	Cir	
210	Western Telephone Corporation (Kansas)	M-A	213,169
211	Western Telephone Corporation of Nebraska	M-B [1]	
212	Western Telephone Corporation of Oklahoma	M-A	134,607
213	Western Telephone Corporation of Texas [16]	M-B	34,308
	System total		382,084
214	Western Union Telegraph Co	O	98,420,220
215	Great North Western Telegraph Co. of Canada [20]	O	(8)
216	Mexican Telegraph Co	O	360,967
	System total		98,781,187

[1] Report for 1936 not received.
[2] Merged with Tri-State Telephone & Telegraph Co. Aug. 31, 1936.
[3] Merged with Tri-State Telephone & Telegraph Co. June 30, 1936.
[4] Merged with Southwestern Bell Telephone Co. July 31, 1936.
[5] Merged with Southwestern Bell Telephone Co. Dec. 31, 1936.
[6] Controlled jointly by H. M. Byllesby & Co. and the United States Electric Power Corporation through ownership of majority of voting capital stock.
[7] Subject only to secs. 201–205 of the act.
[8] None reported, lessor company.
[9] Telegraph facilities leased to and operated by the Canadian Northern Ry. Co.
[10] The Commercial Pacific Cable Co. is closely affiliated with the Mackay companies.
[11] Not included in tabulations, as returns were incomplete.
[12] Independent. Leased by the Postal Telegraph-Cable Co. (land-line system).
[13] Inactive company, files no report; inserted to show intercorporate relation of subsidiary carrier.
[14] Formerly Standard Telephone Co. of Delaware, which was reorganized during 1936.
[15] Operated by the Union Pacific R. R.
[16] Files no report. Inserted to show intercorporate relation of subsidiary carrier.
[17] Jointly controlled by the United Trust Co. as trustee for Brown Memorial Foundation and C. L. Brown Estate.
[18] Merged with the United Telephone Co. of Pennsylvania July 1, 1936.
[19] Merged with Southwestern Associated Telephone Co. Oct. 1, 1936.
[20] Lines in the United States, in New England and northern New York State, leased by the Western Union Telegraph Co. For control see No. 59.

NOTE.—Annual report form M-A is filed by telephone carriers having average annual operating revenues exceeding $100,000; annual report form M-B is filed by telephone carriers having average annual operating revenues exceeding $50,000 but not more than $100,000; annual report form O is filed by all wire-telegraph and radiotelegraph carriers; annual report form H and statistical circular No. 1 are filed by holding companies as described in the text on p. —.

INDEX PERTAINING TO INTERCORPORATE RELATIONS

[For use in connection with table. XXXIV]

APPENDIX B

FIFTH MEETING OF THE INTERNATIONAL CONSULTING COMMITTEE ON TELEGRAPH (C. C. I. T.)

Table showing position of various governments with respect to the four main proposals on code language

EXTRA-EUROPEAN REGIME

Ordinary telegrams in all languages (clear, code, cipher)	Deferred telegrams (L. C.)	Letter telegrams	Adhering administrations
60 percent of present rate	Deleted	Present rate	Germany, Spain, Finland, Japan, Norway, Poland, Sweden, Switzerland, Czechoslovakia.
⅔ (66⅔ percent) of present rate	Present rate	do	Austria, Denmark, Great Britain, Iceland, Union Soviet Socialist Republics.
Do	Deleted	⅓ of new tax on ordinary telegrams.	France.
Status quo, but application of C. D. E. rate to cipher telegrams is proposed.			Belgium, Hungary, Dutch East Indies, Italy, Netherlands, Portugal.

EUROPEAN REGIME

Ordinary telegrams in all languages (clear, code, cipher)	Letter telegrams	Adhering administrations
92 percent of present rate	Present rate	Germany, Austria, Denmark, Spain, Finland, France, Great Britain, Hungary, Iceland, Italy, Norway, Poland, Sweden, Switzerland, Czechoslovakia.
Status quo	Status quo	Belgium, Netherlands, Portugal.

NOTE.—For both regimes the minimum of words is established at 5 for ordinary and urgent telegrams in all languages except in the case of countries that desire the status quo. For urgent telegrams (in both regimes) the administrations of Austria, Denmark, Great Britain, Iceland, Poland, and the Union of Soviet Socialist Republics propose a rate of 1½ times the new rate for ordinary telegrams, while the other administrations propose maintaining the present relationship. The rates of press telegrams and meteorological telegrams are to be examined by the Cairo conference. The proposals listed above are not applicable to rates for coastal and mobile stations. The declarations of private enterprises concerning rates are contained in documents Nos. 49, 71, 72, and 96 and in the report of the seventh meeting of the Committee on operations, regulations, and rates.

APPENDIX C

Agenda for the Habana Preliminary Radio Conference

1. Consideration of the possibility and necessity of resolving a new and proper distribution of the channels corresponding to the broadcast band ranging between 550 and 1600 kilocycles, especially with reference to the North and Central American regions and the West Indies, and also of the possibility of determining the assignment of exclusive, shared, and local channels.

2. Examination of the principles regulating the assignment of broadcast bands in the Americas for short-wave bands.

3. Consideration of the convenience of revising the North and Central American agreement, signed in Mexico City in July 1933, and referring to the bands of frequencies from 1500 to 6000 kilocycles.

4. Exchange of opinions concerning the allocation of frequencies in waves below 10 meters and especially concerning interference with those frequencies from an international standpoint.

5. Proposal of measures, even if they are of a temporary nature, which may contribute to the alleviation of the interference situation that is being produced in the nations of North and Central America in relation to the broadcast service in general.

6. Exchange of opinions concerning other problems confronting the Americas in the different features of radio communication, and, if possible, the adoption of practical resolutions, such as the use of directed waves and the proper geographical separation between stations.

7. Proposal of new bases concerning classification and width of bands, classification of stations according to their power, definition of service areas of the different classes of stations, etc.

8. Consideration of the problems presented in the amateur radio bands of 20 and 40 meters. Study of the possibility of extending these bands and, especially, the bands corresponding to those used in the radiotelephone communication.

9. Adoption of practical coordination measures and mutual aid among neighboring nations through radio communication in cases of national calamities, such as floods, earthquakes, hurricanes, etc.

10. Study of what should, in general, be understood in radio communication as "good engineering standards."

11. Examination of the convenience of proposing and considering in a regional conference of the Americas any other matters deemed useful in avoiding the existing conflicts, or those which may appear in the future, in radio communication in the American countries.

12. Consideration of the convenience of calling, for the month of November 1937, and at such place as may be decided upon, a regional radio conference for the purpose of defining and studying, at a meeting of all the American nations, their point of view in connection with the telecommunication conference to be held at Cairo in 1938.

During the course of the conference a thirteenth question was added, reading as follows:

13. Study of means to suppress inductive interference, with special reference to diathermic and similar apparatus.

APPENDIX D

TABLE I.—*Ship stations—inspections and notices*

District No. and location	Stations inspected				Notices served			
	Ships, under act	Ships, voluntary equipment	Ships, for license	Ships, safety convention [1]	Violation of laws	Violation of rules and regulations	Informative notices	Cleared during inspection
1. Boston, Mass.	171	204	45	496	155	73	127	19
2. New York, N. Y.	1,314	125	75	765	169	211	152	171
3. Philadelphia, Pa.	92	160	41	355	106	59	27	53
4. Baltimore, Md.	189	247	73	665	242	145	67	101
5. Norfolk, Va.	33	117	18	119	27	38	31	9
6. Atlanta, Ga.	0	0	0	10	0	10	0	6
7. Miami, Fla.	53	21	1	27	9	23	19	30
8. New Orleans, La.	174	56	32	165	19	56	33	62
9. Galveston, Tex.	13	147	23	211	12	100	158	71
10. Dallas, Tex.	0	0	0	0	0	0	0	0
11. Los Angeles, Calif.	236	207	42	403	73	65	30	107
12. San Francisco, Calif.	204	104	81	229	23	91	27	45
13. Portland, Oreg.	50	87	16	133	52	35	5	0
14. Seattle, Wash.	177	88	17	95	4	30	9	226
15. Denver, Colo.	0	0	0	0	0	0	0	0
16. St. Paul, Minn.	0	0	0	0	0	0	0	0
17. Kansas City, Mo.	0	4	0	0	0	0	0	0
18. Chicago, Ill.	8	2	0	0	0	0	0	0
19. Detroit, Mich.	29	35	0	0	0	1	0	0
20. Buffalo, N. Y.	9	17	6	0	0	1	0	0
21. Honolulu, Hawaii	123	26	8	130	25	25	4	0
Total	2,875	1,647	478	3,803	916	961	689	900

[1] Effective Nov. 7, 1936.

TABLE II.—*Land station inspections and frequency measurements*

District No. and location	Land-station inspections										Frequency measurements							
	Coastal	Aircraft	Aeronautical	Police	Special emergency	Marine fire	Broadcast	Amateur	Others	Discrepancy notices served as result of inspections	United States broadcast		United States othor than broadcast		Foreign		Discrepancy notices served as result of monitoring	Harmonic notices served as result of monitoring
											Measurements	Deviations	Measurements	Deviations	Measurements	Deviations		
1. Boston, Mass	6	8	9	43	0	1	107	2	6	53	1,586	10	1,912	194	11	9	348	4
2. New York, N. Y	0	80	3	8	0	0	51	14	10	11	0	0	0	0	0	0	0	0
3. Philadelphia, Pa	2	19	6	9	2	0	53	11	59	53	0	0	0	0	0	0	0	0
4. Baltimore, Md	1	5	8	6	0	0	34	4	12	12	2,117	12	853	50	22	10	161	0
5. Norfolk, Va	0	4	5	32	0	0	42	0	6	12	0	0	0	0	0	0	0	0
6. Atlanta, Ga	5	18	47	29	4	0	106	4	84	104	1,529	48	1,156	26	31	9	54	15
7. Miami, Fla	5	66	17	40	14	0	31	0	19	65	0	0	0	0	0	0	3	1
8. New Orleans, La	2	9	20	10	0	0	54	21	8	18	0	0	0	0	0	0	1	0
9. Galveston, Tex	10	16	16	10	0	0	16	2	1	4	0	0	0	0	0	0	0	0
10. Dallas, Tex	0	45	50	46	0	0	133	4	26	62	0	0	0	0	0	0	1	0
11. Los Angeles, Calif	4	51	39	18	14	0	66	4	54	99	1,194	1	1,258	142	92	69	156	7
12. San Francisco, Calif	11	28	16	42	3	0	51	7	52	59	0	0	0	0	0	0	6	0
13. Portland, Oreg	3	5	5	10	0	0	41	4	0	23	1,005	4	4,558	201	21	17	361	5
14. Seattle, Wash	5	21	13	37	3	0	52	0	16	28	0	0	0	0	0	0	62	1
15. Denver, Colo	0	14	22	4	0	0	51	1	4	20	0	0	0	0	0	0	3	0
16. St. Paul, Minn	9	3	11	11	1	0	91	3	11	44	0	0	0	0	0	0	4	0
17. Kansas City, Mo	1	31	16	24	0	0	100	9	19	30	0	0	0	0	0	0	0	0
18. Chicago, Ill	1	61	31	101	0	0	118	0	3	87	0	0	0	0	0	0	0	0
19. Detroit, Mich	16	32	40	48	3	1	107	23	143	86	0	0	0	0	0	0	158	0
20. Buffalo, N. Y	3	3	11	22	3	0	98	12	49	30	0	0	0	0	0	0	12	0
21. Honolulu, Hawaii	2	3	2	1	0	0	6	0	19	14	0	0	0	0	0	0	51	0
Grand Island, Nebr	0	0	0	0	0	0	0	0	0	0	4,697	16	19,814	773	648	42	342	84
Great Lakes, Ill	0	0	0	0	0	0	0	0	0	0	3,205	13	2,062	116	23	14	161	11
Total	86	522	387	551	47	2	1,408	125	601	914	15,333	104	31,613	1,492	848	170	1,884	128

APPENDIX E

TABLE I.—*New broadcast stations authorized in fiscal year 1937 (total 51)*

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KAND	Navarro Broadcasting Association, J. C. West, president, Corsicana, Tex.	1310	100	Daytime.
KATE	Albert Lea Broadcasting Corporation, Albert Lea, Minn.	1200	100	Do.
KAWM	A. W. Mills, Gallup, N. Mex.	1500	100	Unlimited.
KELO	Sioux Falls Broadcast Association, Inc., Sioux Falls, S. Dak.	1200	100	Do.
KGLO	Mason City Globe Gazette Co., Mason City, Iowa.	1210	100	Do.
KGVL	Hunt Broadcasting Association, Fred Horton, president, Greenville, Tex.	1200	100	Daytime.
KHBG	Okmulgee Broadcasting Corporation, Okmulgee, Okla.	1210	100	Do.
KHUB	F. W. Atkinson, Watsonville, Calif.	1310	250	Do.
KLAH	Barney Hubbs, A. J. Crawford, Jack Hawkins and Harold Miller, doing business as Carlsbad Broadcasting Co., Carlsbad, N. Mex.	1210	100	Unlimited.
KLBM	Harold M. Finlay and Mrs. Eloise Finlay, La Grande, Oreg.	1420	100, 250-LS	Daytime.
KOAM	A. Staneart Graham, E. V. Baxter and Norman Baxter, doing business as Pittsburg Broadcasting Co., Pittsburg, Kans.	790	1kw	Do.
KOBH	Black Hills Broadcast Co., Robert Lee Dean, executive president, Rapid City, S. Dak.	1370	100	Unlimited.
KOCA	Oil Capital Broadcasting Association, James G. Ulmer, president, Kilgore, Tex.	1210	100	Do.
KOKO	The Southwest Broadcasting Co., La Junta, Colo.	1370	100	Do.
KPFA	The People's Forum of the Air, Helena, Mont.	1210	100	Do.
KRIS	Gulf Coast Broadcasting Co., Corpus Christi, Tex.	1330	250, 500-LS	Do.
KRMC	Roberts MacNab Co., Arthur L. Roberts, R. B. MacNab, A. J. Breitbach, general manager, Jamestown, N. Dak.	1310	100	Simultaneous, day; share, night KVOX.
KROD	Dorrance D. Roderick, El Paso, Tex.	1500	100	Unlimited.
KROY	Royal Miller, Sacramento, Calif.	1210	100	Daytime.
KSAL	R. J. Laubengayer, Salina, Kans.	1500	100	Unlimited.
KSRO	The Press Democrat Publishing Co., Santa Rosa, Calif.	1310	250	Daytime.
KSUB	Harold Johnson and Leland M. Perry, doing business as Johnson and Perry, Cedar City, Utah.	1310	100	Unlimited.
KTEM	Bell Broadcasting Co., Temple, Tex.	1370	100	Daytime.
KTKC	Tulare-Kings Counties Radio Associates, Charles A. Whitmore, president, Visalia, Calif.	1190	250	Do.
KTMS	The News Press Publishing Co., Santa Barbara, Calif.	1220	500	Unlimited.
KVEC	Christiana M. Jacobson, doing business as The Valley Electric Co., San Luis Obispo, Calif.	1200	250	Daytime.
KVGB	Ernest Edward Ruehlen, Great Bend, Kans.	1370	100	Unlimited.
KVOX	Robert K. Herbst, Moorhead, Minn.	1310	100	Simultaneous, day; share, night Krmc.
KWNO	Harry Dahl, Otto M. Schlabach, Maxwell H. White and Hermann R. Wiecking, doing business as Winona Radio Service, Winona, Minn.	1200	100	Daytime.
KWOS	Tribune Printing Co., Jefferson City, Mo.	1310	100	Do.
KXOK	Star-Times Publishing Co., St. Louis, Mo. (Issues being determined by Court of Appeals.)	1250	1 kw	Unlimited.
KYOS	Merced Star Publishing Co., Merced, Calif.	1040	250	Daytime.
WAIR	C. G. Hill, George D. Walker and Susan H. Walker, Winston-Salem, N. C.	1250	250	Do.
WBHP	Wilton Harvey Pollard, Humstville, Ala.	1200	100	Unlimited.
WBLK	The Exponent Co., Clarksburg, W. Va.	1370	100	Daytime.
WDSM	Fred A. Baxter, Superior, Wis.	1200	100	Unlimited.

TABLE I.—*New broadcast stations authorized in fiscal year 1937 (total 51)*—Con.

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
WEAU	Central Broadcasting Co., Eau Claire, Wis.	1050	250	Daytime.
WFTC	Jonas Weiland, Kinston, N. C.	1200	100, 250–LS	Unlimited.
WGTM	H. W. Wilson and Ben Farmer, Wilson, N. C.	1310	100	Daytime.
WGVA	Glenn Van Auken, Indianapolis, Ind.	1050	1 kw	Do.
WHAL	Harold F. Gross and Edmund C. Shields, Saginaw, Mich.	950	500	Do.
WHIP	Hammond-Calumet Broadcasting Corp., Hammond, Ind.	1480	5 kw	Daytime, Buffalo.
WICA	C. A. Rowley, Ashtabula, Ohio	940	250	Daytime.
WKAT	A. Frank Katzentine, Miami Beach, Fla.	1500	100	Unlimited.
WMBS	Fayette Broadcasting Corporation, Uniontown, Pa.	1420	250	Daytime.
WOLS	O. Lee Stone, Florence, S. C.	1200	100	Do.
WOMI	Owensboro Broadcasting Co., Owensboro, Ky.	1500	100	Unlimited.
WPRA	Puerto Rico Advertising Co., Mayaguez, P. R.	1370	100, 250–LS	Specified hours.
WRTD	The Times Dispatch Publishing Co., Inc., Richmond, Va.	1500	100	Unlimited.
WSAU	Northern Broadcasting Co., Inc., Wausau, Wis.	1370	100	Daytime.
WSNJ	Eastern States Broadcasting Corporation, Bridgeton, N. J.	1210	100	Do.

Broadcast stations deleted in fiscal year 1937 (total 7)

Call letters	Licensee and location	Date of deletion
KELW	Evening Herald Publishing Co., Burbank, Calif. (Voluntarily relinquished facilities to Station KEHE, effective Jan. 5, 1937.)	Jan. 5, 1937
KFJR	KALE, Inc., Portland, Oreg. (Voluntarily relinquished facilities to Station KALE, effective Feb. 2, 1937.)	Feb. 2, 1937
KFPM	Dave Ablowich, trading as The New Furniture Co., Greenville, Tex. (Licensee voluntarily surrendered license Apr. 2, 1935. Application for assignment and renewal for reinstatement filed by Voice of Greenville, dismissed Jan. 26, 1937, effective Mar. 2, 1937.)	Mar. 2, 1937
KGBZ	KGBZ Broadcasting Co., York, Nebr. (Application for renewal of license denied. Decision Apr. 7, 1936.)	July 28, 1936
KWEA	International Broadcasting Corporation, Shreveport, La. (Application for renewal of license denied July 2, 1936, effective Aug. 1, 1936.)	Aug. 1, 1936
WEHS	WEHS, Inc., Cicero, Ill. (Voluntarily relinquished facilities to Station WHFC, effective Nov. 10, 1936.)	Nov. 10, 1936
WKBI	WKBI, Inc., Cicero, Ill. (Voluntarily relinquished facilities to Station WHFC, effective Nov. 10, 1936.)	Do.

CHART 1

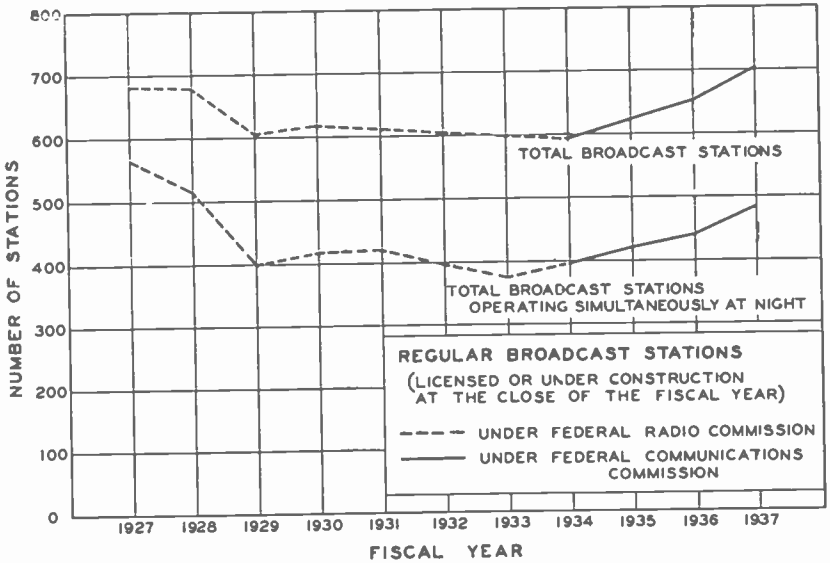
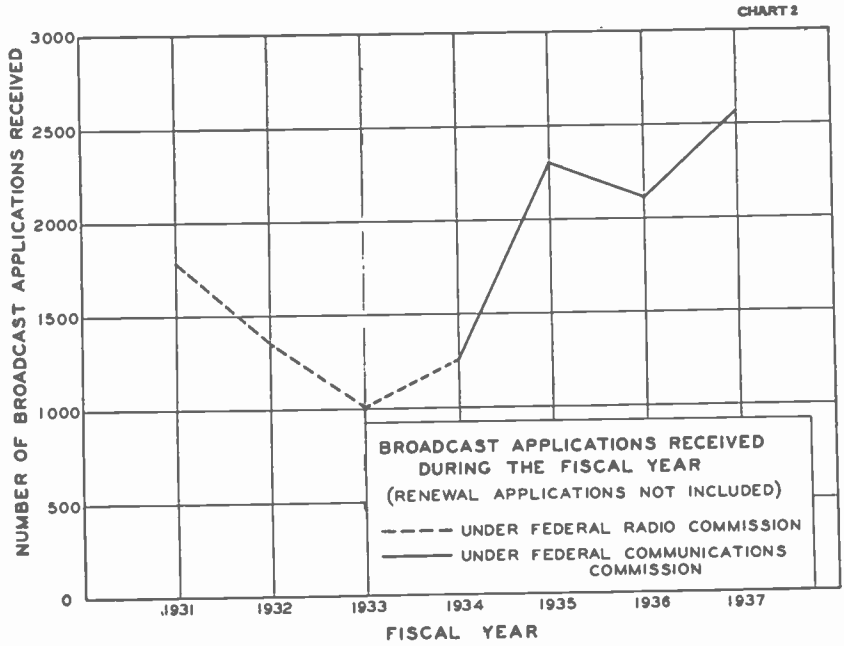


CHART 2



APPENDIX E

TABLE II.—*Distribution of broadcast facilities to cities according to size*

Size of town	Number of cities in United States	Number of cities with radio stations	Number of stations, including all classes—Unlimited time and others								Total stations for population group	Percentage of total number of stations
			Clear		Regional		Local		Total			
			U	Others	U	Others	U	Others	U	Others		
Under 10,000	15,616	[1] 87	0	0	11	27	36	15	47	42	89	12.7
10,000 to 24,999	606	[2] 136	0	1	15	25	57	40	72	66	138	19.7
25,000 to 49,999	185	[3] 81	0	1	25	9	38	17	63	27	90	12.9
50,000 to 99,999	98	[4] 67	2	4	29	17	22	11	53	32	85	12.2
100,000 to 199,999	52	[5] 48	4	4	41	15	24	6	69	25	94	13.4
200,000 to 299,999	16	16	3	3	27	7	7	2	37	12	49	7.0
300,000 to 399,999	7	7	3	1	14	7	1	4	18	12	30	4.3
400,000 to 499,999	5	5	3	1	8	4	1	2	12	7	19	2.7
500,000 and over	13	13	17	5	32	30	10	12	59	47	106	15.1
Total	16,598	[6] 460	32	20	202	141	196	109	430	270	700	100.0

[1] 3 cities in Alaska.
[2] 1 city in Hawaiian Islands.
[3] 1 city in Puerto Rico.
[4] 1 city in Puerto Rico.
[5] 1 city in Hawaiian Islands and 1 city in Puerto Rico.
[6] In the continental United States there are 982 cities above 10,000, of which 614 have no stations and 368 cities have stations. However, from the tabulation of stations in cities of various population groups we have 373 cities above 10,000, with radio stations. This includes 5 outside the continental limits of the United States. These are: Hilo, Territory of Hawaii, with a population of 19,468; Mayaguez, P. R., with a population of 37,060; Ponce, P. R., with a population of 53,430; San Juan, P. R., with a population of 114,715 Honolulu, Territory of Hawaii, with a population of 137,582.

TABLE III.—*Distribution of broadcast stations of all classes to States and possessions*

State or possession	Clear			Regional						Local				Totals				
					Daytime													
	Unlimited time	Share time	Total	Unlimited time	Clear	Regional	Limited time (clear)	Share time and specified hours	Total	Unlimited time	Daytime	Share time and specified hours	Total	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
Alabama		1	1	3				1	3	4	4		8	7	4		1	12
Alaska				1					2	1			1	2			1	3
Arizona				3					3	3		1	4	6			1	7
Arkansas		[1] 1	1	2		2			4	3	2		5	5	4		1	10
California	[2] 4		4	23	5		3	2	33	10	4	2	16	37	9	3	4	53
Colorado	1		1	3				4	7	3		3	6	7			7	14
Connecticut		[3] 1	1	3		2	1		6	1	1		2	4	3	1	1	9
Delaware				1					1			1	1	1			1	2
District of Columbia				4					4					4				4
Florida				7			1		8	7			7	14		1		15
Georgia	1		1	3			1		4	6	2		8	10	2	1		13
Hawaiian Islands				2			1		3					2		1		3
Idaho				5					5	1			1	6				6
Illinois	[4] 3	[5] 3	6	2	1	3	[6] 3	1	10	5	[7] 2	8	15	10	6	3	12	31
Indiana		1	1	3	1	1		3	8	6	1	3	10	9	3		7	19
Iowa	1		1	6	1			[8] 3	10	3		1	4	10	1		4	15
Kansas				2	1		1	5	9	6			6	8	1	1	5	15
Kentucky	1		1	2					2	4			4	7				7
Louisiana		[9] 2	2	4					4	5		2	7	9			4	13
Maine				2			1		3	2		1	3	4		1	1	6
Maryland		[10] 1	1	2		1	1		4	1	[11] 1		2	3	2	1	1	7
Massachusetts	[12] 1		1	[13] 7	1	2	1		11	4			4	12	3	1		16
Michigan	1		1	4	1	1		2	8	9		3	12	14	2		5	21
Minnesota	1		1	2			1	3	6	6	2	1	9	9	2	1	4	16
Mississippi				2		1			3	5			5	7	1			8
Missouri	1		1	6	3	1		3	13	3	1	1	5	10	5		4	19
Montana				5					5	3			3	8				8
Nebraska		[14] 1	1	2	1	1	2		6	3			3	5	2	2	1	10

[1] Includes KTHS, 1040 kc, S-KRLD S. A. Exp.-Simul. Day with WBAL, 1060 kc, S. H.-N.
[2] Includes KGO, 790 kc, 7½ kw, U.
[3] Includes WTIC, 1060 kc, S-WBAL S. A. Expt.-1040 kc, Simul.-KRLD.
[4] Includes WCFL, 970 kc, 5 kw, U.
[5] Includes WBBM, 770 kc, Simul. Day, S-KFAB-N S. A. Exp.-Synchronize KFAB-N.
[6] Includes WCBD, L-WBT, S-WMBI and WMBI, L-WBT, S-WCBD.
[7] Includes WCAZ, 100 w, Day, Clear.
[8] Includes KGCA, D-S-KWLC and KWLC, D-S-KGCA.
[9] Includes WWL, 850 kc, S. H. (KWKH); S. A. Exp.-U and KWKH, 850 kc, S. H. (WWL); S. A. Exp.-U, 1100 kc.
[10] Includes WBAL, 1060 kc, S-WTIC S. A. Exp.-Simul. Day with KTHS, 1060 kc. S. H. to 9 p. m., Synchronize with WJZ, 760 kc, from 9 p. m.
[11] Includes WJEJ, 1210 kc, 100 w, Day; ** S. H.-N with 50 w.
[12] Includes WBZ, 990 kc, 50 kw, Synchronize with WBZA.
[13] Includes WBZA, 990 kc, 1 kw, Synchronized with WBZ.
[14] Includes KFAB, 770 kc, Simul. Day, S-WBBM-N S. A. Exp.-Synchronize WBBM-N.

TABLE III.—*Distribution of broadcast stations of all classes to States and possessions*—Continued

State or possession	Clear			Regional						Local				Totals				
	Unlimited time	Share time	Total	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Total	Unlimited time	Daytime	Share time and specified hours	Total	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional												
Nevada				1					1									
New Hampshire				1	1				2	1			1	2	1			3
New Jersey	1	1	2	1		1		5	7		1	1	2	2	2		7	11
New Mexico		1	1	1					1	3		2	5	4			3	7
New York	5	1	6	10	3	2	1	11	27	7	1	8	16	22	6	1	20	49
North Carolina	1		1	2		1	[15] 1		4	5	3	1	9	8	4	1	1	14
North Dakota				3				2	5	3			3	6			2	8
Ohio	2		2	8		2	1	3	14	6	1		7	16	3	1	3	23
Oklahoma		1	1	4				1	5	7	1		8	11	1		2	14
Oregon		1	1	5			1		6	5	1	2	8	10	1	1	3	15
Pennsylvania	3		3	6	1	1		7	15	7	[16] 2	10	19	16	4		17	37
Puerto Rico				2					2			2	2	2			2	4
Rhode Island				3					3					3				3
South Carolina				3		1			4	1	1		2	4	2			6
South Dakota				1		1	1	3	6	4		1	5	5	1	1	4	11
Tennessee	1		1	6					6	5	1		6	12	1			13
Texas	1	[17] 3	4	11		1		1	13	16	10	[18] 4	30	28	11		8	47
Utah	1		1	2					2	3			3	6				6
Vermont						[16] 2		1	3			2	2		2		3	5
Virgin Islands																		
Virginia	1		1	3		2			5	4		2	6	8	2		2	12
Washington	[20] 1		1	8		1	[21] 2	2	13	6		2	8	15	1	2	4	22
West Virginia		1	1	3			1		4	1	1		2	4	1	1	1	7
Wisconsin				6	1	2			9	7	2		9	13	5			18
Wyoming				1					1	1			1	2				2
Total	32	20	52	202	21	33	25	63	343	196	45	64	305	430	98	25	147	700

[15] Includes WPTF, L-KPO S. A. Exp.-to 11 p. m. EST.
[16] Includes WIBG, 100 w. Day, Clear.
[17] Includes KRLD, S-KTHS S. A. Exp.-Simul. with WTIC.
[18] Includes KTSM, S-WDAH Permanent authority to carry WDAH's schedule.
[19] Includes WNBX, D-LS at Erie, Pa. S. A. Exp.-U.
[20] Includes KJR, 970 kc, 5 kw, U.
[21] Includes KIRO, 650 kc, L-WSM S. A. Exp.-710 kc, U.

APPENDIX F

New stations authorized during the year, stations deleted, and total at close of year

Nature of service and class of station	New stations authorized	Stations deleted	Total number of stations, June 30, 1937
Agriculture: Point-to-point telegraph	0	0	7
Amateur: Amateur	4,511	[1] 6,617	47,444
Aviation:			
Aeronautical	57	6	298
Aeronautical point-to-point	28	2	133
Aircraft	500	237	734
Airport	21	1	43
Obstruction-marker beacon	1	1	4
Broadcast:			
Regular	51	7	704
High frequency [2]	11	1	40
Television [2]	3	0	18
Facsimile	1	0	5
Experimental	4	0	13
Emergency:			
Marine fire	2	1	3
Police, municipal	71	12	302
Police, State	44	9	136
Police, zone	14	0	14
Police, interzone	14	0	14
Special emergency	17	8	66
Experimental:			
General experimental	785	229	1,833
Special experimental	65	36	138
Fixed public:			
Point-to-point telegraph	33	14	439
Point-to-point telephone	58	7	199
Fixed public press: Point-to-point telegraph	0	0	75
Geophysical: Geophysical	49	27	201
Marine relay: Marine relay	0	2	40
Mobile press: Mobile press	0	0	5
Public coastal:			
Coastal telegraph	4	10	101
Coastal telephone	2	1	4
Coastal harbor	31	0	79
Private coastal:			
Coastal telegraph	0	0	3
Coastal harbor	1	1	2
Ship: Ship	335	162	2,193
Temporary:			
Relay broadcast	44	1	102
Experimental relay broadcast	96	7	228
Motion picture	5	1	8
Total	6,858	7,400	55,628

[1] Total eliminations—offset considerably by delayed renewals, etc.
[2] Does not include new stations authorized and deletions for period July 1, 1936, to September 15, 1936.

UNITED STATES
FEDERAL COMMUNICATIONS COMMISSION
COMMERCIAL AVIATION COMMUNICATION SYSTEM
SHOWING
RADIO STATION LOCATIONS

SCALE 1 : 8 000 000

28 0 25 50 75 100 125 150 175 200 MILES

LEGEND

- ● Location of radio transmitters
- ⌑ Aeronautical stations
- ● Aeronautical point-to-point stations
- ■ Aeronautical stations serving lighter than air craft
- ▲ Airport stations (278-kc)

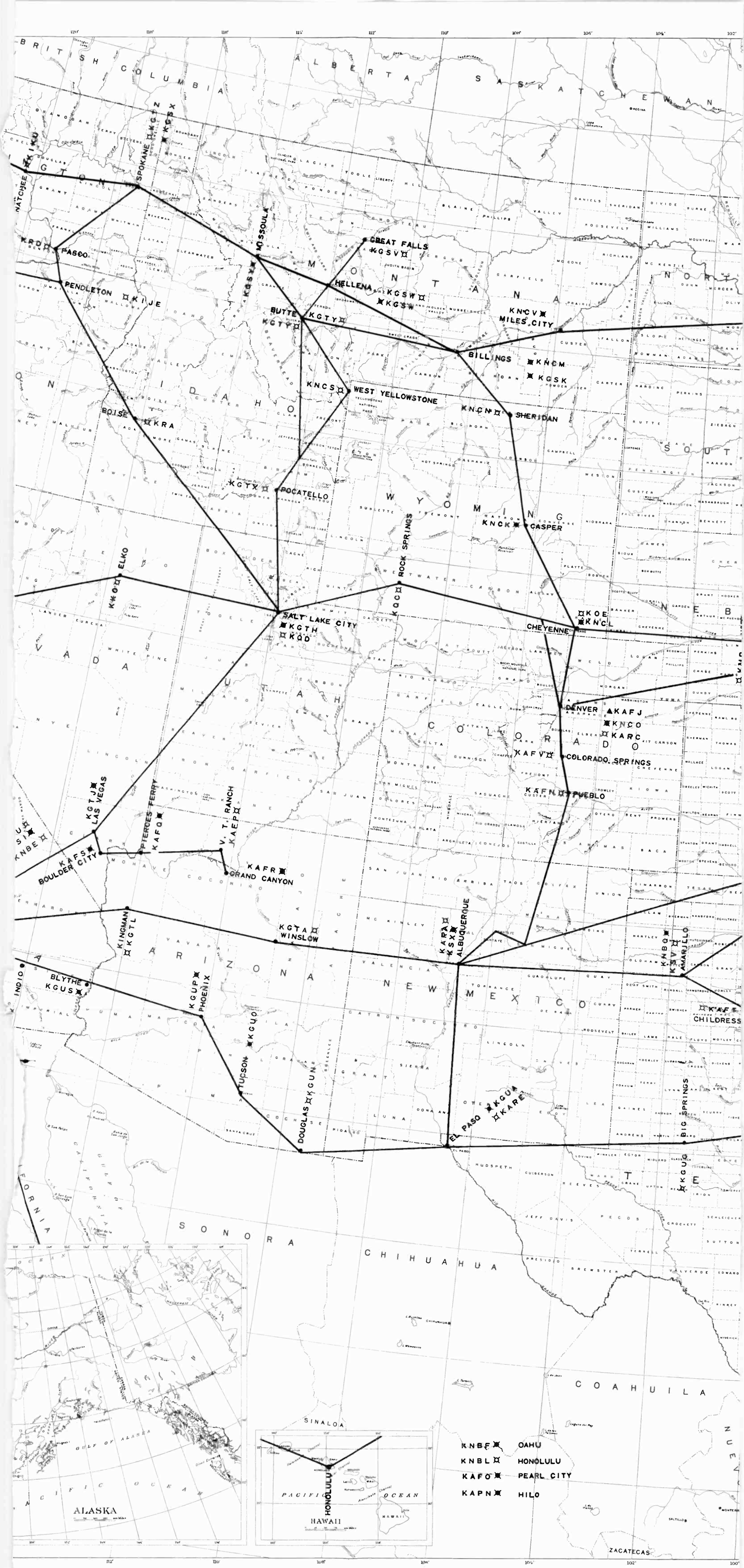
Routes equipped with communication facilities
Northern Transcontinental chain and feeders
Mid Transcontinental chain and feeders
Southern Transcontinental chain and feeders
Eastern Continental chain and feeders
Northwestern Continental chain and feeders
International chain and feeders
Mid Continental chain and feeders

JUNE 30, 1937

Publisher's Note: Color indicating chains served have not been reprinted for this edition

PRINTED BY U. S. GEOLOGICAL SURVEY

MANITOBA
ONTARIO
LAKE SUPERIOR
MINNESOTA
NORTH DAKOTA
SOUTH DAKOTA
FARGO
KNWB
SMARCK
ABERDEEN
KAFA
HURON
KARH
WARX
KAFB
MINNEAPOLIS
ST. PAUL
KSTP
WISCONSIN
KAFC
SIOUX CITY
KARR
ROCHESTER
KOAQ
WGSE
IOWA CITY
WMAD
MOLINE
WGEM
WAMS
CHICAGO
WMBD
WSDS
WSDG
WEEO
WUCG
WOEZ
WAQA
WAEO
WOEY
BATTLE CREEK
WQDW
DEARBORN
GRAND RAPIDS
WAOD
LANSING
WJIM
MILWAUKEE
WAEH
WAQO
MICHIGAN
IOWA
DES MOINES
KQM
KAFG
KMRO
OMAHA
NORTH PLATTE
NEBRASKA
BURLINGTON
KNCA
FORT WAYNE
WAJB
LINCOLN
KBON
KRF
SPRINGFIELD
WMAY
WAEJ
INDIANAPOLIS
WIRE
WHIM
WAJH
WIMA
WSDZ
DAYTON
WIAO
KAFD
KNBO
KST
KANSAS CITY
KGUT
KCSA
KNCX
KCTR
ROBERTSON
KANSAS
MISSOURI
LOUISVILLE
WQEV
WSDF
KNCB
KGTD
WICHITA
KABL
BARTLESVILLE
PONCA CITY
KNBX
TULSA
KNOT
KIOT
KAEM
KAPX
OKLAHOMA CITY
KNBM
KIOO
KGUU
LITTLE ROCK
ARKANSAS
NASHVILLE
WSDH
WAJG
WOEC
CHATTAN
MEMPHIS
WMC
WJAC
WSDK
WICHITA FALLS
KNBP
BIRMINGHAM
WAJF
ABILENE
KGTF
FORT WORTH
KNBY
KNCJ
KASB
DALLAS
KNBJ
KNC
MONROE
SHREVEPORT
MISSISSIPPI
ALABAMA
MONTGOMERY
WOEM
WARN
TYLER
KNBT
JACKSON
WAJD
KGUL
WACO
KNBW
KNBS
AUSTIN
WEEH
KNBN
HOUSTON
BEAUMONT
WEEL
BATON ROUGE
WEEB
NEW ORLEANS
WAQB
WOEN
MOBILE
WOEL
WAGL
PENSACOLA
WAGP
SAN ANTONIO
KNBU
GALVESTON
KNCG
CORPUS CHRISTI
KNBR
KGJW
KNBK
BROWNSVILLE
MEXICO CITY
CANAL ZONE
CRISTOBAL
PANAMA CITY
GULF OF PANAMA
CARIBBEAN SEA
PORTO RICO AND VIRGIN ISLANDS
SAN JUAN
WMDU
PORTO RICO
WKAQ
ATLANTIC OCEAN
100°
98°
96°
94°
92°
90°
88°
86°
84°


SPOKANE KGCX KGSX
KREW PASCO
PENDLETON KIJE
MISSOULA
GREAT FALLS KGSV
HELLENA KGSW KGSW
BUTTE KGTY KCTY
KNCV MILES CITY
BILLINGS KNCM KGSK
KNCS WEST YELLOWSTONE
KNCN SHERIDAN
BOISE KRA
KGTX POCATELLO
ROCK SPRINGS
KNCK CASPER
KOE KNCL CHEYENNE
ELKO KKO
SALT LAKE CITY KGTH KQD
KACQ
DENVER KAFJ KNCO KARC
KAFV COLORADO SPRINGS
KAFN PUEBLO
KGTJ LAS VEGAS
PIERCES FERRY KAFQ
V. T. RANCH KAEP
KAFS BOULDER CITY
KAFR GRAND CANYON
KINGMAN KGTL
KGTA WINSLOW
KARA KSX ALBUQUERQUE
KNBQ KSVP AMARILLO
INDIO
BLYTHE KGUS
KGUP PHOENIX
KGUO TUCSON
KGUN DOUGLAS
KGUA KARE EL PASO
KGUG BIG SPRINGS
CHILDRESS
ALASKA
HAWAII
HONOLULU
KNBF OAHU
KNBL HONOLULU
KAFO PEARL CITY
KAPN HILO

KGSZ KZJ SEATTLE

KGXZ TACOMA

KVO PORTLAND

KGSU EUGENE

MEDFORD KBMF KGE

MONTAGUE KAMU

REDDING KVU KARC

RENO KJE

SACRAMENTO KNBB KFM

HONOLULU

KPSF SAN BRUNO

OAKLAND ALAMEDA KABP KNEO KFO

FRESNO KGT

KQX BAKERSFIELD

KSBG GOLETA

BURBANK KBLA KAFH

GLENDALE KGUR

LOS ANGELES KIKL

KADO SANTA MONICA

KABQ LONG BEACH

BEAUMONT KGTV

SAN DIEGO KCQZ KGOZ

PHILIPPINE ISLANDS

HONG KONG

GUAM

MANILA

APPENDIX H

Amateur

Amateur radio applications, licenses, and call assignments continued in number to exceed greatly those of all other classes combined. Special effort was made to bring action on the applications current. Except for those held over under the provisions of section 307 (e) of the act, virtually every application was handled that had reached the Commission by the morning of June 30.

Amateur radio applications

Receipts:		
Pending July 1, 1936	717	
Received during the fiscal year	33,433	
		34,150
Disposals:		
Approved	21,697	
Returned to applicants	6,234	
Referred to other Federal agencies, etc	395	
Failed required examinations	5,288	
		33,614
Pending, close of fiscal year, June 30, 1937		536
Held by law—section 307 (e) of the act	284	
Held by special cause	10	
Licenses pending approval	145	
Applications received June 30, 1937, awaiting grading of examinations	33	
Other applications received June 30, 1937	64	536

Ordinarily the applications for both operator and station licenses were submitted on a joint application form, and the two were counted as one. On the other hand, a much smaller number of returned and referred applications were received and counted a second time. Many of the applications were for the renewal of expiring licenses or for modifications on account of changed location. Of those involving an examination for operator license or change in class of operating privileges a substantially larger portion failed than during the previous year. This was particularly true of code tests, in which the required speed had been increased from 10 to 13 words per minute just before the fiscal year began.

Amateur Examinations

Nature	Number	Passed	Failed	Percent failed
Code tests	8,580	5,640	2,940	34
Written tests:				
Class A envelope [1]	2,400	1,727	673	28
Class B envelope [1]	3,754	2,697	1,057	28
Class C envelope	1,782	1,311	471	26
Abridged (rules 405–406)	684	507	177	26
Total	8,620	6,242	2,378	28

[1] In 238 instances the examination included both A and B envelopes.

The operator and station licenses actually issued are separately counted, including the reissues, for the purpose of keeping together on joint-card form the amateur's operator and station licenses. All issues exceeded 100 per day.

Amateur radio authorizations

Station licenses:		
New	4,311	
Renewed	7,343	
Modified and reissued	7,335	
		19,189
Operator licenses	19,108	
Operator license endorsements	1,792	
Duplicates of lost or destroyed licenses	686	
		21,586
Total		40,775

Regulations governing radio amateurs were amended during the year in several particulars in order to aid examination, operation, and regulation. Due to infractions of the regulations, the licenses of three amateur operators were suspended, two amateur station licenses were revoked, and eight individuals were debarred from examination for periods from 6 months to 2 years. In much larger numbers licenses were deleted from the records following expiration, or because of the cancelation of surplus issues, but renewals together with other issues caused a net increase in the total number valid of record.

Amateur station licenses valid of record

Valid at close of fiscal year 1936		46,850
Plus:		
Expired but not deleted June 30, 1936	2,700	
New issues, fiscal year 1937	4,511	
		7,211
		54,061
Less eliminations, fiscal year 1937:		
Revocations	2	
Cancelations	141	
Deletions	5,138	
Expirations (renewal yet possible)	1,336	
		6,617
Valid of record at close of fiscal year 1937		47,444

The year was one of unusual service and recognition for amateur radio. Two annual awards were inaugurated for recognition of outstanding individuals. Amateurs continued their record of public service during emergencies, notably during the Ohio Valley flood. During the height of the flood the Commission was informed that the only contact with many flooded areas was by amateur radio and ordered that until the emergency passed the lower bands of frequencies assigned to amateurs be reserved for their communication relating to relief work or other emergency items.

The opportunity for public service by amateurs is enhanced by their number and wide distribution. Wherever the flag flies, there are likely to be radio amateurs maintaining communication that may become vital in times of emergency. As of June 30, 1937, the record of 47,444 amateur station licenses indicates their distribution (in round figures) as follows:

Amateur stations June 30, 1937

State, etc.	Stations	State, etc.	Stations
Alabama	375	Nebraska	475
Alaska	191	Nevada	67
Arizona	335	New Hampshire	230
Arkansas	310	New Jersey	2,575
California	5,800	New Mexico	114
Colorado	470	New York	4,950
Connecticut	890	North Carolina	470
Delaware	81	North Dakota	240
District of Columbia	235	Ohio	2,780
Florida	750	Oklahoma	530
Georgia	390	Oregon	800
Guam	9	Pennsylvania	3,150
Hawaii	263	Puerto Rico	43
Idaho	260	Rhode Island	330
Illinois	3,200	South Carolina	180
Indiana	1,060	South Dakota	230
Iowa	925	Tennessee	380
Kansas	750	Texas	1,625
Kentucky	330	Utah	265
Louisiana	320	Vermont	109
Maine	500	Virginia	450
Maryland	500	Virgin Islands	8
Massachusetts	2,625	Wake	2
Michigan	1,080	Washington	1,300
Minnesota	885	West Virginia	290
Mississippi	185	Wisconsin	1,030
Missouri	1,025	Wyoming	121
Montana	320		

RADIO OPERATORS, PROFESSIONAL CLASSES

There is maintained in the Commission a central record of licenses of the various professional classes required to qualify as radio operators for service at any of the numerous kinds of transmitting stations operated by commercial interests. Nearly 30,000 individuals hold such licenses.

To permit quick service in connection with sea, air, and land stations, the licensing in such cases is to a large extent decentralized, with 22 offices of issue, including Washington. Examinations, failures, license issues, renewals, endorsements, etc., are reported for posting on the one complete record.

During the fiscal year 18,389 such reports were received for record. A large number of the licenses were for radiotelephone third-class operators, for which licenses the requirements are relatively simple. These licenses authorize the radiotelephone operators on aircraft and the majority of the shift operators at police transmitters.

APPENDIX J

TABLE I.—*Applicants for radio operator licenses examined*

District number and location	Commercial							Amateur except class C	
	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass.	21	132	2	142	8	783	160	180	500
2. New York, N. Y.	38	131	15	208	22	874	171	438	1, 144
3. Philadelphia, Pa.	5	66	2	52	11	459	63	125	373
4. Baltimore, Md.	6	21	9	52	25	157	55	35	104
5. Norfolk, Va.	8	19	4	35	8	90	23	66	104
6. Atlanta, Ga.	2	27	6	55	9	104	27	90	111
7. Miami, Fla.	14	99	17	58	31	354	17	51	73
8. New Orleans, La.	13	106	14	86	10	138	54	45	74
9. Galveston, Tex.	3	46	6	38	4	50	58	32	68
10. Dallas, Tex.	3	52	26	113	33	417	50	140	318
11. Los Angeles, Calif.	23	106	20	219	25	756	109	229	424
12. San Francisco, Calif.	17	61	17	107	64	422	67	130	311
13. Portland, Oreg.	8	24	0	47	7	146	26	52	114
14. Seattle, Wash.	14	45	20	54	8	358	41	94	102
15. Denver, Colo.	1	7	6	47	31	100	20	47	100
16. St. Paul, Minn.	4	10	7	65	13	74	18	77	173
17. Kansas City, Mo.	1	32	27	368	30	252	224	206	229
18. Chicago, Ill.	7	92	21	223	41	763	144	297	531
19. Detroit, Mich.	7	77	17	168	56	530	91	327	779
20. Buffalo, N. Y.	2	67	6	111	20	143	32	152	524
21. Honolulu, Territory of Hawaii	5	12	2	9	1	18	8	28	78
Total	202	1, 232	244	2, 257	457	6, 988	1, 458	2, 841	6, 234

TABLE II.—*Operators licensed except amateur*

District number and location	Commercial															
	Extra first	First telegraph	First telegraph with first telephone endorsement	First telegraph with second telephone endorsement	First telegraph with third telephone endorsement	Second telegraph	Second telegraph with first telephone endorsement	Second telegraph with second telephone endorsement	Second telegraph with third telephone endorsement	Third telegraph	Third telegraph with first telephone endorsement	Third telegraph with second telephone endorsement	Third telegraph with third telephone endorsement	Telephone first	Telephone second	Telephone third	Telephone third with telegraph endorsement
1. Boston, Mass.	0	129	55	0	0	103	50	0	0	1	0	0	0	142	7	917	8
2. New York, N. Y.	0	296	114	7	2	57	71	2	2	12	6	−1	1	212	24	1, 144	0
3. Philadelphia, Pa.	0	49	28	2	−1	51	28	3	1	−1	3	0	0	68	12	471	7
4. Baltimore, Md.	0	82	48	2	0	17	16	1	−2	7	0	1	0	85	21	216	0
5. Norfolk, Va.	0	34	5	0	0	0	11	1	0	0	0	0	0	50	3	101	0
6. Atlanta, Ga.	0	11	12	1	0	4	22	3	0	2	−1	0	1	92	8	140	0
7. Miami, Fla.	0	39	21	1	0	54	22	1	3	4	3	4	−2	40	16	331	0
8. New Orleans, La.	0	111	55	1	0	47	43	4	2	7	3	0	0	91	6	116	8
9. Galveston, Tex.	0	60	8	0	0	35	17	0	0	5	1	0	0	31	2	46	0
10. Dallas, Tex.	0	8	14	−1	0	7	36	6	1	5	4	3	0	125	13	406	0
11. Los Angeles, Calif.	1	78	53	3	1	32	83	3	2	6	4	3	0	190	35	756	0
12. San Francisco, Calif.	0	182	37	1	0	50	23	2	0	5	8	0	0	125	85	496	0
13. Portland, Oreg.	0	34	10	0	0	11	17	−1	0	0	0	0	0	58	20	143	0
14. Seattle, Wash.	0	68	22	1	0	50	13	1	0	10	1	0	3	69	19	382	0
15. Denver, Colo.	0	3	6	0	0	1	12	1	0	2	1	0	0	75	41	121	1
16. St. Paul, Minn.	0	5	8	0	0	3	24	3	0	0	3	−1	0	76	9	82	0
17. Kansas City, Mo.	0	3	21	3	0	6	48	3	1	1	4	1	3	337	27	286	0
18. Chicago, Ill.	0	23	40	3	0	33	92	5	1	6	7	1	1	171	45	698	0
19. Detroit, Mich.	0	21	40	0	0	32	61	7	−1	−3	5	8	2	201	43	582	0
20. Buffalo, N. Y.	0	9	13	0	0	−1	33	0	0	1	1	2	−1	96	13	142	0
21. Honolulu, Territory of Hawaii	0	20	8	0	0	11	3	1	1	0	0	0	−1	6	0	16	5
Total	1	1, 265	618	24	2	603	725	46	11	70	53	21	7	2, 340	449	7, 592	29

APPENDIX K

TABLE I.—*Transatlantic telephone service*

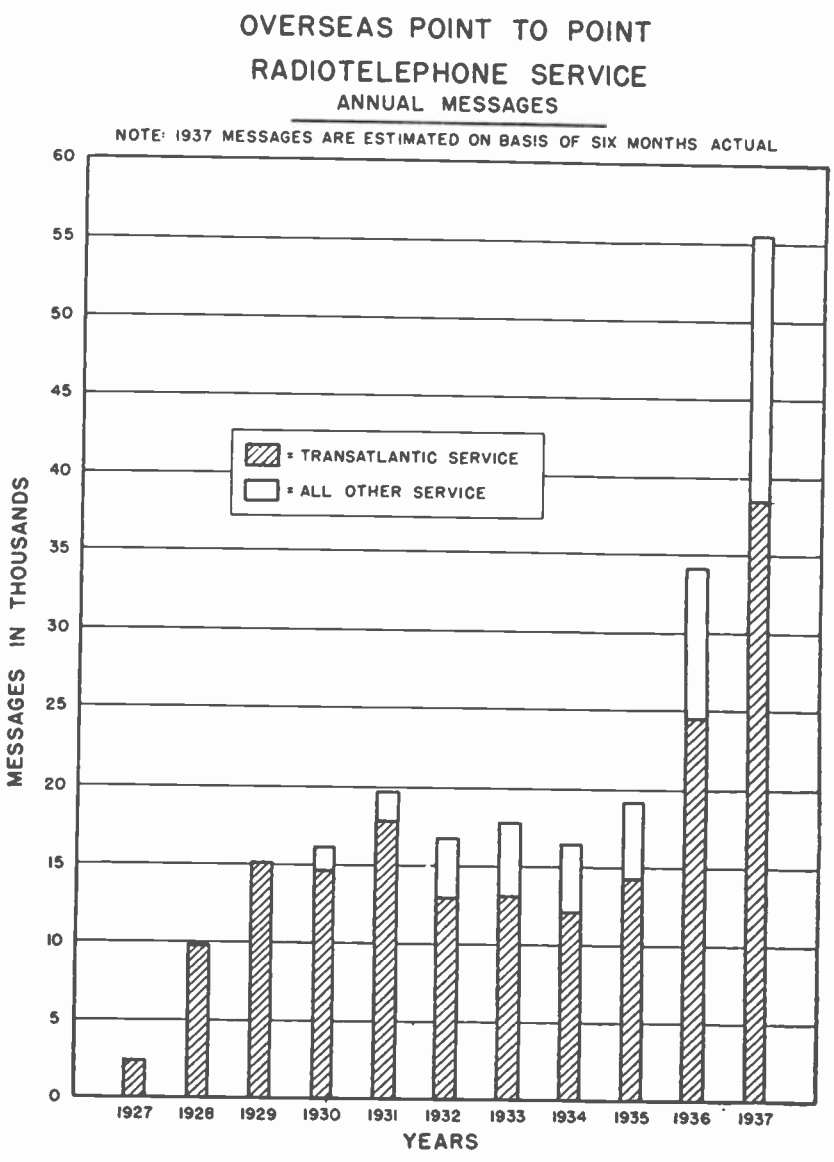
	Number of paid messages in both directions										
	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937 [1]
Great Britain	2,296	5,646	7,987	7,265	8,657	6,625	7,209	7,647	9,209	15,453	10,827
France	------	2,890	4,686	4,369	4,519	2,983	2,859	2,214	2,429	4,322	3,228
Germany	------	851	1,200	1,115	1,521	806	881	649	680	1,433	982
Switzerland	------	72	287	251	505	510	580	296	361	593	445
Italy	------	------	38	243	320	244	326	268	323	452	429
Holland	------	146	182	169	277	125	205	148	205	527	335
Sweden	------	42	64	74	184	367	109	83	84	176	121
Spain	------	40	185	518	1,152	720	264	108	146	161	39
All others [2]	------	204	426	635	672	524	666	650	846	1,371	978
Total	2,296	9,891	13,055	14,639	17,807	12,904	13,099	12,063	14,283	24,488	17,384

[1] 6 months.
[2] These include 17 countries and territories in Europe and 16 countries and territories reached via Europe.

TABLE II.—*International radiotelephone circuits as of June 30, 1937*

Circuit terminals	Statute miles	Service date
North America to Europe		
(1) New York to London (long-wave)	3,448	Jan. 7, 1927
(2) New York to London	3,448	June 6, 1928
(3) New York to London	3,448	June 1, 1929
Montreal to London	3,245	July 11, 1932
New York to Paris	3,610	Dec. 1, 1936
North America to South America		
New York to Buenos Aires	5,327	Apr. 3, 1930
New York to Rio de Janeiro	4,849	Dec. 18, 1931
New York to Lima	3,679	Oct. 14, 1932
Miami to Bogota	1,514	Dec. 22, 1932
Miami to Caracas	1,362	Dec. 19, 1932
Miami to Barranquilla	974	Nov. 8, 1934
North America to Asia and to Oceania		
San Francisco to Honolulu	2,393	Dec. 23, 1931
San Francisco to Manila	6,969	Mar. 30, 1933
San Francisco to Tokyo	5,133	Dec. 8, 1934
San Francisco to Shanghai	6,209	May 19, 1937
San Francisco to Bandoeng	9,101	Feb. 1, 1934
North America		
New York to Hamilton (Bermuda)	795	Dec. 21, 1931
Miami to Tegucigalpa (Honduras)	919	Apr. 23, 1935
Miami to Managua (Nicaragua)	1,002	June 7, 1933
Miami to San Jose (Costa Rica)	1,120	Mar. 20, 1933
Miami to Panama	1,161	Feb. 24, 1933
Miami to Nassau	175	Dec. 16, 1932
Miami to Guatemala	1,017	Apr. 17, 1933
Miami to Trujillo	833	Oct. 31, 1935
Miami to Kingston	576	Apr. 3, 1936
Miami to San Juan	1,034	Feb 20, 1936
Miami to San Salvador	1,012	June 10, 1936
Trujillo to San Juan	251	Sept. 4, 1936

CHART 1


OVERSEAS POINT TO POINT
RADIOTELEPHONE SERVICE
ANNUAL MESSAGES
NOTE: 1937 MESSAGES ARE ESTIMATED ON BASIS OF SIX MONTHS ACTUAL
= TRANSATLANTIC SERVICE
= ALL OTHER SERVICE
MESSAGES IN THOUSANDS
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1927
1928
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1935
1936
1937
YEARS

FOURTH ANNUAL REPORT

FEDERAL COMMUNICATIONS COMMISSION

FISCAL YEAR ENDED JUNE 30, 1938

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1939

MEMBERS OF THE COMMISSION

AS OF JUNE 30, 1938

FRANK R. MCNINCH, *Chairman*
T. A. M. CRAVEN
GEORGE HENRY PAYNE
EUGENE O. SYKES
THAD H. BROWN
PAUL A. WALKER
NORMAN S. CASE

LETTER OF TRANSMITTAL

WASHINGTON, D. C., *December 14, 1938.*

To the Congress of the United States:

There is transmitted herewith the Fourth Annual Report of the Federal Communications Commission, for the fiscal year ended June 30, 1938.

That fiscal year and the succeeding months have been a period of significant developments and noteworthy progress both in American communications and in the administration of this Commission to which Congress has entrusted the duty of regulating them. The administrative and regulatory task for which the Congress made this Commission responsible under the Communications Act of 1934 and amendments thereto has increased both in scope and in importance.

In large part the increase in the Commission's work, and the changes in its character and direction, parallel or follow the trends in the development of the country's systems of communication. A few of the conspicuous trends in communications, as well as significant developments in regulation, may be specially mentioned.

The growth and development of the broadcasting industry continue, as evidenced, for example, by the number of applications for new broadcast stations and for increases in the facilities of existing stations. Establishment of 47 new stations was authorized during the fiscal year, upon findings by the Commission that the public interest, convenience, and necessity would be served thereby. This represented little more than a third of the new stations for which applications were filed. The applications numbered 127. The additions, after allowing for some stations ceasing to operate, brought the total number of broadcast stations holding authorizations from the Commission to 747. By December 1, 1938, this number had increased to 763.

Because of their large number, and the requirement that licenses be renewed every 6 months, the broadcast stations claim a large share of the Commission's attention. The time and study given to them, however, do not seem disproportionate to their importance. The technical perfection and the usefulness and potential usefulness of broadcast stations are increasing with their numbers and the facilities. As radio makes perhaps the most powerful of all impacts upon the mass-mind, capable of influencing importantly our destiny as a people, the responsibility resting upon this Commission is very great, even though our regulatory authority is limited.

Underlying our responsibility and our problem is the basic fact that all radio frequencies belong to the people. No broadcaster has or can acquire any vested interest or right in a frequency. Under our mandate from the Congress he is only licensed to use a frequency in the public interest. This definitely stamps radio with a peculiarly

high obligation to put public service ahead of all other considerations, and to use the frequencies primarily for programs that are informative, educational, entertaining, or now and then perhaps all three.

Besides the licensing of new stations and the renewing or withholding of privileges from stations previously licensed, the Commission has made changes in the allocation of frequencies to the various radio services in such a fashion as considerably to enlarge the radio spectrum for the use of which licenses will be granted, with a corresponding enlargement of its usefulness.

Pursuant to the direction of Congress the Commission has also adopted rules relating to the use of broadcast stations by legally qualified candidates for public office, with provisions to prevent discrimination. Since these rules were promulgated there have been fewer complaints.

Radio facilities for aviation have been advanced to the point that installations for instrument-landing systems are being made at several of the major airports, with the expectation that such systems will be in actual service in the United States within a few months. The Commission has set aside certain frequencies for the aviation service, including four for instructional aviation.

Arrangements have been made to license radio relay press stations to operate in the mobile press service, projected to provide a link between a reporter in an isolated area, or a point where wire communication is not available, and the nearest wire terminal from which his news matter may be transmitted.

To encourage the wider use of broadcasting facilities in education, the Commission has authorized a new class of stations, known as "noncommercial educational broadcast." Although this activity is quite new, it promises to be of large importance to organized nonprofit educational agencies, which may transmit to schools programs for use in connection with the regular courses of study. They may also broadcast educational and entertainment programs for the general public but not commercial programs. The program of the Federal Radio Education Committee, appointed by the Commission in 1935, has been carried forward through studies and other measures intended to bring about the most effective use of radio as an educational medium.

Meanwhile noteworthy progress has continued to be made in the field of wire communications. Telephone developments and improvements of the past year, with the improvements made in the few years preceding, have borne fruit in the development of several new types of carrier telephone systems which are expected to affect profoundly the future of telephony. One new system provides 12 additional carrier channels, so that a single pair of open wires may be used for a total of 16 telephone channels.

The coaxial cable system, capable of carrying a multitude of simultaneous conversations, has been the subject of extensive experiments, some dealing with the transmission of sound motion pictures and thus testing its possible value in the handling of television programs.

The Proposed Report on the Telephone Investigation, supervised by Commissioner Walker, has been transmitted to the Congress, and the Commission hopes to transmit a final report soon after the convening of the Congress.

The Commission is pursuing its study of methods of organizing all communication facilities, including radio, telephone, and telegraph services, to provide for their prompt and efficient use upon the arising of any sectional or national emergency. The measures this study contemplates would be adapted not alone to national defense in time of need but to disasters such as those caused by floods, fire, or hurricane.

A committee appointed by the Commission, composed of Commissioners Case, chairman, Payne and Craven, conducted a public hearing for several weeks to obtain evidence to guide the Commission in determining whether or not the new technical rules concerning broadcasting and the standards of engineering practice formulated by the Commission should be adopted. One of the rules in question was Commission's Rule 117, limiting the authorized power of dominant clear channel stations. Completion of this Committee's report is expected early in 1939. This committee's report will aid in formulating new policies with respect to the technical aspects of broadcasting, including a decision on the question of superpower.

The Great Lakes and Inland Waters Survey, which was provided for in Public Law No. 97, has been carried on under the direction of Commissioner Brown. In connection with this survey, various investigations are being conducted for the purpose of developing the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and the inland waters of the United States. A report, with recommendations, will be filed not later than December 31, 1939.

The Commission's investigation of chain and network broadcasting and of possible monopoly, being conducted in order to get the necessary information upon which to base regulations and possibly recommendations for legislation, promises to produce much information of value. On the committee supervising this investigation, besides the chairman of the Commission, are Commissioners Walker, Sykes, and Brown.

Continuing efforts are being made to increase the Commission's effectiveness as a regulatory agency through changes in practices, procedure, and organization, and substantial progress has been made.

The Congress will recognize that the Commission's functions are very broad, embracing as they do the regulation of radiobroadcasting, radiotelephony, radiotelegraphy, the wire telegraph and the wire telephone, as well as inquiry into the technical advances in the art of communications. The course of Federal regulation of this character is largely uncharted. Functional subdivisions are far more numerous and complex than is generally understood. Broadcast stations alone embrace seven separate classifications, one of them (visual), including television and facsimile stations with all their problems and potentialities.

Similarly, the broadcast authorizations applied for during the fiscal year numbered nearly 7,000, including the applications of emergency, temporary, and experimental character. Every such application requires some form of action by the Commission. Increasing use of radio for police, marine, fire, aviation, and other services has swelled the number of professional radio operators who must be licensed by the Commission, until the total number of licensed operators is rapidly nearing 40,000. While proceeding with this licens-

ing, it has been necessary to tighten up requirements in order to assure higher standards of service and maintenance work and to improve the qualifications of operators. The Commission also licenses approximately 50,000 operators of amateur stations.

The new responsibility placed upon the Commission by the Seventy-fifth Congress, to promote safety of life and property through wire and radio communication, has increased greatly the Commission's duties in maintaining radio on vessels, both American and foreign. Although inspectors during the year served some 3,000 deficiency reports on owners of radio installations, owing to lack of personnel only the more serious violations could be referred to the Law Department for further proceedings.

The administrative task throughout the range of the Commission's functions is accordingly large, varied, and difficult. Experience has demonstrated that the Commission is gravely understaffed for its task and that this condition is largely responsible for the accumulation of work and the inability to keep a great part of this work current. Overtime work by the staff is unavoidable, and excessive.

It amounted in the fiscal year to 2,062 days, or the equivalent of about 5 days for every person in the Commission's headquarters organization of less than 400 people. Since the end of the fiscal year the overtime condition has grown somewhat worse.

To remedy this situation of understaffing, overload, and accumulation, as well as to provide more adequate and effective facilities for regulation, the Commission has recommended this year a substantial increase in its budget.

Reorganization steps already taken have helped materially but they are not, and alone cannot be, a complete cure. The Commission was behind on its work on pending applications for broadcasting licenses, as well as some other phases of its work. Through speeding up, and a great deal of overtime work, this accumulation of cases and work has been handled and made practically current.

The divisional method of organization (i. e. Telephone, Telegraph and Broadcast Divisions), which divided responsibility for Commission action, was abandoned. The work was merged into a single organic whole.

Since the close of the fiscal year we have adopted measures to complete, or largely to complete, the reorganization of the Commission's administrative set-up, and the Examining Division, as well as the Information Office as formerly operated were abolished. Formerly, recommendations made by the examiners were, in part, the basis for a great majority of the Commission's decisions. Under the new practice each hearing is to be conducted by the Commission, by a commissioner, or by one or more suitably qualified employees, chiefly lawyers. The Commission, instead of the person who presided at the hearing, will file a proposed report of findings of fact and conclusions of law in each case, which report shall be public. Opportunity will be afforded for the filing of exceptions and oral argument before the Commission issues its final report or order. This procedure provides for "fair play" by apprising the parties of the proposed decisions before they are made final, as the Supreme Court advocated in its decisions in the Morgan and other cases.

These reforms have two broad purposes: First, greater efficiency, and second, the utmost protection attainable against possible improper influence by those having business with the Commission. They promise decidedly improved administration of the Communications Act.

FRANK R. MCNINCH, *Chairman.*

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Part I
Administrative Functions of the Commission

ORGANIZATION AND PROCEDURE

General background.—The Commission made an extended effort in the fiscal year 1938 to increase its effectiveness as a regulatory agency through changes in practices, procedure, and organization. While much remained to be done in this regard, the changes made resulted in substantial progress toward more useful and more effective administration.

Abolition of Divisions.—From its establishment in July 1934 until November 15, 1937, the Commission functioned largely through three Divisions set up under the authority contained in section 5 of the Communications Act. The composition of these Divisions and the duties that were assigned thereto are set forth in our Third Annual Report.[1] It was believed at that time that this method of dividing the work would tend toward a more efficient and expeditious handling of matters delegated to the Commission for its administration. However, after 3 years of experience with this method, it was found that to subdivide a small commission in such a manner had a devisive effect and was not conducive to cooperation and mutual understanding among the members of the Commission. In the case of each Division of the Commission it resulted in two members' carrying an unnecessary load of responsibility and exercising an undesirably large portion of the powers and functions assigned to the Commission. It denied each Commissioner any practical opportunity to participate in the decisions of the Commission that were made by Divisions other than the one to which he was assigned. Important decisions were rendered largely by two members of the Commission, constituting the majority of a Division, without an opportunity to exchange views with, and to profit by free discussion and expression of opinions by, other Commissioners who had been assigned to a different Division. Nonmembers of a Division felt a natural reluctance to participate or to display an interest in the work committed to others, hence they were not afforded an effective opportunity to express their views upon pending matters.

The organization of the members of the Commission into Divisions also prevented a rounded development of each Commissioner's knowledge and experience in the whole field of the Commission's activity.

In view of the foregoing, it was decided to abolish the Divisions of the Commission, effective November 15, 1937.[2] Changes in the Rules of Practice and Procedure were made to bring them into conformity with this change of organization.

Assignment of routine matters.—With the abolition of the Divisions, a great mass of detailed and routine work fell upon the whole Commission, resulting in a condition which, if it had been allowed to remain, would have rendered difficult a careful and expert treatment

[1] At p. 5.
[2] Commission Order No. 20, 4 F. C. C. 41.

of the larger problems facing the Commission. The detailed and routine work referred to did not involve the exercise of discretion, and was concerned for the most part with applying the rules and established policies to such matters. To relieve the Commission as a whole of this cumbersome and time-consuming activity, various of these routine matters were assigned to individual Commissioners and to the holders of specified offices on the Commission's staff.[3] The assignment of such duties to individual Commissioners is changed each month, thus permitting each Commissioner to be personally informed with reference to every phase of the Commission's activities and, by such procedure, conserving the principal portion of his time for the consideration of important problems of a general nature with which the Commission is constantly faced.

The Commission adopted an order[4] which provided in effect that private communications relating to the merits of any matter involved in formal proceedings before the Commission would not be considered by the Commission in arriving at a final decision. At the same time, the Commission realized that National, State, and local public officials, as well as private citizens, often have information which, if properly brought to the attention of the Commission, would have an important bearing on the question of public interest, convenience, and necessity. In order that the Commission might have the benefit of such information, therefore, it was further provided in the above-mentioned order that all parties who addressed communications to the Commission relative to the merits of a matter pending formal proceedings would be notified when a hearing was scheduled thereon, and would be given the opportunity to appear at the hearing and to testify with respect to the matter—subject, of course, to the applicable rules of evidence. Under this order valuable information known to any person can be offered for Commission consideration, but not unless and until it has been offered in a public proceeding so that all concerned may know what facts are being considered and may have the opportunity of attesting or refuting the truth of the facts offered.

Departments of the Commission.—In addition to the above-described assignment of duties to members of the Commission and certain officers of its staff, the personnel of the Commission during fiscal 1938 functioned through the following departments for administrative purposes: The Accounting, Statistical, and Tariff Department; the Engineering Department; the Examining Department; the Law Department; and the Secretary's Office.

Procedural questions affected by court decisions.[5]—The Communications Act provides that an appeal may be taken within 20 days after the effective date thereof from decisions of the Commission to the United States Court of Appeals for the District of Columbia by any applicant for a construction permit for a radio station, for a radio station license, or for a renewal or modification thereof, whose application is refused by the Commission and by any other person aggrieved or whose interests are adversely affected by any decision

[3] Commission Order No. 28 adopted November 29, 1937, and subsequent amendments adopted February 21, March 30, and April 13, 1938.
[4] Commission Order No. 25, 4 F. C. C. 47.
[5] All cases discussed hereunder are in connection with matters arising under title III of the Communications Act only.

of the Commission granting or refusing any such application.[6] The right to file before the Commission an application for rehearing upon such decisions of the Commission within 20 days after the effective date thereof is also given.[7] The effect of these provisions was considered by the court, and it was held that the filing of a petition for rehearing suspends the running of the appeal period and that an appellant has 20 days from the date of final action on the petition for rehearing within which to take his appeal.[8]

The question of whether an appellant must exhaust his administrative remedies before the Commission prior to taking an appeal was also presented to the court, and an appeal was dismissed in one case where the appellant had not applied for a rehearing before the Commission prior to taking his appeal to the court.[9] This indicates that the filing of a petition for rehearing before the Commission is a necessary administrative step that must be taken before an appeal will be entertained.

Since the above-mentioned decisions, the number of petitions for rehearing filed with the Commission has increased materially.

A recent decision of the court [10] held that in cases arising under title III of the Communications Act the statement of facts and grounds for its decision should be made by the Commission at the time it enters its order in the premises. Prior to this ruling it had been the practice of the Commission in some cases to enter its final order and at a subsequent date to publish its statement of facts and grounds for decision. The Commission now publishes its findings of facts, grounds for decision, and order at the same time.

Other decisions of the court [11] held that the Commission should include in its decisions the basic facts upon which its decision rests. The preparation of more detailed findings, accordingly, has considerably increased the amount of time required for the preparation of the statements of facts and grounds for decision.

The status of an application pending at the time of final decision by the Commission on another application was clarified somewhat in a court decision [12] wherein it was held that a person having on file an application conflicting with the rules of the Commission was not entitled to any consideration, even though the Commission's action complained of may preclude favorable consideration of such pending application.

The rules of evidence as applied to proceedings before the Commission were considered in a decision [13] in which it was held that certain evidence, admitted over objection, was hearsay and, therefore, incompetent.

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[6] Section 402, 48 Stat. 926, as amended by 48 Stat. 1093 and 50 Stat. 197; 47 U. S. C. 402.

[7] Section 405, 48 Stat. 1095, 47 U. S. C. 405.

[8] *Saginaw Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 282, 96 F. (2d) 554. Cert. denied October 10, 1938.

[9] *Red River Valley Broadcasting Co.* v. *F. C. C.*, — App. D. C. —, 98 F. (2d) 282, Cert. to U. S. S. C. denied October 10, 1938.

[10] *Missouri Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 124, 94 F. (2d) 623.

[11] *Heitmeyer* v. *F. C. C.*, 68 App. D. C. 180, 95 F. (2d) 91; *Tri-State Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 292, 96 F. (2d) 564; *Saginaw Broadcasting Co.* v. *F. C. C.*, 68 App. D. C. 282, 96 F. (2d) 554.

[12] *Pittsburgh Radio Supply House et al.* v. *F. C. C.*, Appeal Nos. 7024, 7025, and 7027, reported at 98 F. (2d) 303.

[13] *Tri-State Broadcasting Co.* v. *F. C. C.*, *supra.*

LEGISLATION AND TREATIES

LEGISLATION

New legislation.—The basic law under which the Commission functions is reviewed in our Third Annual Report at page 5. There was one amendment to the Communications Act during this fiscal year.[14] Section 201 (b) was amended so as to allow carriers to furnish information regarding the positions of ships at sea to newspapers of general circulation at a nominal charge or without charge.

Proposed legislation.—Upon the request of various congressional committees, the Commission furnished comments in regard to proposed legislative measures introduced before either House of Congress.[15]

A number of situations have been studied by the Commission which may eventually result in recommendations for additional or amendatory legislation.

One of the most important of these is the difficulty of prosecuting cases involving the unlicensed operation of radio equipment by young persons of school age. We find that both United States attorneys and grand juries are loath to bring indictments in these cases, as is the Commission itself, since the maximum penalty involved is 2 years' imprisonment or a fine of ten thousand dollars ($10,000), or both. The conclusion is almost inevitable that a different type of penalty must be imposed, such as forfeiture, seizure of equipment, fine, or other punishment, so that the offense would be a misdemeanor under Federal law, rather than a felony.

During the year a bill was proposed by the Commission to add a new section 330 to the Communications Act which would have the effect of bringing within the jurisdiction of the Commission apparatus that utilize radio-frequency electric currents and thus have the possibility of interference with radio service, although not intended primarily for radio purposes. The proposed legislation is designed primarily to authorize the Commission to deal with a source of interference to radio communication arising from the operation of diathermy apparatus. This interference seriously impairs radio communication service at the present time and is rapidly growing in intensity. In advocating this legislation, the Commission expressed the opinion that unless measures for suppression or mitigation can be promptly undertaken, there is real danger that the usefulness of a large part of the radio spectrum for communication purposes will be destroyed. A discussion of the investigation of two such types of apparatus, the diathermy machine and the carrier telephone intercommunicating system, is found at pages 13 and 14 of our Third Annual Report.

TREATIES

The treaties that govern certain functions of the Commission are reviewed in our Third Annual Report at page 5. The international conferences held during the year looking toward the adoption of new treaties are discussed in the following section of this report.

[14] Public Law No. 561, 75th Cong., approved May 31, 1938.
[15] These proposed bills are identified in appendix A.

INTERNATIONAL CONFERENCES

The Commission has assisted this Government in carrying on its international relations in respect to radio, wire, and cable by supplying experts to the United States delegations attending the various international conferences and by constant study of the many problems arising in those relations. For example, the Commission in the last fiscal year adjusted 464 radio-station complaints involving international aspects.

A vast amount of correspondence relative to international problems has been handled and an accurate record of all international communications statistics is maintained so that information upon international matters is available upon request. This Commission maintains up-to-date records of Canadian, Mexican, and Cuban broadcasting stations. Lists of these stations are published from time to time. The Commission also compiles and issues lists of the international broadcast stations of the world.

A number of important conferences were held during the year which required a large amount of preparatory work.

INTER-AMERICAN TECHNICAL AVIATION CONFERENCES

The first Inter-American Technical Aviation Conference was held in Lima, Peru, September 15 to 25, 1937, and considered an agenda, which was formulated by the Government of Peru after consultation with the various American Republics and was based upon the resolutions of the Seventh International Conference of American States, the Pan-American Commercial Conference, and the Inter-American Conference for the Maintenance of Peace.

As a result of the conferences, there was formed a Permanent American Aeronautical Commission composed of plenipotentiary delegates appointed by each Government to unify and codify public and private air laws and to formulate the laws and customs of aerial warfare.

In the field of radio and meteorology as well as in the other diversified activities of the Conference much was accomplished in coordinating the divergent views of the various American Republics. In addition to arriving at an agreement in regard to international aviation services, it is felt that one of the most important accomplishments of this conference was the promotion of good relations among the republics represented.

INTER-AMERICAN RADIO CONFERENCE

The First Inter-American Radio Conference was held at Habana, Cuba, November 1 to December 13, 1937. As a result of the careful detailed consideration of the agenda the following documents were signed: (1) Final Act of the First Inter-American Radio Conference, including (a) Resolutions, Motions, and Agreements, and (b) Recommendations to the International Telecommunications Conferences to be held at Cairo, Egypt, commencing February 1, 1938; (2) Inter-American Radio Communications Convention; (3) Inter-American Arrangement Concerning Radio Communications; and (4) North

American Regional Broadcasting Agreement. As a result of the formulation of these documents, the American Republics were practically in accord at the Cairo Telecommunications Conferences. Here was established, at least temporarily, in the city of Habana and under the auspices of the Government of Cuba an Inter-American Radio Office, which is intended to provide for closer cooperation among the member States and for a fuller and more rapid dissemination of technical, legal, and other data of interest in the field of communications, all for the purpose of an improvement of engineering practices and a better understanding of the legal problems in the field of communications in the participating countries.

The Inter-American Arrangement Concerning Radiocommunications seeks to effect a standardization throughout the Americas of technical matters involved in the art of radiocommunications, particularly with respect to allocations, tolerances, spurious emissions, and interference, use, and nonuse of certain air calling and distress frequencies, amateurs, and receipt and transmission by them of third-party messages, an international police radio system, and radio aids to air navigation.

The North American Regional Broadcasting Agreement undertakes to establish in that region, which consists of Canada, Cuba, Dominican Republic, Haiti, Mexico, Newfoundland, and the United States, frequency assignments to specified classes of stations in the broadcast band on clear, regional, and local channels with a view to avoiding interference which, in this region, has caused great inconvenience to radio listeners. It is believed that the principles laid down in this convention, if carried into effect, will result in general satisfaction, not only to the listening public but to the broadcasters as well.

The agreement is of primary importance to Canada, Cuba, Mexico, and the United States of America. If and when three of the four mentioned countries shall have ratified and the fourth signified its readiness pending notification as an administrative measure to put the provisions of the agreement into effect, then such countries may, by administrative agreement, fix a date upon which they shall give effect to the provisions, which date is preferably but one year from the date of such administrative agreement. The agreement has been ratified by the Government of the Republic of Cuba, and on June 30, 1938, it was ratified by the United States. Additional information with respect to this agreement is found hereinafter at p. 53.

The establishment of broad general principles on a sure basis, agreement on many technical matters involved in sound engineering practice, the conclusion of an arrangement for more effective frequency allocation and avoidance of interference in the North American region, the establishment of a centralized consultative office, the agreement of the American States upon recommendations for the forthcoming Cairo conference, and the common understanding evidenced by the Inter-American Resolutions are believed to afford an adequate basis for the more effective functioning of radiocommunications in the Americas and the better service of the public and of the Governments concerned. The maintenance of friendly relations among the American States and the effectuation of the "good neighbor" policy, as evidenced by the many expressions of good will on the part of

foreign representatives, make this conference one of extreme importance to the United States and to the other Governments participating therein.

INTERNATIONAL TELECOMMUNICATIONS CONFERENCES

The International Telecommunications Conferences were held at Cairo, Egypt, February 1 to April 8, 1938. These were divided into two conferences: The International Radio Conference and the International Telegraph and Telephone Conference.

Cairo International Radio Conference.—The General Radio Regulations annexed to the International Telecommunications Convention of Madrid have in general been satisfactory to the United States. However, the ever-increasing demands for additional radio frequencies due to a never-ceasing expansion of the mobile, fixed, and broadcasting services necessitated a further tightening of existing rules to make the most economical use possible of facilities at present available, as well as a reconsideration of the existing allocation of frequencies in the light of experience gained since the Madrid conference.

The following are some of the more important decisions of the Cairo Radio Conference which have been incorporated in the Revised Regulations adopted at that conference:

1. Adoption of a plan for radio channels for the world's seven main intercontinental air routes, including calling and safety service channels.
2. Widening of the high frequency broadcast bands to a total of 300 kilocycles and the adoption of special bands for tropical regions for regional use.
3. The limitation of the use of spark sets to three channels and the outlawing of spark sets except below 300 watts output.
4. Improved tolerance and bandwidth tables.
5. The extension of the allocation table to 200 megacycles for the European region. Other regions were given the right to effect their own arrangements above 30 megacycles.
6. Establishment of further restrictions on the use of 500 kilocycles frequency for traffic.
7. The bringing up to date of regulations relative to the maritime and aeronautical services.

The Commission participated actively in organizing the preparatory work for the Cairo Radio Conference, and furnished the secretariat, which turned out voluminous documents, finally leading to the adoption of the American proposals for this conference. It also furnished the Secretary-General for all the Cairo Radio Preparatory Committees. It is believed that, due to the thorough and adequate preparation of the United States Government at this conference, which lasted from February 1 to April 8, 1938, in Cairo, Egypt, no action was taken which was in any way prejudicial to the interests of the United States, and the results of the radio conference were on the whole extremely satisfactory. It may be mentioned in passing that the preparatory work with the other nations of the Americas, done at the Habana Inter-American Radio Conference, was of inestimable value in providing a united front among the Americas in connection with the problems in which they were particularly and vitally interested because of their common interests.

The final results of the conference are found in the General Radio Regulations of Cairo, which will no doubt be submitted to the Senate for its advice and consent to ratification early in the next session, inasmuch as the effective date of the treaty is January 1, 1939, except

for article 7, which becomes effective September 1, 1939. A full and complete discussion of the Cairo conferences is found in the Report of Senator Wallace H. White, Jr., chairman of the American Delegation to the Conferences.

Cairo International Telegraph and Telephone Conference.—Although the United States is not a party to the International Telegraph Regulations, four members of the American delegation to the Cairo Telecommunications Conferences were assigned to the Telegraph Conference. Two representatives of the Commission were included in this number. The United States is not a party to the International Telephone Regulations and did not participate in the International Telephone Conference.

Prior to the convening of the conference the United States submitted a proposal in principle which was included in the book of proposals of the telegraph conference, suggesting the division of the regulations into two groups: One group containing those articles of interest to the Government of the United States and to which the United States might become a party; the other group containing articles relating to management. At the first meeting of the Committee on Telegraph Regulations the chairman of the American delegation announced that, because of circumstances beyond the control of this Government, the work of separating the regulations into the two groups had not been completed. The chairman stated also that the Government of the United States was still interested in the telegraph regulations and would continue its study after the delegation returned home.

Although the delegation did not intend to sign the Telegraph Regulations at Cairo, it was welcomed to participate in the work of the conference. The American delegation played a major part in maintaining the "status quo" in the relationship of the rates for the various classes of telegraph messages in the extra-European regime, which was the most important question presented to the telegraph conference.

A study of these regulations will be commenced in the near future to determine the attitude of all interested parties in the United States toward adhering to them.

UNITED STATES-CANADIAN REGIONAL ARRANGEMENT GOVERNING THE USE OF RADIO FOR AERONAUTICAL SERVICES

In addition to the above conferences, an informal conference between the United States and Canada was held in Washington, January 10 to 15, 1938, in which an agreement was reached in regard to the radiocommunication service of aeronautics and air navigation services in the bands 200–400 kilocycles and above 30000 kilocycles.

THE COMMISSION'S PARTICIPATION IN THE INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The Commission has devoted much time and effort during the fiscal year to the work of the Interdepartment Radio Advisory Committee. This Committee is the Government Committee established for the purpose of advising the President with reference to the assignment of frequencies to Government radio stations, under the Communications Act of 1934, as amended. The Committee, which is composed of representatives of 13 Government departments and agencies, including the Federal Communications Commission, has had frequent meetings and has approved the assignment of 1,639 frequencies for Government radio stations during the past year. At the present time there are 4,145 active assignments to Government radio stations, all of which have been recommended by the Committee since its establishment.

During the past year the Committee has been actively engaged in the allocation to Government services of frequencies in the radio spectrum from 25 to 300 megacycles and definite recommendations for these allocations have been made. Due to the greatly increased volume of work, it has been necessary for the Committee to draft new principles for its operation and there is now in course of preparation a draft of a proposed executive order, to be signed by the President, listing the classes of stations to which Government frequencies are now assigned.

EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATION

A large number of requests for technical information have been handled during the year. The most numerous of these have been in connection with complaints as to interference with broadcast reception. Many of these complaints were attributable to "external cross modulation" caused by detector action in circuits or metallic structures in the neighborhood of the receiving sets. This type of interference is usually difficult for broadcast listeners to locate and eliminate. An investigation of this type of cross modulation was made, and a report was prepared for administrative purposes, discussing the interference and the best means of locating and correcting it.

The necessity for an investigation of the various types of modulated signals used in the communication services arose in connection with apparatus manufactured for installation as main or as main and emergency radiotelegraph transmitters on merchant vessels subject to Title III, Part 2, of the Communications Act of 1934, as amended. In paragraph 12 (c) of the Ship Radiotelegraph Safety Rules as modified, there are certain provisions defining the percentage of modulation of signals used in the marine service which must be complied with.

In the apparatus in question, modulation of the signal is accomplished by applying the unfiltered output of a full wave rectifier directly to the plate circuit of the transmitter. A theoretical study of the form of wave produced in this manner was made, from which it was determined that the modulated signal produced was of standard form and that the "percentage of modulation was measurable by the usual standard methods."

Because of the need for similar data with respect to the many different types of modulated signals used in the communication service, and particularly the interest shown during the past year in the use of frequency or phase modulated signals for television and broadcasting on the ultra-high frequencies and the direct bearing of information of this kind on the practical problems of allocation, the investigation is being conducted and broadened to include the necessary information with respect to all of the types of modulated signals used or proposed for use in communication circuits.

Research in interference from low-power devices.—Further work in connection with the interference capabilities of low-power devices, such as the interoffice communication system outlined in the Third Annual Report, has been necessary. The use of such low-power devices for alarms, remote control purposes, and so forth seems to be increasing, and their regulation is becoming a considerable problem, to the solution of which the Commission is giving attention.

Commission's participation in technical conferences and meetings.—The work of the Commission's engineering staff in maintaining contacts with developments in the communication arts by inspection trips, attendance at conventions and the meetings of the various committees listed in the Third Annual Report has been actively prosecuted. The participation in the work of the Standards' Committee of the Institute of Radio Engineers has been of particular value to the Commission in connection with the revision of the rules and regulations of the Commission.

Investigation of sky wave field intensities.—An investigation of sky wave field intensities at shorter and longer distances from the transmitter than were covered by the measurements of the broadcast allocation survey of 1935 was made. In this study a new theory of sky wave propagation was developed, and the results obtained using it were checked with all available experimental data. As a by-product of this investigation, the separate influence of such variables as the type of antenna, the ground conductivity, the frequency, and the seasons was determined. The usefulness of the theory as a guide to the influence of these variables (which may not be determined by experiments, which give only average values) in all allocation problems requiring the prediction of sky wave field intensities was clearly indicated. The principal results obtained may be summarized as follows:

(*a*) Beyond the distance at which the ground and sky waves have an equal intensity, the sky wave increases with increasing distance out to the distance at which the sky wave field intensity reaches a maximum (200 to 300 miles, depending on the type of transmitting or receiving antenna, frequency, ground conductivity, etc.).

(*b*) At distances shorter than the distance for maximum sky wave field intensity, the principal factors for the sky wave field intensity

are the type of transmitting and receiving antenna used and the characteristics of the ionosphere.

(*c*) At distances greater than the distance of maximum sky wave field intensity, the principal factors for the sky wave field intensity are the ground conductivity along the path and the frequency. The ionosphere characteristics are here less important.

Study of effect of antenna height.—A study was made of the effect of the transmitting and receiving antenna height on the propagation of ground waves at the ultra-high frequencies.

A theoretical investigation of these effects and of the polarization of the waves was made in order to check the results of published experimental data for the use of the Commission in connection with certain problems arising in the administration of the many services planning to use these frequencies on a commercial basis. A theoretical analysis verifies the fact that the ideal location for ultra-high frequency broadcast transmitting antennas is at the most elevated points near the center of metropolitan areas and that such locations provide the maximum field intensities and minimize the adverse shadow effects of tall buildings and hills. It also showed that propagation was practically independent of polarization, but that conditions were somewhat more favorable when using horizontal rather than vertical polarization because of less interference due to electrical noise.

Investigation of necessary power for ship transmitters.—An investigation was made of the power required for ship radio transmitters for the purpose of obtaining engineering data for use in formulating the rules and regulations for the proper administration of section 354 of Public Law No. 97, Seventy-fifth Congress. A study of the technical factors involved showed that the limiting factors were atmospheric noise and receiver sensitivity during the daytime and either atmospheric noise or fading at night. As a result of this investigation, it appeared to the Commission, based on the best experimental and theoretical data available, that an antenna power of 200 watts was insufficient to provide a reliable communication service operating on the frequency 500 kilocycles over a seawater path of 200 nautical miles.

It was recognized, however, that the data on the signal to noise ratio required for the grade of service, and particularly on the atmospheric noise conditions encountered in the service itself, were inadequate for a reliable solution of the problem. The Commission, therefore, has undertaken a survey of atmospheric noise in the marine service in order to establish a sound engineering foundation for a solution of the problem at a later date.

The inspector in charge at Baltimore, Md., was required to prepare apparatus and make installations on three vessels sailing to various ports throughout the world for the purpose of obtaining data for the Commission in connection with its determination of power requirements for ship transmitters. The apparatus is designed to record automatically the noise levels prevailing on the routes traveled by the ship. Commission personnel was furnished to operate this equipment, analyze the data, and compile the necessary reports needed for the Commission preparatory to the hearing to be conducted at a later date.

Investigation of distortion in broadcast transmission.—An investigation of distortion in broadcast transmission caused by selective fading was made necessary by the engineering problems encountered in the determination of the best allocation plan for the provision of the best broadcast service to listeners located in rural areas in the secondary service areas of broadcast stations. Theoretical studies of principles underlying the investigation of propagation lead us to the following conclusions:

(*a*) Selective fading occurs only when interfering waves arrive at the receiver along paths different in lengths by an amount comparable to the wave length of the audio frequency involved.

(*b*) When the path length difference is equal to one-quarter wave length of the audio-modulation frequency, selective fading will occur continuously for that frequency.

(*c*) For smaller path length differences, the modulation frequency will be affected for a smaller percentage of the time.

(*d*) For a given path length difference, selective fading is independent of the carrier frequency.

(*e*) Since the frequency of fading is directed proportionately to the carrier frequency, selective fading will occur more frequently at the higher carrier frequencies, although not for a greater percentage of the time.

(*f*) At the higher carrier frequencies, since reflections occur from both the E and F layers of the ionosphere, there is a greater probability of waves arriving at the receiver over paths with large path length differences.

Sky wave field of stations operating with power in excess of 50 kilowatts.—In connection with the hearing of June 6, 1938, on the proposed new Broadcast Rules and Regulations and Standards of Good Engineering Practice, the Commission desired further information on the sky wave field produced by stations operating with power in excess of 50 kilowatts, the service rendered in the secondary service areas of such stations, and interference produced by these fields of great intensity.

An interesting fact brought out by this study was the large departure from the 1935 sky wave propagation condition which took place during the recent period of high sunspot activity. The data showed that sky-wave field intensities were several times as strong in 1935 at the time of the broadcast allocation survey as they were in 1938; consequently, a power of 500 kilowatts in 1938 did not provide as much secondary service as was produced by 50 kilowatts in 1935.[16]

As a result of these measurements and of similar results from other sources reported in the testimony taken at the hearing, the importance of a field strength recording program, extending over the complete cycle of variation in solar activity as it affects radio communications, has been shown to be the outstanding requirement in allocation engineering. An almost equally important matter on which insufficient information is available is that of atmospheric and other electrical noise and its diurnal, seasonal, and long-period variations. As it is the ratio of signal strength to noise that determines

[16] See also further discussion of this matter hereinafter at p. 58.

the usefulness of a given signal to the listener, it is obvious that adequate information must be obtained on both factors in order to provide a sound engineering basis for the specification of grades of service and the proper allocation of frequencies.

New theory of ground wave propagation.—There has recently been developed by several investigators in Europe a new theory of ground wave propagation which more accurately takes into account the effect of the curvature of the earth. The theory previously used has been known to be only approximate in this respect. The new theory was approved and accepted at the fourth meeting of the International Radio Consulting Committee, hereinafter referred to by the abbreviation of its French title, C. C. I. R., held in Bucharest, but has only recently been put into such form as to be practicable for predictions over the entire range of frequencies and electrical ground constants met with in practice. As the theory more accurately represents the actual conditions in ground wave propagation, the work of revising the standard ground wave curves in conformity with it was begun.

Field strength recorders.—Receivers and automatic field strength recorders were installed at Baltimore, Md., Grand Island, Nebr., and Portland, Oreg., for the purpose of recording continuously the field intensities of certain broadcasting stations throughout a long period of time and in connection with the Commission's study of wave propagations, antenna characteristics and intensity, and characteristics of atmospheric noises.

Equipment studies.—During the past fiscal year, studies have been made, and are in progress, pertaining to the performance of auto-alarm equipment, transmitter, receiver, direction-finder, wiring and safety specifications, particularly in regard to new and future ship installations; also, pertaining to marine frequency allocations between 30 and 40 megacycles, degree of modulation, and band width. Numerous conferences have been held pertaining to the foregoing with representatives of commercial and Government organizations.

The American Committee on High Frequency Allocation preparing for the Cairo conference decided to obtain data on the actual use being made of the high-frequency channels. To this end a cooperative survey, participated in by the Commission, other Government agencies, and certain private organizations, was organized. The general supervision of the survey, instructions to the observers, preparation of the forms used, tabulation of results, and their reduction to exhibit form was put in the hands of the Commission's engineering staff.

Two observation periods of 6 weeks each, one in the early summer and the other in the fall of 1937, were completed.

From the material obtained, various large charts were prepared from which the relative activity in the various frequency bands and the classes of stations operating therein could be determined at a glance. The types of emissions recorded were broadcast, telephone, telegraph, and diathermy, as well as harmonics and unmodulated carrier waves. This material was of considerable value to the representatives of our Government in considering the allocations of the high frequencies at the Cairo conference.

During the course of the fourth meeting of the C. C. I. R., held in Bucharest in May and June 1937, further study of the contributions on "wave propagation" presented by the various nations participating was entrusted to a subcommission in which this Government was represented. The Commission's staff was requested to prepare any additional material on wave propagation accumulated as a result of further studies of the data of the broadcast allocation survey for the use of the American delegate at a meeting of this subcommission to be held in London in November 1937.

An extensive report was prepared for this purpose. The report contained a discussion of the importance of the conception of the surface and space waves in radio propagation. It also presented new curves of ground wave field intensity at various distances. These new curves extended the validity of the Sommerfeld theory of ground wave propagation to the high frequencies where the effect of the dielectric constant of the ground is an important factor. It also contained a theoretical discussion on the determination of the intensity of sky waves at intermediate frequencies, emphasizing in particular the importance of the conductivity of the ground along the path between transmitter and receiver in calculating broadcast frequency transmission at night.

PUBLICATIONS

Under Section 4 (m) of the Communications Act of 1934 it is mandatory that the Commission "shall provide for the publication of its reports and decisions in such form and manner as may be best adapted for public information and use, and such authorized publications shall be competent evidence of the reports and decisions of the Commission therein contained in all courts of the United States and of the several States without any further proof or authentication thereof."

During the present fiscal year volumes 3 and 4 of F. C. C. decisions and reports were prepared and released. These volumes cover the decisions and reports of the Commission from July 1, 1936, to February 28, 1937, and from March 1, 1937, to November 15, 1937, respectively. This latter date corresponds to the effective date of the abolition of the various Divisions of the Commission. There are reported 106 decisions of the Commission in volume 3, and 129 decisions in volume 4.

Each volume contains tables of cases reported according to applicants, call letters, and localities, and also a comprehensive index digest of the subject matter of the decisions. There are also included for the period covered by each volume (1) general orders of the Commission, (2) interlocking directorate decisions of the Commission, and (3) selected court decisions that are pertinent to the regulatory and licensing work of the Commission. Other publications relating to the work of the Commission are listed in appendix B.

RULES AND REGULATIONS

New rules.—As the developments in the various industries under the jurisdiction of the Commission have taken place, changes in the Commission's rules, or new rules, have been adopted in order to accompany such developments. During this fiscal year, the Commission approved a revision of its rules governing emergency radio services. These services are more fully discussed hereinafter at page 83. Changes in the allocation of frequencies to the various radio services were made so as to considerably enlarge the spectrum for the use of which licenses would be granted by the Commission. The effect that such reallocation had on the various services involved is shown under the discussion herein of such services.

Such other changes in the rules and regulations of the Commission were made as experience in the administration of the old rules had indicated were needed.

The Commission adopted a series of rules relating to the use of broadcast stations by legally qualified candidates for public office, containing definitions and provisions for the prevention of discrimination in the use of broadcast facilities by such candidates.[17]

Proposed rules.—The Commission has created a committee on rules, which has the function of initiating recommendations to the Commission upon the adoption and revision of rules, and to which the Commission refers for study, comment, and recommendation matters relating to its rules and regulations.

During the year there was undertaken a complete revision of the Rules of Practice and Procedure. This revision was necessitated, in part, by the amendment to the Communications Act relating to the promotion of safety of life and property through the use of communications. Changes were also proposed in the light of the new Federal District Court rules. Other revisions were proposed as indicated by the experience gathered in the 4 years of the Commission's existence through the handling of hearings and investigations. The Commission released to the public for comment the redraft of the procedural rules submitted, and entered an order looking to the adoption of the revisions at an early date.

There was also begun the complete revision of the substantive rules and regulations of the Commission. This major undertaking is scheduled for completion within 2 years. In this regard, an important task was the rearrangement and renumbering of the rules. This task was done in accordance with the arrangement and numbering system recommended by the Codification Board for the codification of all Federal rules and regulations.

During the fiscal year there were presented for the Commission's consideration, in addition to the above-mentioned Rules of Practice and Procedure, the following chapters of rules: (1) General Substan-

[17] Pursuant to sec. 315, 48 Stat. 1088; 47 U. S. C. 315.

tive Rules (including definitions and general administrative and technical regulations); (2) Rules Governing Standard Broadcast Stations;[18] (3) General and Special Experimental Rules; (4) Rules Governing Emergency Radio Services; and (5) Rules Governing Noncommercial Educational Broadcast Stations.

With respect to the rules governing standard broadcast stations, the Commission ordered that a hearing be held before a Committee of Commissioners, which was participated in by the broadcast industry as a whole, and operated 4 weeks, and during which more than 2,000 pages of testimony were taken. At the close of the hearing, the report of the Committee was in the process of preparation.[19]

Study was given during the year to the revision of the forms in use for making application for new or increased broadcast facilities, and for renewal of license. The purpose of such study was to evolve questions that would secure a wide variety of data not heretofore available. As one step in this direction, a new rule was adopted requiring more complete information as to the ownership and contractual obligations of broadcast stations.

Informal hearings were held during the year on several sets of regulations, including those governing the municipal police, aviation, and special emergency services.

Codification of F. C. C. Regulations.—A codification of Federal Communications Commission Regulations was prepared during this fiscal year in accordance with the requirements of Section 11a of the Federal Register Act and the rules and regulations of the Codification Board. The documents submitted to the Board constitute all of the rules and regulations in effect on June 1, 1938, which are relied on by the Federal Communications Commission in carrying out the requirements of the Communications Act. Many of these regulations were originally approved by the Federal Radio Commission and the Interstate Commerce Commission, and their administration was conferred on this Commission by Section 604 of the Communications Act. They will be embraced in Title 47 of the C. F. R. (Codification of Federal Regulations), and are arranged in a systematic manner which results in convenience for reference and citation purposes. There is included for each section of F. C. C. Regulations in the code a statement as to the statutory authority under which it was enacted and the source thereof, including the date and form of its original passage, and the agency enacting same.

Arrangements are being made whereby rules adopted by the Federal Communications Commission since June 1, 1938, conform to the numbering system embodied in the Codification of Federal Regulations. This will result in the gradual elimination of any variance between the numbers assigned to rules when they receive Commission approval and when they are embodied in the Codification of Federal Regulations. It is also expected to make extensive use of reprints of the Codification of Federal Regulations for various units of the Commission's Regulations.

[18] More fully discussed hereinafter at p. 55.
[19] This hearing is discussed more fully hereinafter at p. 57.

PROSECUTIONS OF UNLICENSED ACTIVITIES

The Commission, in collaboration with the United States district attorney for the middle district of North Carolina, obtained indictments against two individuals for the unlicensed operation of radio-broadcast stations in the State of North Carolina. Pleas of guilty were entered, and fines of $50 were imposed on each defendant.

A number of other cases in which persons were discovered to be maintaining and operating unlicensed radio stations in violation of sections 301 and 318 of the Communications Act of 1934, as amended, were referred to the Attorney General for criminal prosecution. Some of the parties were convicted and sentenced and some of the cases are still pending.

With further reference to "The Baker case," fully discussed at page 33 of our Third Annual Report, it will be remembered that at the close of the fiscal year covered by that report there was an appeal by the defendants pending before the Fifth Circuit Court of Appeals. This court handed down its opinion on December 16, 1937, in which it held that the statute (sec. 325 (b) of the Communications Act) was not sufficiently clear to legally serve as the basis for an indictment in the instant case. This decision is reported at 93 F. (2d) 332. A petition for a writ of certiorari to the United States Supreme Court was denied February 28, 1938.

Part II

Regulation of Telephone and Telegraph Carriers

INTRODUCTION

Carriers subject to the jurisdiction of the Commission are those engaged in interstate or foreign communication for hire by wire or radio; i. e., telephone and telegraph carriers. Their regulation by the Commission as carriers, whether by wire or radio, is discussed in this section of the report. The regulation of the rates and tariffs, the supervision of accounts, and the securing of financial and other statistical data of carriers employing radio facilities are discussed herein, whereas the consideration given to them by the Commission in the licensing thereof is discussed hereinafter.

Jurisdiction over telephone carriers.—Since section 2 (b) (2) of the act exempts certain telephone carriers from the provisions of the act, except sections 201–205, it was necessary at the outset for the Commission to determine the extent of its jurisdiction over telephone carriers. The work of classifying the many thousands of telephone carriers, which was a tremendous task, had been completed to a large extent prior to this fiscal year. During the year there was classified a total of approximately 325 companies, of which 73 were classified as connecting carriers, 4 as subject to all provisions of the act applicable to wire-telephone carriers, and the remainder were small companies which do not engage in interstate communication for hire and therefore are not subject to the jurisdiction of this Commission in any manner. There remain to be classified approximately 150 companies, the majority of which are small companies, concerning which the Commission has not been able to receive information. The only group of larger companies not yet classified are the operating subsidiaries of a holding company which is in the process of reorganization under 77-B of the Bankruptcy Act. Hearings were conducted during the year in seven cases in order to determine whether certain carriers named were entitled to exemption under Sec. 2 (b) (2) of the Act. Decisions were rendered by the Commission upon records made in hearings held prior to this fiscal year in three cases.

Only one attempt has been made by court action to set aside an order of the Commission classifying a telephone company under this section, and this resulted in a decision in favor of the Commission. The Rochester Telephone Corporation, whose claim for exemption under this section was denied during the past fiscal year, brought suit in equity in the United States District Court for the western district of New York to enjoin, annul, and set aside the order of the Commission classifying it as a carrier subject to all provisions of the act applicable to wire-telephone carriers. A three-judge court on June 20, 1938, refused to set aside the order of the Commission. This case is more fully discussed hereinafter at page 44.

[1] Part V. p. 88.

TELEPHONE INVESTIGATION

On April 1, 1938, the Commission transmitted to the Senate and House Committees on Interstate and Foreign Commerce, respectively, a Proposed Report on the Telephone Investigation, prepared by the Special Telephone Investigation staff under the direction of Commissioner Paul A. Walker. This proposed report previously had been submitted to the Commission with a view to subsequent determination at the earliest practicable date as to the form and content of the report which the Commission will later submit to the Congress.

RATES AND TARIFFS

RATE SCHEDULES

Number of tariff publications filed.—Communication carriers filed with the Commission during the fiscal year 17,602 tariff publications (book, pamphlet, and loose-leaf tariffs, revised loose-leaf pages, and concurrences) containing changes in rates, regulations, practices, and classifications of service, or establishing new communication services. Of this number, eight were rejected for failure to give lawful notice to the Commission and to the public. New or revised instruments of concurrence, whereby some carriers adopted as their own certain tariffs of other carriers, numbered 92.

Of the total number of tariff publications filed, 12,382 related to telephone services, 3,603 related to telegraph services, and 1,617 related to both telephone and telegraph services.

Examination and revisions of tariff schedules.—Each tariff publication received by the Commission was (1) cataloged; (2) reported to the public in press releases showing the date of receipt, the date effective, and the general nature of the publication; and (3) examined to determine whether or not it conformed with the provisions of the act and the regulations contained in the Commission's Tariff Circular No. 1 and particularly to determine whether or not any rate or regulation appeared to be unjustly discriminatory or otherwise unlawful.

Many of the schedules were defective in form or construction or failed to comply with certain other requirements of the Commission's Tariff Circular No. 1, which contains regulations governing the filing of tariffs. Also, several carriers subject to the tariff-filing requirements of the act had failed to file any schedules of charges. With few exceptions, these discrepancies were corrected by means of correspondence with the carriers or informal conferences between representatives of the Commission and representatives of the carriers.

Investigation ordered by the Commission.—Near the close of the fiscal year an investigation was ordered by the Commission, and is now pending, regarding the action of one large telephone carrier in withdrawing from publication certain rates for interstate telephone service to and from points in the vicinity of a large metropolitan center, and the establishment by such carrier of alleged local exchange service through the alleged extension of the local service area of the metropolitan center for considerable distances to include the interstate points mentioned. The question at issue may be of importance in the case of various other large metropolitan areas in the United States and may involve the question of whether, through such arrangement, telephone carriers may avoid the jurisdiction of the Commission in many of their activities.

Special applications.—Under authority of rule 14 of the Commission's Tariff Circular No. 1, 59 applications for special permission were filed by telephone and telegraph carriers requesting authority

to publish schedules of charges on less than statutory notice or without regard to certain requirements of the tariff circular. The greater number of these applications pertained generally to reductions in charges or other changes clearly in the public interest. Upon good cause shown, the Commission granted 54 of the 59 applications received, 4 were denied, and no action was necessary with reference to one of the applications.

On November 15, 1937, rule 8 (b) of Tariff Circular No. 1 was amended to permit carriers to establish certain greeting services, such as Christmas and New Year greetings, for a period of less than 30 days without seeking special permission of the Commission.

Public inspection of tariff files.—Tariffs filed with the Commission are kept open for public inspection. During the year an increased use was made of the tariff files. When requested, the Commission's staff cooperated to the fullest extent in assisting those seeking information relating to rates, regulations, and services offered by communication carriers in interstate and foreign commerce. Copies of tariffs were furnished in several instances to the public at cost.

RATE REDUCTIONS

During the fiscal year many reductions were made in rates for interstate or foreign communication services. These reductions will result not only in material savings to the public but should also result in expanding the use of such services. Among the more important reductions were the following:

Telegraph.

1. Night letter rates to Cuba were reduced, amounting to approximately 50 percent for messages of 50 words and over.
2. The land-line zone charges for messages originating in Louisiana (except New Orleans), Mississippi, and Texas to destinations in Latin American countries were reduced from 11, 8, and 11 cents to 4, 5, and 6 cents per word, respectively, through negotiations by the Commission's staff with the carriers.
3. Rates for time-wire service over approximately 900 routes were reduced.
4. Changes were made in the method of counting figure groups in telegrams, and charges for certain punctuation marks were eliminated, resulting in considerable savings to the public.
5. Press and Government rates to many international points were reduced.
6. The Western Union Telegraph Co. changed its regulations to permit contract periods for leased wire service shorter than 1 month, and also made provision to allow branch offices of the subscribers to this service to be connected with the circuit.

Telephone.

1. The United States zone rates on overseas radiotelephone service were reduced approximately 25 percent.
2. Charges for coastal harbor radiotelephone services were reduced.
3. The radiotelephone rate to Iceland was reduced.
4. The Interstate Telephone Co., serving certain northwestern States, reduced the evening rates applicable to message toll telephone

service between 7 p. m. and midnight to the level of the rates applicable between midnight and 4:30 a. m.

5. New England Telephone and Telegraph Co. previously had two schedules of interstate toll rates in effect, one applying generally in New England territory and the other applying between certain points in New Hampshire and certain points in Maine and Vermont. This latter schedule was discontinued, resulting in a saving to the public as well as a simplification of the rate structure.

EXTENDED SERVICES

During the fiscal year many new points of communication were established, and other extensions of existing services were effected. Among such extensions of service were the following:

1. R. C. A. Communications, Inc., established program transmission service to China.

2. The Western Union Telegraph Co. established rates and regulations for private-line circuits between cities for program transmission or other leased wire services, equipment to be supplied by the customer.

3. The Western Union Telegraph Co. established baseball and stock quotation ticker service in 186 additional cities in the United States.

4. The American Telephone & Telegraph Co. established teletypewriter exchange service in 147 additional cities in the United States.

5. The Western Union Telegraph Co. established "telemeter" service between Boston and Chicago, Boston and Detroit, Boston and Los Angeles, Boston and San Francisco, Chicago and Los Angeles, Chicago and San Francisco, Cleveland and Los Angeles, Cleveland and San Francisco, New York and Salt Lake City, Chicago and Cleveland, and New York and Boston.

6. The American Telephone & Telegraph Co. inaugurated radiotelephone service to Bagdad, Iraq, and also established message toll-telephone service between land stations in the United States and the steamships *Washington* and *Manhattan*.

7. The Pacific Telephone & Telegraph Co. established rates and regulations for short period private-line telephone service.

RATE SURVEYS

Studies were made, and will be continued, relating to the level of rates and the regulations applicable to interstate telephone and telegraph service. Certain provisions in tariffs have been modified in the public interest through the cooperative efforts of the Commission's staff and representatives of carriers. Extensive studies were also made during the fiscal year by the Telephone Rate and Research Department and are reflected in a series of 13 reports (each constituting a volume), 9 of which are planographed for use by the Commission and other interested governmental agencies. Work of this nature will be continued in order to secure effective regulation of telephone rates.

RATES FOR GOVERNMENT TELEGRAPH MESSAGES

The annual order for the fixing of rates for Government telegraph messages, as authorized by the Post Roads Act of 1866, was issued

for the fiscal year 1938–39. There were no changes from the order effective during the past fiscal year except to make provision for possible changes which might be the result of Commission action on the then pending petitions of the telegraph companies to increase Government telegraph rates. In general, this order provides that Government communications shall have priority over all other business and shall be sent at rates not to exceed 40 percent of the rates applicable to commercial communications of the same class, of the same length, and between the same points in the United States, subject to certain minimum charges. Certain exceptions are made in the case of serial messages, timed-wire service, and communications between the continental United States and its possessions, between the United States and foreign countries, and between the United States and ships at sea, for which other provisions are prescribed.

DOMESTIC TELEGRAPH RATES

The most important case dealing with domestic telegraph rates affecting the general public during the year was that of the petition of carriers for increases in domestic telegraph rates.

The Postal Telegraph-Cable Co., the Mackay Radio & Telegraph Cos. of California and Delaware, and the Western Union Telegraph Co. filed a joint petition on December 22, 1937, seeking authority to make a general increase of 15 percent in all their rates and charges for domestic messages except for a limited number of specified exceptions. A separate petition by R. C. A. Communications, Inc., sought similar authority. An investigation was ordered by the Commission and an extended hearing was had, a number of interested parties being permitted to intervene. Western Union, Postal, and Mackay alleged a financial emergency brought about principally by increased operating expenses accompanied by declining revenues. R. C. A. Communications, Inc., while not claiming to be in a financial emergency itself, sought to share in the increases so as to avoid a possible defection of traffic which might bring about a disturbance in business and in the competitive practices of the domestic telegraph carriers. Upon consideration of the entire record the Commission found that the carriers were not entitled to the relief prayed for and, accordingly, the petitions were denied.

Another case of primary importance was that in connection with Telegraph Division Order No. 12 concerning double urgent rates. Upon motion of the Western Union Telegraph Co. for rehearing and for suspension of the effective date of certain portions of the Commission's order of June 14, 1937, the Commission suspended for a limited period the effective date of the provisions of that order relating to the ratio between ordinary and urgent messages and allowed Western Union to file appropriate schedules cancelling before the same became effective the new tariffs which had been filed for the purpose of complying with the order. On May 12, 1938, oral argument was had before the Commission on the motions of Western Union, R. C. A. Communications, Inc., and Commercial Cable Co. praying for (1) a permanent suspension of the provisions of the order relating to the ratio between ordinary and urgent messages or (2) a reopening of the matter for further evidence and a temporary

suspension of the order in the interim, and on the opposition of the Cable and Radio Users' Protective Committee to said motions. At the close of the year the above-mentioned provisions of the order were under temporary suspension pending decision by the Commission.

INTERNATIONAL TELEGRAPH RATES

Trans-Pacific rates.—Because of the activity of various far eastern foreign trade associations and chambers of commerce on the Pacific coast, and the representations made to the State Department, a study is being made of the trans-Pacific telegraph rate situation with a view to the elimination of any discriminatory conditions or practices found to exist.

Divisions of tolls.—Studies of the divisions of tolls between American carriers and the associated foreign administrations in international telegraph traffic were continued during the fiscal year. As stated in a previous report, special attention is given to the relationship of the American carriers with the foreign government administrations which normally operate foreign telegraph service, with special emphasis on the competitive problems resulting from foreign contracts, the divisions of tolls between the carriers sharing in the charges for the handling of international messages, and the settlement of accounts involving fluctuating foreign currencies.

International Telecommunications Conference, Cairo, Egypt.—Special preparation was made, in the nature of traffic studies, for the International Telecommunications Conference at Cairo, Egypt, held in February 1938, elsewhere discussed in this report. Among other things, a comprehensive study was made of all international traffic to and from the United States, all foreign traffic transiting the United States, and ship traffic, during 7 selected days in Setpember 1937.

SUPERVISION OF ACCOUNTS

ACCOUNTING REGULATIONS

Uniform systems of accounts, telephone carriers.—During the fiscal year considerable correspondence was conducted with telephone carriers in order to execute the requirements of the instructions in the new uniform system of accounts for class-A and class-B telephone carriers [2] which became effective on January 1, 1937, providing that there be submitted (1) copies of journal entries effecting transfers from the accounts previously maintained to the new accounts and (2) statements describing the nature and purpose of (a) subdivisions of accounts and (b) clearing, temporary, or experimental accounts established by them in addition to those prescribed. Preliminary data were assembled in connection with the drafting of certain needed revisions in this system of accounts.

A draft of a new uniform system of accounts for telephone carriers having average annual operating revenues in excess of $25,000, but not exceeding $50,000 (designated as class-C carriers), was completed during the fiscal year. While this system was prescribed (effective January 1, 1939) for class-C telephone carriers, it was also recommended for observance by the small carriers having average annual operating revenues not exceeding $25,000, designated as class-D carriers.

Perpetual record of plant and work-order systems.—Considerable work has been done looking to the completion of the continuing or perpetual detailed record of telephone property as at December 31, 1936, and of the changes in plant occurring during the calendar years 1937 and 1938. An order was adopted by the Commission extending to June 30, 1939, the latest date for completion of this work.

The tentative draft of rules governing work-order systems and perpetual records of property changes for telephone carriers (associated with the foregoing) is in process of revision.

Cost accounting.—Preliminary steps are being undertaken in connection with the drafting of cost-accounting procedure for wire-telephone companies.

Uniform systems of accounts, telegraph carriers.—At the end of the fiscal year, a draft of a new uniform system of accounts for telegraph and cable carriers (exclusive of radiotelegraph carriers) was undergoing final extensive revision after being the subject of extended conferences with representatives of State Commissions and the telegraph carriers.

A draft of a new uniform system of accounts for radiotelegraph carriers was likewise undergoing final extensive revision after being the subject of the same or related conferences with representatives of the radiotelegraph carriers.

[2] A class-A carrier is one having average annual operating revenues in excess of $100,000. A class-B carrier is one having such revenues in excess of $50,000 but not in excess of $100,000.

FIELD EXAMINATIONS

Telephone carriers.—One historical examination of the plant accounts of a large telephone carrier and a study of the accounting for costs incidental to the construction of a coaxial cable extending from New York to Philadelphia were completed during the fiscal year.

Only one field accounting office has been established by the Commission. This office is located at New York, N. Y., and has been engaged principally in the examination of the accounts and records of telegraph carriers. There is an urgent need (but insufficient funds) for the establishment of a few additional field offices in order to reach the accounts and records of the many large carriers subject to the jurisdiction of the Commission. This organization is necessary in order to gather factual information needed by the Commission in the discharge of its regulatory duties.

Telegraph carriers.—Examinations of the accounts and records of two important carriers, one being a cable company and the other a radiotelegraph company, were completed during the fiscal year. These examinations included historical audit examinations developing the lifetime history of the plant and equipment and related reserves; balance-sheet audits for certain years; and complete analytical audit examinations for certain years. They included also a development of operating statements; data regarding traffic interchanges, intercompany financing, and foreign exchange; and analyses of cable repairs.

One of the purposes of these examinations was to provide an outline of the accounting methods of these carriers which might be used in connection with the preparation of a uniform system of accounts for radiotelegraph carriers and the revision of the existing system of accounts for wire-telegraph and cable carriers, both mentioned above.

Two similar examinations were in progress at the end of the fiscal year. One of these is an examination of the records of a radiotelegraph company and the other is an examination of the accounts and records of a cable company. Some preliminary work was also done prior to the end of the fiscal year in connection with two other contemplated examinations relating to telegraph or cable carriers.

OTHER ACCOUNTING ACTIVITIES

Relief and pensions.—An order was adopted by the Commission which required that each telephone and telegraph carrier file copies of its original plan for relief and pensions adopted by it, if such a plan existed, or comprehensive outlines of the plan if a copy of the text was not available, together with copies of all changes therein and their effective dates. It also required that the Commission be informed of any future changes in the benefit plan and any contemplated changes in accounting.

Studies are being made of the data filed in compliance with this order, with a view to assurance that the accounting therefor is in conformity with the applicable regulations and with a view to the determination of the advisability of modifying or amplifying the accounting regulations with respect to new situations revealed.

Rate proceeding.—Financial and accounting data were assembled in connection with the application of telegraph carriers for a 15-percent increase in domestic telegraph rates.

Special investigation.—Careful attention was given to facts disclosed by the special telephone investigation to determine whether, and the extent to which, changes should be made in accounting regulations applicable to telephone carriers. This study is expected to be continued, and full consideration will be given to all findings and recommendations.

Depreciation.—Studies are being made of data assembled with a view to obtaining better information for use in the regulation of depreciation accounting practices by telephone and telegraph carriers.

Leasing arrangements.—A study of the several corporate histories and leasing arrangements existing in the telegraph industry was commenced during the fiscal year and will be continued for the purpose of determining the proper accounting required in the circumstances.

Extensions of lines.—Attention was given to accounting considerations involved in 48 applications received from telephone carriers and 25 applications received from telegraph carriers relating to extensions of lines and mergers or other acquisition by one carrier of the properties of another within the purview of sections 214 or 221 of the act. All progress and completion reports submitted in compliance with the orders granting such applications were reviewed.

COOPERATION WITH STATE REGULATORY BODIES

A policy of close cooperation with State regulatory bodies and with the National Association of Railroad and Utilities Commissioners—particularly with the Association's Committee on Statistics and Accounts—has been pursued in all matters relating to the regulation of telephone and telegraph accounts. This has been especially true in the formulation of new accounting systems and regulations. The cooperation, advice, and assistance of representatives of State regulatory bodies and of the association and committee mentioned above are gratefully acknowledged.

FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Requirement and content.—All telephone carriers subject to the jurisdiction of the Commission, having average annual operating revenues in excess of $50,000, were required to file annual reports, as in previous years, pursuant to section 219 of the act. Telegraph carriers subject to the jurisdiction of the Commission were also required to file annual reports. Only telephone carriers having average annual operating revenues in excess of $250,000 and telegraph carriers having such revenues in excess of $50,000 were required to file monthly reports.

The annual and monthly reports mentioned above contained financial and other statistical information regarding the reporting carriers of the nature specified in section 219 of the act.

In addition to the regular reports mentioned above, the larger telephone carriers having average annual operating revenues in excess of $1,000,000 were required to file an additional monthly report, beginning in January 1938, showing changes in selected income and balance-sheet items not covered in the other monthly report form required to be executed by the smaller carriers.

Changes in forms.—The monthly report form required of telegraph carriers was revised for use beginning in July 1938, in order to show separately the amount of depreciation of plant and equipment and the amount of relief department and pension expenses. Only minor changes were made in the annual report form required of telegraph carriers.

A considerable number of changes were made in the annual report form required of telephone carriers during the fiscal year. These were occasioned principally by changes in accounting regulations effected through the new uniform system of accounts prescribed for telephone carriers which became effective on January 1, 1937. The changes in the annual report form include the following:

1. The carriers were required to segregate their investment as follows: (a) Telephone plant in service; (b) telephone plant under construction; (c) property held for future telephone use; and (d) telephone plant acquisition adjustment. Likewise, they were required to show: (a) Data concerning contingent assets and liabilities; (b) amount of preferred-stock cumulative dividends in arrears; and (c) amount of matured long-term debt held by, or for, respondent and not canceled.

2. A new schedule was provided to secure an analysis of account 180, "Surplus reserved," showing the name of the reserve, purpose for which created, and amount.

3. An analysis of the amounts included in account 525, "Revenues from general services and licenses," was required.

4. The schedule for plant and operating statistics was revised to show more detailed data relative to the cable mileage used in telephone service.

5. The carriers were required to furnish more information concerning relief and pension payments; additions to, disbursements of, investments of, and balances in pension and benefit funds; and statistical data relative to pensions and benefits.

6. Important changes in service and rate schedules during the year were required to be reported and the carriers were required to show: (a) Estimated increase or decrease in annual revenues by reason of such changes; (b) estimated saving or additional cost to the public; and (c) the bases used in arriving at such estimates.

Reports required of holding companies.—Holding companies owning interests in communication carriers were required to file annual reports for the calendar year 1937. A similar requirement was made in the two preceding years and was mentioned in prior reports to Congress. Two report forms have been prescribed, one designed for holding companies owning large interests in communication carriers and one designed for holding companies owning only minor interests in communication carriers.

These reports reflect financial and other factual information somewhat similar to, but less exhaustive than, that required of carriers. Among other things, these reports reflect the capital structure, control, financial condition, and the relationship of the holding companies to the carriers concerned.

Data regarding intercorporate relations and other selected items of interest are compiled from these reports and from other sources of information including the reports filed by the carriers.

Manufacturing and other subsidiaries.—A tentative draft of an annual report designed for manufacturing subsidiaries, research organizations, and other similar corporations controlled by communication companies, or such companies under common control with communication carriers, was completed during the fiscal year and will be the subject of conferences with representatives of State regulatory bodies and the companies concerned before consideration is given to prescribing the form for use by such manufacturing and other subsidiaries mentioned above.

The Commission has previously inquired into the accounts of certain manufacturing subsidiaries by direct examinaton by Commission accountants to determine the cost of certain manufactured articles used by carriers in the construction of plant.

Number of reports filed by telephone, telegraph, and holding companies.—Annual reports for the calendar year 1937 were filed by 97 telephone carriers and 56 telegraph carriers. The telegraph carriers consisted of 36 companies engaged in wire communication (including cable companies) and 20 companies engaged in radiotelegraph communication. Monthly reports were filed by 91 telephone carriers and 17 telegraph carriers. A total of 34 telephone carriers filed monthly reports on the new form required of large carriers having average annual operating revenues in excess of $1,000,000. A total of 48 holding companies filed annual reports. Of this number, 24 reported on the form required of companies owning major interests in communication carriers, and 24 reported on the smaller form

required of companies owning only nominal interests in communication carriers.

Examination and correction of reports.—All accounting schedules and other statistical data contained in the reports filed by telephone, telegraph, and holding companies were carefully examined, and corrections were made where necessary following correspondence with the companies concerned.

Public reference room.—Annual and monthly reports filed by telephone, telegraph, and holding companies were made conveniently available to the public through the medium of a public reference room. There was an increased use of these reports by the public during the fiscal year 1937–1938. When requested, the Commission's staff assisted those who sought information reflected by these reports.

STATISTICAL COMPILATIONS

The statistical publications pertaining to telephone and telegraph carriers which were issued during the fiscal year are set out in appendix B. Various other statistical compilations, not included in this list of publications, were made during the fiscal year in order to assemble factual information required in the work of the Commission. These included a special study of economic aspects of competition affecting the land-wire telegraph industry and a study of trends in national income in so far as they relate to the communications industries.

The Commission cooperated with the Bureau of the Census in developing forms used in the quinquennial census of electrical industries for the year 1937.

STATISTICAL DATA CONTAINED IN APPENDIX

Summary of selected statistical data.—To indicate financial and other statistical trends during the calendar year 1937 in both telephone and telegraph industries, some of the more important items are shown in the following tables and comparisons are made with similar statistics for the previous year:

TELEPHONE (CLASS A)

	1937	1936	Increase or decrease	
			Amount	Ratio, percent
Investment in telephone plant	$4,678,893,476	$4,540,690,297	$138,203,179	3.04
Depreciation reserve	1,262,171,574	1,188,469,599	73,701,975	6.20
Capital stock	4,276,220,332	4,306,192,025	[1] *29,971,693*	[1] *.70*
Funded debt	941,509,080	973,840,600	[1] *32,331,520*	[1] *3.32*
Total surplus	390,180,025	386,734,572	3,445,153	.89
Operating revenues	1,138,132,784	1,076,619,047	61,513,737	5.71
Operating expenses	774,549,427	721,975,372	52,574,055	7.28
Operating taxes	142,107,406	121,341,218	20,826,188	17.16
Net operating income	221,416,111	233,255,895	[1] *11,839,784*	[1] *5.08*
Number of telephones	17,005,401	16,059,625	945,776	5.89
Miles of wire	85,525,108	83,322,628	2,202,480	2.64
Number of employees (Dec. 31)	295,089	281,243	13,845	4.92
Total compensation	$488,797,654	$433,363,452	$55,434,202	12.79

[1] Decrease.

TELEGRAPH

	1937	1936	Increase or decrease	
			Amount	Radio, percent
Investment in plant and equipment	$536,883,818	$533,358,381	$3,525,437	0.66
Reserve for accrued depreciation	162,340,960	123,299,398	39,041,562	31.66
Capital stock	172,910,813	175,044,360	[1] 2,133,547	[1] 1.22
Unmatured funded debt	114,740,918	115,218,721	[1] 477,803	[1] .41
Total corporate surplus	70,116,329	111,643,377	[1] 41,527,048	[1] 37.20
Operating revenues	146,299,718	141,541,707	4,758,011	3.36
Operating expenses	126,515,291	119,292,519	8,222,772	6.95
Operating taxes	7,626,530	5,636,349	1,990,181	35.31
Operating income	11,460,700	16,989,996	[1] 5,529,296	[1] 32.54
Miles of wire	2,428,750	2,425,904	2,846	.12
Number of revenue messages transmitted	222,431,477	208,891,814	13,539,663	6.48
Number of employees (Dec. 31)	72,820	76,390	[1] 3,570	[1] 4.67
Total compensation	$90,413,563	$83,052,726	$7,360,837	8.86

[1] Decrease.

Appendix.—Extensive statistical data relating to telephone and telegraph carriers are contained in appendix C to this report.

COMPLAINTS AND INVESTIGATIONS

The Commission continues to receive a considerable number of complaints. Many of these relate to local exchange service, over which this Commission does not have jurisdiction. Upon receipt of a complaint relative to a matter beyond the scope of the Commission's jurisdiction, the complainant is advised of such fact and referred to the proper local or state regulatory authority.

Many investigations have been conducted during the year upon complaints, informal and formal. In most instances these have been satisfactorily adjusted by informal means without the necessity of resorting to formal proceedings. The subject matter of these complaints covered a wide range, including rates, charges, services, discrimination, failure to interconnect facilities, and related matters. The procedure in handling complaints is established by the Rules of Practice and Procedure promulgated and adopted by this Commission.

Inductive interference.—The question of inductive interference between the power transmission lines and telephone lines has been studied, both from a standpoint of proposed legislation in Congress and in connection with informal complaints received during the year. No formal decision in connection with this question has been reached since the problem primarily relates to rural telephone exchange service over which the Commission has no jurisdiction.

EXTENSIONS OF WIRE FACILITIES

The regulation of wire carriers, as contemplated by the act, includes the granting or denying of certificates of public convenience and necessity for the construction, extension, and transfer of wire facilities, as well as for the supplementing of existing facilities.

TELEPHONE

The 48 applications for extension of lines or facilities from telephone carriers handled during this year include those for (1) acquisition and construction under section 214, (2) supplementing of existing facilities under the second provision of section 214 (a), and (3) authority to consolidate under section 221 (a).

Acquisitions under section 214.—Among the applications for authority to acquire new or extended lines was one of Southwestern Bell Telephone Co. to acquire and operate all the interstate toll lines of the United Telephone Co. (of Kansas), a controlled subsidiary of the Southwestern Bell Telephone Co. A decision had not been rendered in the case at the close of the year. Another was the application of the Nebraska Continental Telephone Co. for permission to acquire and operate all the telephone lines, system, business, and assets of the Nebraska Continental Telephone Corporation, which had been filed during the previous year. This application was granted by the Commission.

The application of the American Telephone and Telegraph Co. to supplement its existing toll facilities between Dallas and San Antonio and between Dallas and Houston, Tex., which was filed during the previous fiscal year, and consolidated with the proposed plan of the Southwestern Bell Telephone Co. to supplement its existing facilities between the same points, is still pending before the Commission.

Supplementing of existing facilities under section 214.—The second proviso of section 214 (a) gives the Commission power to authorize the supplementing of existing facilities without regard to the other provisions of the section, requiring hearings, notices, etc. During this fiscal year, 43 applications for authority to supplement existing facilities were received and granted. The expenditures in connection with the individual projects ranged from a few thousand to more than one-half million dollars, and totaled almost 4 million dollars. This represents a slight decrease from last year, both in number of applications handled and in the total expenditure. The major portion of these applications was filed by the Bell System, only three being filed by other companies.

In connection with these projects it is the policy of the Commission to require periodic construction and progress reports and a full report on their completion. The reports are regularly received and analyzed by the engineering and accounting departments.

Petitions for authority to consolidate.—Section 221 (a) of the act provides that telephone carriers desiring to consolidate their properties may file with the Commission a petition requesting a certificate to the effect that the proposed consolidation, merger, acquisition, or control of the property of one or more telephone companies by another will be of advantage to the persons to whom service is to be rendered, and in the public interest. Such a certificate exempts the carriers from the provisions of the antitrust acts. The applications filed during the fiscal year under this section include: (1) Application of the Indiana Bell Telephone Co. for a certificate that the proposed acquisition by it of the property of the Dugger Mutual Telephone Co. will be of advantage to the persons to whom service is rendered, and in the public interest, on which hearing was held on March 2, 1938, and which was still pending at the end of the fiscal year; and (2) the joint application of the Bell Telephone Co. of Pennsylvania and Pennsylvania Telephone Corporation for a certificate that the proposed acquisition of certain telephone properties in the Commonwealth of Pennsylvania will be of advantage to the persons to whom service is to be rendered and in the public interest, which application was, after hearing, granted. This latter application involved properties in Allegheny, Bedford, Blair, Cambria, Fayette, Indiana, Somerset, and Westmoreland Counties in Pennsylvania.

Physical connection between carriers.—Section 201 (a) of the act gives the Commission authority to require carriers to establish physical connection with other carriers and to establish through routes and charges applicable thereto, if, after opportunity for hearing, such action is found necessary or desirable in the public interest. The only petition for such connection now before the Commission is that of the *Oklahoma-Arkansas Telephone Co.* v. *Southwestern Bell Telephone Co.* for physical connection at Fort Smith, Ark. A hearing had been held before an examiner who had filed his report thereon, to which exceptions were filed during the past fiscal year. On August 10, 1937, the Commission (telephone division) issued its report and order reassigning the matter for hearing de novo. The respondent thereafter filed a petition for rehearing and modification of the order of August 10, 1937, which was denied by an order of the Commission (telephone division) issued September 15, 1937. The respondent then filed its application and petition for rehearing before the full Commission, which was dismissed on October 6, 1937, by an order of the Commssion. The hearing was thereafter held before an examiner, who had not issued his report thereon at the close of the year.

TELEGRAPH

The extension of telegraph wire facilities under the jurisdiction of the Commission has been small during this fiscal year and consisted entirely of leased circuits. No applications were received or acted on which had as their purpose the extension of existing facilities by new construction. A total of 169½ miles of circuits was authorized to be leased for permanent use and 569 miles for temporary use. The applications received were as follows:

Pending July 1, 1937	4
Received July 1, 1937, to June 30, 1938	29
Total	33
Granted July 1, 1937, to June 30, 1938	28
Pending June 30, 1938	[1] 5
Total	33

[1] Temporary authority has been granted in three of these cases.

One of the most important matters arising under section 214 of the Communications Act as applied to telegraph carriers was the investigation ordered by the Commission of the facts surrounding the acquisition by Mackay Radio & Telegraph Co. of a line or circuit extending from Washington, D. C., to Baltimore, Md., without first obtaining a certificate of convenience and necessity from the Commission; the lawfulness thereof; the determination of the requirements of section 214 of the Communications Act of 1934; and the issuance of rules and regulations applicable thereto. Other carriers having an interest in the proceeding were made parties. A hearing was held in the matter on April 18, 1938, and oral argument heard the following day. The case was pending at the end of the fiscal year.

TECHNICAL DEVELOPMENTS IN THE WIRE-TELEPHONE AND WIRE-TELEGRAPH ARTS

WIRE TELEPHONE

During the past year many technical developments and improvements were effected in wire-telephone communication, the most important of which are discussed herein.

Carrier systems.—During the past few years several new types of carrier telephone systems have been developed which are expected to have a profound effect on the future of telephony. Some of them—such as the types J and K carrier systems—will materially increase the number of high quality telephone circuits that may be obtained from existing types of line facilities.

The type J carrier system operates on open wires like the present standard type C system. The latter provides three carrier channels and operates in the frequency range from about 4,000 to 30,000 cycles. However, the new type J system operates in the range from 36,000 to about 140,000 cycles and provides 12 additional carrier channels. Thus, one pair of open wires may be used for a total of 16 telephone channels.

The type K system is employed with cable facilities and provides 12 carrier channels on four conductors by operating in the frequency range between 12,000 and 60,000 cycles. These 12 channels may be employed for 12 ordinary telephone circuits or for as many as 144 telegraph circuits. In practice, each type K system would be more likely to carry some telephone and some telegraph circuits. For program transmission, two or three adjacent carrier channels may be combined to give a single high quality program channel.

The use of the relatively high frequencies of the above new systems has introduced a large number of new problems and involved numerous radically new types of apparatus and techniques. Both systems make use of new types of quartz crystal band filters and amplifiers.

Extensive operating tests of the type K system have been made in existing cables between Toledo, Ohio, and South Bend, Ind. The operation of the type J system has also been tested in a trial installation between Lamar, Colo., and Wichita, Kans., and further testing of the same type of system is under way on open wire lines in Florida.

Plans have been made to put type K systems into service in cables between Toledo and Detroit, between South Bend and Detroit, between New York and Chicago, and between New York and Charlotte, N. C. These plans also anticipate extension of circuits between Charlotte, N. C., and points in Florida by means of type J open wire carrier systems. Plans are also under way to install type J carriers on the new fourth transcontinental line from Oklahoma City to Whitewater, Calif., and also between Salt Lake City, Utah, and Pocatello, Idaho.

Coaxial cable system.—Extensive experiments were made during the past year on the coaxial cable system between New York and Philadelphia.[3] One of the most important groups of experiments was the transmission of sound motion pictures from New York to Philadelphia for the purpose of testing the performance of the coaxial system in the handling of television programs.

In the arrangements employed, the motion picture was obtained by scanning motion-picture film with a rotating disc, using 240 lines, with 24 frames per second. This gave a signal band extending from 0 to about 800 kilocycles, which in two stages of modulation was shifted upward about 150 kilocycles for single sideband transmission over the coaxial line. At the receiving terminal the signal band was restored in two stages of modulation to its original frequency position and applied to a cathode ray tube for reproduction of the picture. Sound accompaniment for the picture, obtained from a sound track on the film, was transmitted simultaneously with the television pictures over the coaxial line.

The experiments were not to show improved television but were to demonstrate the unique and economical utilization for television currents of the frequency band of a long coaxial cable.

The 1-megacycle repeaters at the unattended points between New York and Philadelphia have now been removed. Preparation for trial of 2-megacycle repeaters between New York and Princeton, N. J., has been continued, as well as construction of experimental group modulating equipment for installation at New York, which will eventually permit obtaining 480 telephone circuits or accommodate television currents corresponding to about 350-line pictures from the 2-megacycle coaxial system.

Autodial.—A new automatic device has been developed which is designed to simplify the calling of persons whom the user calls most frequently. All that is required is to set a pointer opposite the name of the desired person on a list of those frequently called, a lever is then pushed and released, and the autodial does the dialing.

Switchboards.—Numerous improvements have been made in the design of switchboards, one of which is a new automatic switchboard of the relay type for small exchanges. There has also been developed a new multicontact rotor relay which has resulted in added simplicity of design and smoothness of operation in the field of this type of machine switching. These switchboards are designed for small exchanges and have ultimate capacities of 30, 60, and 100 lines.

Operator equipment.—A new breast-plate operator's set with a lightweight nonpositional transmitter and a featherweight operator's receiver has been developed. The entire set weighs 6⅜ ounces.

Station equipment.—New self-contained handset desk and wall type subscriber equipment has been developed. Improvement of the telephone ringer has been made so that it may be heard at a greater distance and yet the sound is not jangling or nerve wracking.

WIRE TELEGRAPH

Additional varioplex installations were made during the year and telemeter service was extended to several additional points.[4] Carrier

[3] Discussed at p. 108 of our Third Annual Report.
[4] See p. 80 of our Third Annual Report.

Telegraph Systems were installed between New York and Washington, D. C., and between New York and Atlanta, Ga.

A new method of automatic relaying, known as "reperforator switching," was installed at Richmond, Va., in order to eliminate manual retransmission of messages to be relayed at this point. The automatic equipment provides for all the relaying functions of this office more economically, more rapidly, and more accurately than manual retransmission. Special types of automatic repeater apparatus were installed at other points in order to provide for through operation of telegraph circuits to eliminate manual rehandling.

LITIGATION

The Mackay-Oslo case.[5]—On appeal to the United States Court of Appeals for the District of Columbia, the Commission's decision, denying the applications of Mackay Radio & Telegraph Co. for modification of certain radiotelegraph licenses to add Oslo, Norway, as a primary point of communication, was affirmed. The court held that the findings of fact made by the Commission were supported by substantial evidence and were a proper basis for the Commission's conclusion that public interest, convenience, and necessity would not be served by a grant of the applications. The Commission's findings were discussed in our Third Annual Report at page 66.

The Rochester case.[6]—The Rochester Telephone Corporation claimed exemption under section 2 (b) (2). The Commission, after a hearing, denied the company's claim and entered an order classifying the company as subject to all provisions of the act applicable to wire telephone carriers. The carrier filed a bill in equity to set aside, annul, and enjoin the order of the Commission. A hearing was had in Rochester in May 1938 before a three-judge statutory court composed of Justice Manton, of the Circuit Court of Appeals, and Judges Knight and Burke, of the District Court. On June 20, 1938, the three-judge court rendered its unanimous decision sustaining the order of the Commission.

The basic questions involved in this case are (1) what type of influence and control Congress intended to include by the phrase "directly or indirectly * * * controlled by" as used in section 2 (b) (2) of the act; and (2) whether the Rochester Telephone Corporation is controlled directly or indirectly by the New York Telephone Co., with which it has a physical connection whereby it engages in interstate and foreign commerce in the manner contemplated by the section.

Section 2 (a) makes all carriers engaged in interstate or foreign commerce by wire or radio subject to the provisions of the act, but Section 2 (b) (2) exempts a carrier from the Commission's jurisdiction, except as to sections 201–205, if it is engaged in interstate and foreign communication solely through physical connection with the facilities of another carrier and is not directly or indirectly controlled by such other carrier. In sustaining the Commission the court pointed out:

> Congress has recognized the fact that there are many ways in which actual control may be exerted, such as stock ownership, leasing, contract, and agency. Congress also realized that control may be exercised "through ownership of a small percentage of the voting stock of the corporation, either by the ownership of such stock alone or through such ownership in combination with other factors." Broadly used, "control" may embrace every form of control, actual or legal, direct or indirect, negative or affirmative.

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[5] *Mackay Radio & Telegraph Co., Inc., v. F. C. C.*, 68 App. D. C. 336, 97 F. (2d) 641.
[6] *Rochester Telephone Corporation v. United States of America and Federal Communications Commission*, In Equity 2141, U. S. D. C., W. D. N. Y., decided June 20, 1938.

Although the Commission has issued a number of orders under this section, this is the first construction of it by a court, and it is important not only to this Commission but to other governmental agencies operating under acts containing the phrase "directly or indirectly controlling or controlled by."

Brief in Pacific Gas & Electric case.—Members of the regular and special investigation staffs collaborated on the preparation of an amicus curiae brief which was filed on behalf of the Federal Communications Commission in the Supreme Court of the United States in the case of *Railroad Commission of the State of California et al., Appellants*, v. *Pacific Gas & Electric Company, Appellee*, decided January 3, 1938, and reported in 302 U. S. 388. The Commission had no interest in the outcome of this cause insofar as the merits of the proceeding were concerned. Its sole interest arose from its belief that the court below had enunciated an erroneous principle of law—one which, if not reversed, would doubtless have a direct and important effect upon this Commission's statutory duties, powers, and discretion, particularly in relation to the fixing by it of the rates of common carriers engaged in interstate or foreign commerce by wire or radio and the valuing of the property of those carriers. The lower court's decision was reversed by the United States Supreme Court.

Part III

Regulation and Licensing of Broadcast Services

INTRODUCTION

Throughout the fiscal year there was received in the Commission a total of 6,941 applications for the various types of broadcast authorizations. There were 5,263 applications for formal grants and 1,678 requests for authorizations of an informal character, such as the use of broadcast facilities in an emergency, the temporary use of a station beyond the terms of its license, or experimental authorizations that gave promise of substantial contribution to the advancement of the radio broadcast art.[1]

That the growth of the broadcast industry as reported in previous annual reports is continuing is evidenced by the number of applications for new broadcast stations and for increases in the facilities of existing stations. From 127 applications for new broadcast stations and as a result of the proceedings held with respect thereto, the Commission found that public interest, convenience, and necessity would be served by authorizing the establishment of 47 of the new stations sought. These additions, after allowing for some deletions, brought the total number of broadcast stations holding authorizations from the Commission to 747.

A new class of station was established in the high-frequency broadcast service known as the noncommercial educational broadcast station. It is more fully discussed hereinafter at page 66.

Study was given during the year to the preparation of a uniform system of accounts for licensees of broadcast stations, and a proposed system has been submitted for the consideration of the Commission.

The development and progress of the various broadcast services and the activities of the Commission with respect thereto are discussed in the following sections of this report.

[1] See appendix D for more detailed information.

STANDARD BROADCAST SERVICE

FACILITIES

Allocation plan.—The basic plan of allocation of standard broadcast facilities in the band between 550 and 1600 kilocycles has continued unchanged insofar as the general plan of allocation of stations by frequency, power, and hours of operation is concerned. As in previous years, individual changes in assignment have occurred, however, as a result of the granting of applications, in the majority of cases after a hearing. Detailed discussions of the effect the new broadcast rules and standards of good engineering practice and the North American Regional Broadcasting Agreement will have on allocations within the regular broadcast band, are given in later sections dealing with these specific subjects.[2]

Number of stations.—As of June 30, 1938, there were 747 broadcast stations licensed or under authorized construction in the United States. Appendix E shows the total number of standard broadcast stations licensed or under construction, as well as the total number operating simultaneously during nighttime hours at the close of each of the fiscal years 1927 to 1938, inclusive.

Distribution of broadcast facilities.—In conjunction with the hearing of June 6, 1938, the Engineering Department made a study of the distribution of broadcast facilities within the United States. This study was made as of May 1, 1938, and the results are shown in this report as appendix F. On the basis of the assumptions made for this study, it was found that during the daytime 8.1 percent of the total population and 38.5 percent of the total land area are outside of the good-service area of any standard broadcast station, and that during the nighttime 17.4 percent of the total population and 56.9 percent of the total land area are outside of the good-service area of any standard broadcast station. The majority of the service received in these areas (which in general is far from satisfactory) is intermittent service [3] during the daytime and secondary service [4] during the nighttime from high-power clear-channel stations.[5] It will also be noted that during both daytime and nighttime approximately 15 percent of the urban population residing within the service areas specified do not receive satisfactory service from any station

[2] See pp. 8, 53.

[3] The intermittent service is rendered by the ground wave and begins at the outer boundary of the primary-service area and extends to the value of signal where it may be considered as having no further service value. This may be down to only a few microvolts in certain areas and up to several millivolts in other areas of high noise level, interference from other stations, or objectionable fading at night. The intermittent-service area may vary widely from day to night and generally varies from time to time, as the name implies.

[4] Secondary service is delivered in the areas where the sky wave for 50 percent or more of the time has a field intensity of 500 uv/m or greater. It is not considered that satisfactory secondary service can be rendered to cities unless the sky wave approaches in value the ground wave required for primary service. The secondary service is necessarily subject to some interference and extensive fading, whereas the primary-service area of a station is subject to no objectionable interference or fading.

[5] See also pp. 100, 101.

due to the fact that the ratio of signal intensity to noise intensity ("man-made static" caused by power lines, electrical equipment, etc.) is too low.

The distribution of standard broadcast facilities throughout the United States on the basis of authorized hours of operation, as of July 1, 1938, is shown below:

	Clear	Regional	Local	Total
Unlimited time	33	205	226	464
Limited time	25			25
Daytime	23	37	55	115
Sharing time	18	43	30	91
Specified hours	5	17	30	52
Total stations	104	302	341	747

Directional antennas.—The following table shows the number of directional antenna systems in use or authorized to be installed at the close of each fiscal year from 1932 to 1938. This type of antenna has proven very useful in reducing interference and in directing the signals to desired areas, thus improving the service. The effectiveness of the North American Regional Broadcasting Agreement is dependent to a large extent on the proper use of directional antennas and it is doubtful whether an agreement on the distribution of facilities among the several countries could have been reached without the utilization of directional antennas. As in the past, the present policy of the Commission does not permit the use of directional antennas on local channel frequencies, since such use is not feasible from an allocation standpoint, due to the large number of stations on these frequencies.

Number of directional antennas in use or authorized for use

	Fiscal year ended June 30						
	1932	1933	1934	1935	1936	1937	1938
Stations on clear channels	0	2	4	7	8	9	11
Stations on regional channels	2	4	11	20	25	39	53
Total	2	6	15	27	33	48	64

Applications received.—During this fiscal year there were received 1,916 applications concerning standard broadcast stations. This does not include the regular renewal applications which must be filed every six months. The fact that this number is considerably less than that received the previous year is undoubtedly due to the pendency of the proposed new broadcast rules and the North American Regional Broadcasting Agreement. Applications seeking the consent of the Commission to an assignment of broadcast license or permit numbered 83, and those seeking its consent to a transfer of control of licensee corporations were 96. The number of broadcast applications received each fiscal year from 1931 to 1937 is set out in appendix G.

Where it was not clear from an examination of these applications and the material submitted in connection therewith that public interest, convenience, and necessity would be served through a grant thereof, the matter was set for hearing and the applicant was given an opportunity to offer proof with respect to the merits of his application. Over 350 such hearings were held during the year. The vast majority of such cases were heard before a member of the Examining Department of the Commission, who submitted a written report of the facts appearing of record, together with his recommendations as to the action to be taken thereon by the Commission. Applicants or parties who received an unfavorable recommendation were allowed to file exceptions to such report and to have oral argument before the Commisison, pursuant to the provisions of section 409 (a) of the act. After a full and complete consideration of the entire record, the Commission then entered its Statement of Facts, Grounds for Decision, and Order in the premises. More than 250 such formal decisions on broadcast applications were approved by the Commission during this fiscal year.

New stations.—Forty-seven new standard broadcast stations were authorized by the Commission in the last fiscal year. The following table shows the class and the hours of operation of these newly authorized stations.

Class of station	Hours of operation	Number
Local channel	Unlimited	20
Do	Daytime, sharing, and specified hours	20
Regional channel	Unlimited	3
Do	Daytime	3
Clear channel	Unlimited	0
Do	Daytime	1
Total		47

Stations deleted.—There were five oustanding authorizations for standard broadcast stations which were either not renewed by the Commission or were forfeited or surrendered by the holder of the authorization.

The renewal applications of stations KWTN (Watertown, S. Dak.) and KGDY (Huron, S. Dak.) were denied by the Commission on May 25, 1938, because the stations were found to have been operated in violation of the Commission's rules governing the technical operation of broadcast stations, because the licensees thereof, through formal action of their officers and directors, were parties to a violation of section 310 (b) of the Communications Act, and because the licensees had demonstrated an unfitness to continue further in the operation of these stations. An appeal from the denial of KWTN's renewal application was pending at the close of the fiscal year.

An authorization granted to J. B. Roberts for a new broadcast station at Gastonia, N. C., was defaulted by the holder thereof through his failure to take affirmative action leading to the construction and the initial operation of the station. Station WMBQ at Brooklyn, N. Y., was denied its application for renewal of license because of the failure of the licensee corporation to show itself legally

qualified to continue the operation of the station. The facilities of this station were in the same proceeding granted to the Long Island Broadcasting Corporation and increased the facilities of station WWRL. The authorization granted to S. George Webb to construct a new station at Newport, R. I., was canceled by the Commission because of the holder's failure to take affirmative steps to start the construction and operation of the station.

The authorization held by station WRAX, Philadelphia, was transferred, by means of a formal proceeding, to station WPEN at Philadelphia for the purpose of effecting a consolidation of those two stations.

NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT

Scope.—The purpose and scope of the North American Regional Broadcasting Agreement [8] as set forth in the document "is to regulate and establish principles covering the use of the standard broadcast band in the North American region so that each country may make the most effective use thereof with the minimum technical interference between broadcast stations."

The part of the agreement which has to do with standard broadcasting will materially affect domestic broadcasting in the United States and is therefore discussed in detail.

Allocation of facilities.—The agreement provides a complete working basis for the allocation of facilities among the countries of North America. The 106 channels in the standard broadcast band between 550 and 1600 kilocycles are divided into three classes in order to enable the governments concerned to render service to the various types of people found throughout the North American region and at the same time to permit a maximum of service with a minimum of technical interference among the stations that share channels.

Classes of channels.—Three classes of channels are established, namely, local, regional, and clear. The purpose of a local channel is to accommodate low-power stations to serve centers of population and the immediately surrounding rural areas. Regional channels accommodate stations of medium power to serve large centers of population and extensive surrounding areas. The clear channels provide for high-power stations, which are primarily intended to serve large centers of population and the vast remote rural areas and the small urban communities scattered throughout North America that can be served in no other way with the limited physical facilities available. The agreement allocates the 106 channels as follows:

Local channels	6
Regional channels	41
Clear channels	59

The local channels are designed to accommodate numerous stations, and their use is shared by all of the governments that are parties to the agreement, provided the standards of allocation established by the agreement are complied with. The regional channels accommodate fewer stations than the local channels, and the clear channels in the main accommodate only a few stations.

[8] See also previous discussions of the conference and agreement at p. 8 of this report.

Classes of stations.—The agreement provides for the establishment of four classes of stations to be assigned to the three classes of channels described above. First, class IV stations (with low power, 0.1 to 0.25 kw), assigned to local channels; second, class III stations (with medium power, 0.5 to 5 kw), assigned to regional channels; third, class II stations (with a wide range of permissible power, 0.25 to 50 kw, depending on considerations of interference, service to be rendered, etc.), which are "secondary" stations operating on clear channels; and fourth, class I stations (with power of not less than 50 kw), operating on clear channels.

Service and interference.—The agreement provides for the protection of the service of the various classes of stations to established limits from interference due to stations operating on the same and adjacent channels. It provides for the protection of the primary service of class IV and class III stations and for the protection of the primary and secondary services of class I stations. To effectuate this reclassification of stations will require no drastic changes in the present allocation of, or service rendered by, stations in the United States. While the four classes of stations are new, all of these stations are now in existence as local, regional, daytime or limited-time, and clear-channel stations, and no new principles are established except that the stations operating experimentally on clear channels and the existing daytime or limited-time stations, which will become class II stations, are given a recognized status on the clear channels among the various countries. The class II station will enable the various governments to make the best possible use of clear channels without in any way impairing the rural service of the class I station.

Allocation of clear channels.—Under the provisions of the agreement "each country may use all of the 106 channels when technical conditions with respect to interference to established stations are such as to render such use practicable." However, priority of use on specified clear channels is recognized for the following number of class I and class II stations in each country:

Canada	*14
Cuba	9
Dominican Republic	1
Haiti	1
Mexico	*15
Newfoundland	2
United States	63

*Class II stations are to be operated on certain regional channels on condition that directional antennas to prevent objectionable interference to the existing class III stations are installed.

The agreement provides that in case of conflict between the allocations of broadcast stations proposed by or now existing within any two nations, these differences may be resolved prior to the effective date of the agreement.

Effect on United States stations.—Within the United States at the close of the fiscal year 1938 there were 747 licensed broadcast stations. Of this number 114 are provided for on the 59 clear channels established by the agreement. The remaining 633 stations are accommodated on the 41 regional and the six local channels. It will not be necessary to affect materially the service rendered by any one

existing station in order to put into operation the allocation provided for in the agreement. The principles of allocation and the engineering standards established are in the main those used at present within the United States or proposed by new rules governing broadcast stations. The agreement provides for possible increases in the maximum authorized power of most existing classes of broadcast stations in order that improved service may be rendered.

Effect of agreement.—At the present time there is no agreement for the allocation of broadcast facilities among the countries of North America, other than the bilateral treaty between Canada and the United States reserving certain channels for Canada that are not used by the United States. Heretofore the countries to the south have not been bound by any agreement that required them to respect the allocations and the service rendered by stations within the United States or Canada. This situation has resulted in a very serious problem of interference to numerous American stations. The North American Regional Broadcasting Agreement provides an equitable solution for these serious international problems without its being incumbent upon the United States to give up a single station, to change its plan of allocation, or to reassign operating frequencies in such a manner as to result in a material loss of service. The Commission has published the frequency changes that will result when the agreement is put into operation. Until the agreement is ratified by Canada and Mexico the date upon which it will become effective cannot be fixed.

NEW RULES AND STANDARDS

New broadcast rules.—The Commission, considering the continual and rapid advance in the art of broadcasting that has been brought about by the introduction of improved technical standards of operation, the refinements in equipment as applied to both transmitting and receiving installations, and the ever-expanding knowledge of the behavior of the transmission medium, has prepared and promulgated proposed new rules to govern the operation of standard broadcast stations. The existing rules, since their adoption by the Federal Radio Commission on October 3, 1933, have been modified only in certain details as the development of the art necessitated such action. The proposed new rules were prepared after an exhaustive study of the present technical state of the broadcast art. The Commission had the assistance during the preparation of the proposed rules of the voluminous testimony and the many exhibits presented at the broadcast-allocation hearing in Washington, D. C., from October 5 to 31, 1936. The purpose of this hearing was to afford the broadcast industry an opportunity to make recommendations concerning rules that it believed necessary for the good of the industry. The scope of the hearing, the types of data presented, and the specific recommendations made with respect to allocation problems were set forth in the Third Annual Report of the Commission.[10] The proposed rules will continue in effect most of the principles that are embodied in the

[10] See p. 41 of that report. For a detailed discussion of the social and economic aspects of radiobroadcasting as developed at this hearing, see the report thereon submitted to the Broadcast Division of the Commission by the engineering department, released July 1, 1937.

present rules, but with clarification and amplification wherever necessary to keep pace with technical developments. There are also proposed certain additional rules which are deemed desirable because of recent developments in the industry.

Separation of rules and engineering standards.—The complexity of the engineering problems encountered and the voluminous technical regulations and standards required by an industry such as broadcasting suggested the separation of the rules establishing certain methods and modes of operation from the detailed technical instructions as to how the rules should be carried out. This resulted in incorporating the former in the proposed "Rules and Regulations governing Standard Broadcast Stations" and the latter in the proposed "Standards of Good Engineering Practice concerning Standard Broadcast Stations (550–1600 kc)."

Enlarged scope of proposed new rules.—Among the new rules proposed to cope with the ever changing problems of broadcasting are the definitions of the "primary," "secondary," and "intermittent" service areas of a broadcast station.[11] The rules establishing the names of the several classes of broadcast stations are to be modified to provide for the use of the names established by the North American Regional Broadcasting Agreement.[12] The classes of channels are to be redefined to conform to the classifications established by the agreement. The classes, purposes, and power of stations will be established together with appropriate references to the "Engineering Standards of Allocation," which set forth the normally protected service contours for the various classes of stations. One of the proposed rules will establish the general requirements for obtaining an authorization for a new standard broadcast station or for increased facilities for an existing station.[13] The channels on which the different classes of stations will be allowed to operate are designated in section 31.5. Another rule will require the licensee of each standard broadcast station to provide a reliable clock in the transmitter room and in each studio control room.[14]

Standards of Good Engineering Practice.—Embraced within the Standards of Good Engineering Practice are the Engineering Standards of Allocation, in which are set forth the protected service signals and the permissible interfering signals for the different classes of stations, together with specific methods of making the field-intensity measurements and calculations necessary to determine the presence or absence of interference in a particular case; the specifications concerning directional antenna systems, transmitter locations, and minimum antenna heights or performance requirements; the specifications and established procedure for the determination of station power, the power rating of vacuum tubes, etc.; the minimum standards governing the construction, general operation, and safety-of-life requirements; the minimum specifications of indicating instruments, crystals, frequency-control units, modulation- and frequency-monitors; and the conditions under which the use of a common antenna for two or more stations would be authorized. Also included within the

[11] Sec. 30.11.
[12] See above, p. 54.
[13] Sec. 31.4.
[14] Sec. 33.16.

Standards of Good Engineering Practice are lists of approved frequency- and modulation-monitors and approved transmitting equipment, a list of the standard broadcast application forms and their use, a list of the Commission's field offices, and the average-sunset table.

Hearing concerning proposed standard broadcast rules.—The above-discussed rules were made the subject of a hearing that was held from June 6 to June 30, 1938, before a committee composed of three members of the Commission. At this hearing all parties were afforded an opportunity to appear and to present evidence concerning any rule. Preliminary to the hearing, the Commission made several extensive studies of the various phases of broadcasting in order to prepare exhibits that would assist the committee in its study of the issues involved in the hearing.[15]

Analysis of further survey of rural radio-reception conditions.—An analysis of the response to a postcard questionnaire sent to fourth-class postmasters during April 1937 was made by the Commission.[16] As set forth in the Third Annual Report of the Commission, this survey was conducted along the general lines of a similar survey of rural radio-reception conditions that was made in connection with the allocation survey conducted during the spring of 1935. The stations reported as being received by the listeners were divided between D. C. (dominant clear-channel stations) and R-L-D (regional, local, and daytime stations), and an analysis was made to determine the listeners' dependence upon the two general classes of stations for radio service both day and night. As an illustration of the type of data obtained from this questionnaire, there is incorporated the following table which shows for the United States the total class-of-station preferences of the listeners, based on the reports of their personal observations:

Class of station	First choice		Second choice		Third choice		Fourth choice	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Day							
D. C.	7679	59.1	6096	51.2	5397	52.4	4318	52.2
R-L-D	5318	40.9	5819	48.8	4912	47.6	3959	47.8
	Night							
D. C.	9958	81.4	8817	78.0	7779	78.3	6313	76.0
R-L-D	2273	18.6	2482	22.0	2155	21.7	1992	24.0

A further analysis of the questionnaire is summarized in the table reproduced herewith, which is based on the reports on the conditions of reception and on radio-receiver data from the personal observations of the listeners:

[15] See p. 59, *infra*.
[16] See also p. 60, *infra*.

Clear reception	Unsatisfactory reception	Response indicating reason for unsatisfactory reception				
		Local interference	Station interference	Weather	Weak signals	Miscellaneous
7104 D 6334 N	5555 D 6215 N	1549 D 1057 N	615 D 2582 N	2193 D 1861 N	211 D 56 N	179 D 164 N

Number not owning radios	Total number owning radios	Number owning radios for—				
		1 year	2 years	3 years	4 years	5 years or over
652	12,204	4,108	2,241	1,459	1,052	3,344

Study of propagation conditions.—The engineering department conducted a series of field-intensity recordings on a single broadcast station at several selected locations for the period April 15 to May 14, 1938. The results of these recordings were analyzed and curves of field intensity versus distance were plotted for the signal exceeded 10 percent of the time and 50 percent of the time for distances to approximately 1,100 miles from the transmitter. These propagation curves were then compared with the curves derived as a result of the 1935 allocation survey and it was found that the propagation conditions for the 1-month period embraced by the measurements were materially poorer than they were during the period of the allocation survey. The fields received at different distances from the transmitter varied from approximately 30 percent to 4 percent of those obtained during the allocation survey.

Study of service rendered by standard broadcast stations.—The engineering department prepared a study showing the areas and population within the 0.5 mv/m contours of all standard broadcast stations. This study was separated into an analysis of the coverage of dominant clear-channel stations for both daytime and nighttime operating conditions; an analysis of the coverage of other than dominant clear-channel stations, which include regional, local, daytime, and limited time stations, for both daytime and nighttime conditions; and an analysis of the total coverage of all stations for both daytime and nighttime conditions. Maps were plotted from which the areas within and without the service areas were determined for each State of the United States. This study included a separation of the populations residing in urban and in rural areas and the determination of the cities (and their populations) not having a radio station and not located within a metropolitan area or contiguous to a city having a station. This study of service is included as appendix F.

Interests represented at the hearing.—The groups appearing at the hearing reflected the interests of the numerous organizations and persons connected with the broadcast industry. The National Association of Broadcasters, the National Committee on Education by Radio, and the American Civil Liberties Union appeared and presented evidence concerning phases of the broadcast industry in which

they were respectively interested. Numerous individual licensees appeared in person and by counsel to protest or to present evidence concerning specific rules which they believed affected them. The testimony adduced at the hearing extended to 2,170 pages. In addition, several hundred exhibits were introduced and made a part of the record.

Major subjects discussed at the hearing.—The matter to which the greatest portion of the evidence presented at the hearing was directed concerned the proposals incorporated in the rules with respect to the maximum authorized power of the various classes of standard broadcast stations. It is proposed to fix the power of class I–A stations at 50 kilowatts. More of the evidence adduced at the hearing had to do with the retention or removal of this power limitation than with any other single issue. In connection with this testimony much evidence was presented concerning station coverage and program and service duplication.

The engineers appearing at the hearing presented evidence concerning many of the technical phases of broadcast station allocation including evidence dealing with the methods of determining interference, the use of directional antennas, the efficiencies of antennas, and the methods of computing power of broadcast stations. Considerable attention was devoted to a discussion of the variations in the efficiency of the transmission medium and the possible effect of changes in the sun-spot activity upon conditions in the ionosphere. Evidence was presented concerning limitations to service from electrical interference and atmospheric static. The effect upon service principally in the rural areas of variations in the transmission medium and thunderstorm activity was discussed.

FINANCIAL AND OTHER STATISTICAL DATA

Questionnaires.—Each licensee of a standard broadcast station authorized to operate in the band of frequencies from 550 to 1600 kilocycles was required to file with the Commission statements regarding income and property investment and other information.[17] This was followed by a request for income statements, balance sheets, and other information to be filed by broadcast networks.

Such licensees were subsequently required to respond to a questionnaire designed to develop data regarding employees and also to a questionnaire regarding the nature and types of programs broadcast during a selected period prior to the date of the questionnaire.

These questionnaires represent the initial effort of the Commission to develop rather extensive financial, operating, and other statistical data regarding broadcast licensees and broadcast stations and networks in the United States. The responses to these questionnaires constituted the bases for rather extensive tabulations of factual data reproduced for the information and use of the Commission and introduced in evidence in the hearing on rules and regulations governing standard broadcast stations (Docket 5072–A) which began on June 6, 1938.[18]

[17] Commission Order No. 38, approved April 25, 1938.
[18] See p. 57, *supra*. For more detailed information see appendix H.

Forms.—The Commission approved balance-sheet and income-statement forms to be used as a part of applications for broadcast licenses, designed to develop additional information of a financial or accounting nature.

Postcard survey.—A postcard questionnaire was directed to all fourth-class postmasters during the fiscal year, somewhat similar to the survey made in 1935, to develop certain limited information regarding broadcast reception in rural areas of the United States.[19]

[19] The results of this survey are discussed hereinbefore at p. 57.

THE FEDERAL RADIO EDUCATION COMMITTEE

Last year the Annual Report of the Federal Communications Commission gave a rather detailed report of the formation and organization of the Federal Radio Education Committee, appointed by the Commission in December 1935, for the purpose of eliminating controversy and misunderstanding among groups of educators and between the broadcasting industry and educators, and for promoting active cooperation between educators and broadcasters. The chairman of the Commission, at the annual meeting of the National Association of Broadcasters on February 14, 1938, called attention to the vital importance to the industry of giving such assistance as might be necessary to the Committee to enable it to carry out the constructive work which had been planned.

Originally, the program consisted of 18 studies. The executive committee reduced that number to 16 studies. By combining certain of the studies and eliminating others, the Committee of Six reduced the number to 9 studies, and the total amount of money estimated as being necessary to support the program from $257,800 to $250,500. This latter amount, it was agreed, would be divided three ways: two-thirds of it to be contributed by educational foundations and the remaining third by the broadcasting industry.

In June 1937 the Rockefeller Foundation completed negotiations to underwrite one of the major studies described at pages 45 ff. in our Third Annual Report. Funds were allocated to Princeton University to undertake the study which had been designed by Prof. Hadley Cantril. This study includes a detailed analysis of the effects of radio upon the listener. It involves many classifications of listeners, representing various ages, different cultural and economic levels, and a wide geographic distribution of residences. It seeks to ascertain the listening habits of these different groups, what information they have secured from radio, and what improvements or changes such listeners feel should be made. Still another aspect of the study will deal with the rather critical problem of grave concern to many, namely, the influences on children of certain types of radio programs.

Another of the studies has been undertaken by Ohio State University and is being financed for the first 2 years of its operation by a grant from the General Education Board. This study has to do with the question of evaluating radio broadcasts for schools. An examination is being made of selected programs in the more important subject-matter fields to ascertain what they are accomplishing and where they are falling short. Another phase of the study is expected to furnish guidance to teachers in selecting and using various types of school broadcast programs. Still another phase covers the development of techniques for evaluating various radio programs. The cooperation of some 60 schools, located at strategic points in four different areas of the United States, and representatives of

rural, town, and city districts, will be utilized during the progress of the study.

Details for carrying out the other phases of the program have not been completed, but the broadcasting industry has pledged its portion of the sum of money necessary to carry on the program, and it is expected that it will be undertaken in cooperation with the office of education and the executive committee. These remaining studies have been designed jointly by representatives of the broadcasting industry and specialists in the field of education. They are pointed at practical problems which confront both groups.

A survey to discover, analyze, and interpret successful efforts by local broadcasters to cooperate with civic and other nonprofit groups is expected to reveal ways and means of applying demonstrated successes to other communities. A study of the whole question of teacher training in the field of radio is another important aspect of the program. The increasing demand by teachers for assistance in the proper use of radio indicates the need for developing material which will be useful for prospective teachers in teacher-training institutions as well as for those in service. Still another phase of the study is the development of an experiment and idea exchange, from which the findings and resources of various experiments and experiences in commercial stations, universities, and other groups may be brought together and made available through a national clearing house. The first step in this experiment has been in operation for two years in the radio script exchange of the office of education. The enthusiastic reception of this service by schoolmen and broadcasters alike is a gratifying indication of the need for its further development. Effective methods of publicizing radio programs is still another problem to be studied with a view to developing specific ways in which educational programs may best be brought to the attention of radio audiences.

Out of these studies, it is expected, there will develop practical means for producing a workable piece of machinery for securing a pooling of experience through democratic processes, thus attaining working compromises and adjustments that will enable the educators and broadcasters to combine forces which will bring about the most effective use of radio as an educational medium.

BROADCAST SERVICES OTHER THAN STANDARD

There have been rapid growth, development, and progress in broadcast services such as relay, international, high frequency, television, and facsimile. However, few changes in the Commission's rules and regulations governing these services have been found necessary to keep step with this development. The effective date of rule 981 requiring frequency monitors for stations operating in these services has been continually extended until such time as it is considered that instruments of sufficient accuracy are obtainable.

The establishment of a new type of high frequency broadcast station to be licensed to nonprofit educational agencies and known as noncommercial educational broadcast stations was announced by the Commission January 26, 1938.[20] The steps leading to the establishment of this class of station are set forth on pages 45 to 50, inclusive, of the Third Annual Report of the Commission. The Rules and Regulations and Standards of Good Engineering Practice concerning this class of station have been established.

Twelve experimental authorizations have been issued to standard broadcast stations to broadcast facsimile signals on their assigned frequencies during the experimental period of 12 midnight to 6 a. m.

A complete analysis of the applications and the percentage increases of stations operating in the broadcast services other than standard is contained in appendix D.

INTERNATIONAL BROADCAST STATIONS

Reports of reception in foreign countries of programs transmitted by international broadcast stations in the United States indicate no material improvement in reception during the last year. This supports other evidence to the effect that the use of both increased station power and directional antennas is necessary to provide reliable broadcast service to certain foreign areas. Certain licensees have manifested an interest in better coverage as evidenced by the fact that several were increasing station power and erecting or improving directional antenna systems at the close of the fiscal year. The extent of the improvement in service which would result cannot be accurately predicted and it will necessarily take considerable time to collect information based upon actual observations.

Increases in station power result in a stronger signal and a better signal to noise ratio, thus improving reception through interference. With the use of conventional antenna systems the signals are radiated equally in all directions, and when the purpose is to reach a particular foreign area with a broadcast much of the energy radiated serves no useful purpose. The use of directional antennas concentrates the energy in the desired direction within the confines of certain horizontal and vertical angles determined by the design and adjustment of the system, thus materially improving the signal intensity in the country to be served. The International Radio Telegraph Conven-

[20] See p. 66, hereinafter.

tion, Washington, 1927, allocated certain frequency bands to the international broadcast services. Five of the frequencies assigned for use by the United States (6120, 9550, 11730, 15130, and 21500 kc) were subsequently known as the Pan-American frequencies and were assigned by executive order to the Navy Department for use by the Pan-American Union and were notified to the Bureau of International Telecommunications Union, Berne, Switzerland, as being United States Navy Department frequencies. These frequencies were included in the bands assigned to the international broadcast services under article 7 of the International Telecommunication Convention, Madrid, 1932. The frequency 6120 kc was subsequently made available to International Broadcast Station W2XE on a temporary basis, and the actual operation by W2XE has been largely responsible for that frequency's remaining comparatively free of occupancy by foreign stations.

The Seventh International Conference of American States, Montevideo, Uruguay, December 1933, adopted a resolution requesting that the Pan-American administrations utilize the five so-called Pan-American frequencies made available by the treaties, but it was not until the Pan-American broadcasting hour was inaugurated as a result of the Inter-American Conference for the Maintenance of Peace, Buenos Aires, 1936, that any real interest in the use of these frequencies was manifested by the Latin American countries.

The four unused Pan-American frequencies (9550, 11730, 15130, and 21500 kc) were made available for assignment for immediate use by the Commission on a temporary basis to existing international broadcast stations in the United States with the understanding that the frequencies would be surrendered to the Pan-American Union when desired and that share time operation of the frequencies would be permitted with the Pan-American countries. On this basis the Commission on September 22, 1937, amended rule 229 to include 9550, 11730, 15130, and 21500 kilocycles as "available for non-Government assignments to international broadcast stations on a temporary basis and subject to cancellation at the discretion of the Commission without advance notice or hearing."

On September 21, 22, and 23, 1937, a hearing together with oral argument was held on three applications for the Pan-American frequencies. The showing made by each applicant consisted principally of the past experimentation and programs and the future proposals with respect to research and program development. The Commission on February 1, 1938, issued its decision on the applications requesting the use of the Pan-American frequencies.

1. World Wide Broadcasting Co., Boston, Mass.—W1XAL (Docket No. 4843). The application of this licensee was granted in part to authorize the operation on the frequencies 11730 and 15130 kc.

2. National Broadcasting Co., Downers Grove, Ill.—W9XF (Docket No. 4844). The application of this licensee was denied.

3. The General Electric Co., Schenectady, N. Y.—W2XAD (Docket No. 4845). The application of this licensee was granted in full, authorizing the use of the frequencies 9550 and 21500 kc with power of 100 kw.

RELAY BROADCAST SERVICE

Stations licensed to operate in this service are used to relay programs from remote localities where wire lines are not available and

from boats, aeroplanes, or other moving conveyances for broadcast over standard broadcast stations. The popularity and need for relay stations are indicated by the percentage of increase in the number of such stations, as shown by appendix D.

Besides relaying customary events, the following unusual programs were among those transmitted to the public through relay broadcast stations:

1. Descriptions from planes in flight of the national parks in the United States, Boulder Dam, Grand Coulee Dam, Redwood Empire, and flood and fire-stricken areas.
2. Programs relayed in connection with the experimental transatlantic flight from New York to Europe July 3 to 5, 1937, and from the British plane Cavalier and the U. S.—Bermula clipper between Port Washington, N. Y., and Hamilton, Bermuda, May 27 and 28, 1938.
3. Test runs and races of Captain Eyston on the Bonneville Salt Flats, Utah, October 1937.
4. United States naval squadron flight from San Diego, Calif., to Honolulu, T. H., January 1 to 19, 1938.
5. Relay broadcasts in connection with the observance of National Air Mail Week, May 15 to 21, 1938.
6. Stratosphere balloon flight of Dr. Jean Picard, July 18, 1937.

VISUAL BROADCAST SERVICE

(*a*) *Television stations.*—Information available indicates that the technical phases of the television art are progressing in a satisfactory manner. However, it is generally agreed that television is not ready for standardization or commercial use by the general public. No applications for commercial authorizations were filed with the Commission during the fiscal year. Formal hearings were conducted on six applications for new experimental television stations.

Television has developed to the state where complete transmitting equipment is available on the market, but such equipment is costly and, because of the experimental status of the art, may become obsolete at any time due to new developments. A few of the existing licensees are attempting scheduled program transmissions as part of their research and development work.

(*b*) *Facsimile stations.*—There are two types of facsimile authorizations. Regular licenses may be issued to experimental facsimile broadcast stations intended for research, design, development, and service testing of facsimile equipment. Stations of this class generally operate on frequencies that can be received only by use of a special receiver or an all-wave broadcast receiver equipped with a facsimile recorder attachment. Special experimental facsimile authorizations may be issued to standard broadcast stations for the transmission of facsimile signals on their regularly licensed frequency during the experimental period (12 midnight to 6 a. m., L. S. T.).

The expectation of developing a service whereby the transmission of radio news flashes for record reception in the home will be made possible has resulted in the issuance of a greater number of authorizations for the transmission of facsimile signals by standard broadcast stations than by the experimental stations. It has also resulted in the development of several types of facsimile recording devices designed to operate either as a complete separate unit, incorporating the radio receiver, or as an attachment to a regular broadcast receiver.

HIGH-FREQUENCY BROADCAST SERVICE

High-frequency broadcast stations are classified in two general groups, depending upon the type of modulation used.

The system of modulation known as amplitude modulation is the system in most general use for speech and music transmission by radio. It was the first system developed and has long been used by standard broadcast stations. Amplitude modulation involves a system of varying the amplitude of the carrier current in accordance with the audio-frequency electrical current representing voice, music, or other sound.

The other type of modulation, known as frequency modulation, involves a system whereby the frequency of the carrier current is varied in accordance with the electrical current corresponding to music, voice, or other sound. This type of modulation has been the subject of recent extensive investigation by several experimenters. For optimum operation, this system requires a frequency band of emission approximating 200 kc when operating on frequencies approximating 40 megacycles.

The engineering information submitted by the 37 licensees of high-frequency broadcast stations operating on an experimental basis has not been sufficiently comprehensive for a conclusive determination of the propagation characteristics of the frequencies allocated to these stations. However, more data are being accumulated and after a full analysis has been made it is believed that adequate technical information will be available for an allocation of frequencies above 30 megacycles for a high-frequency broadcast service. Stations of this class increased 39 percent during the last fiscal year.

Available data concerning the use of frequency modulation in the high-frequency broadcast service indicate a material gain in the effectiveness of reception through static, especially the type of static resulting from nearby thunderstorms and from some types of man-made electrical disturbances. It is also shown that the signal-to-noise ratio necessary for satisfactory reception is considerably less than that required for the same reception with a broadcast system employing amplitude modulation. This results in good reception at a greater distance from the transmitter and a correspondingly larger service area for the same power used at the transmitter. The present disadvantage of this system is that the frequency band necessary is increased several fold over that required by a system employing amplitude modulation. No information, other than reports on preliminary tests, is yet available from the holders of the five construction permits for the erection of stations employing frequency modulation of this class.

NONCOMMERCIAL EDUCATIONAL BROADCAST STATIONS [21]

The term "noncommercial educational broadcast station" is used to identify a high-frequency broadcast station licensed to an organized nonprofit educational agency for the advancement of its educational work and for the transmission of educational and entertainment programs to the general public. Stations of this class will be licensed only to an organized nonprofit educational agency and upon a show-

[21] See also the discussion herein of the Federal Radio Education Committee at p. 61.

ing that the station will be used for the advancement of the agency's educational program. Each station may transmit programs directed to specific schools in the system for use in connection with the regular courses as well as routine and administrative material pertaining to the school system and may transmit educational and entertainment programs to the general public. No sponsored or commercial programs may be transmitted nor may commercial announcements of any character be made. Such a station may not transmit the programs of any other class of broadcast station unless all commercial announcements and commercial references in the continuity are eliminated.

Considerable interest in this class of station among the educational institutions in the country is indicated by the large amount of correspondence and the number of inquiries received by the Commission since the announcement of its establishment January 26, 1938. At the close of this fiscal year one construction permit had been granted to the Cleveland City Board of Education, and the erection of this station was well under way. One application for such a station was on file with the Commission at the close of the fiscal year. It appears that this class of station has every possibility of being highly valuable in the work of the educational systems throughout the country.

EXPERIMENTAL BROADCAST SERVICE

There were 15 licensed stations and two outstanding construction permits in the experimental broadcast service at the close of the fiscal year. Two applications were on file that had not received consideration by the Commission. There was an increase of 25 percent in the number of stations licensed in this service over those of last year.

Experimental research to determine the feasibility of operating a synchronized transmitter with a broadcast station without the use of wire-line connections between the two transmitters was successfully completed by one licensee with the following conclusions: (1) such a system may be utilized for improving coverage and broadcast service, and (2) synchronization with the transmitter of the broadcast station is practical without the use of wire-line connections between the two stations. An interesting technical feature characteristic of the system is that, under proper synchronous adjustment, the intensity of the resultant signal varies widely within very limited areas or zones without quality distortion. These minimum signal zones were comparatively small and were not found to be objectionable.

Another program of experimentation authorized to be carried out and of unusual interest is the development of the so-called telemobile station, designed to televise programs originating in remote localities for relay to the main television station for broadcast to the general public. It consists of two large motor vans containing the television-control apparatus and the 400-watt visual and 100-watt aural transmitters. This represents the first complete development of this type licensed for experimental operation.

USE OF BROADCAST FACILITIES IN EMERGENCIES

During the fiscal year broadcast facilities were used in several emergencies, generally in cooperation with other communication agencies. The emergencies which occurred during this year were mostly local in character and the use of broadcast facilities cannot be compared with the extensive use made thereof during the Ohio flood of the previous year. Undoubtedly there are numerous cases which do not come to the attention of the Commission wherein immeasurable service is rendered in giving warnings of storms and other hazards affecting the safety of life and property.

COMPLAINTS AND INVESTIGATIONS

Investigations of chain and other broadcasting.—Under the provisions of section 303 of the Communications Act of 1934, as amended, the Commission is given authority to make special regulations applicable to radio stations engaged in chain broadcasting. On March 18, 1938, by its order No. 37 the Commission initiated an inquiry into all phases of chain broadcasting and into the broadcasting industry generally, for the purpose of obtaining factual information upon which to base such future regulations or recommendations for needed legislation as the public interest, convenience, and necessity should require. A committee was appointed to conduct the inquiry, consisting of Commission Chairman Frank R. McNinch, chairman; Commissioner Thad H. Brown, vice chairman; and Commissioners Eugene O. Sykes and Paul A. Walker.

Hearings will be conducted under this order by the above-mentioned committee, during which all national and regional networks will be called upon to present full and complete information on their network operations and business relations, and individual stations will be called for examination on management, lease contracts, and the multiple ownership and concentration of stations in the same or affiliated interests. In addition, radio transcription and recording companies will be called to furnish information on that rapidly developing phase of the broadcasting industry. It is expected that numerous other persons and organizations will also avail themselves of the opportunity to present information concerning the industry.

General nature of complaints.—The majority of the investigations conducted with regard to complaints received concerning the program service of broadcast stations did not necessitate the holding of hearings. Other complaints involving possible violations of the Act and of the rules and regulations of the Commission, including the broadcasting of lotteries, medical programs, and fortune-telling programs, and the illegal assignments of licenses and transfers of the control of licensee corporations, have been investigated, and appropriate action has followed either by way of adjustment or by the designation of applications for renewal of license for hearing.

The Commission maintains complete records of the names and addresses of all officers, directors, and stockholders, of the amount and kind of stock held, and of all contracts affecting the conduct or the control of all licensees of standard broadcast stations.[22] This information is designed to show the citizenship of officers, directors, and stockholders, the ultimate control of a licensee corporation, and the relationship of managerial contracts, leases, and agreements for the sale of time to the actual operation of the station.

[22] This information is required to be filed under sec. 340.01 of the Federal Communications Commission Regulations.

All applications for standard broadcast facilities, including those for the regular renewal of a broadcast station license, are compared with these records to determine whether a change in ownership or a transfer of the control of a licensee corporation has occurred and also to determine what interests the licensees or stockholders may have in other stations.

Number of investigations.—At the beginning of the fiscal year investigations were pending against 30 stations, and during the year 114 investigations of stations were instituted. The number of investigations closed during the year was 65, leaving a total of 79 under consideration at the end of the fiscal year. All of the investigations closed during the year, except six, were adjusted informally.

LITIGATION

Civil.—During the fiscal year, 29 appeals were taken from final action by the Commission on applications for new or improved broadcast facilities. The 13 cases pending at the beginning of this fiscal year [23] were either dismissed by action of the appellant or decided on their merits by the court. The cases in which the United States Court of Appeals handed down a decision during this year are fully discussed in appendix I.

Petitions for writs of certiorari were filed with the United States Supreme Court in three of these cases. Two such petitions were denied,[24] and one was pending at the close of this year.[25]

One suit for injunction was filed in the District Court of the United States for the District of Columbia, seeking to restrain the Commission from taking certain action in connection with a certain group of broadcast applications. In this case the court denied the request for a writ of injunction. An appeal therefrom was taken by the petitioner, which was pending before the United States Court of Appeals for the District of Columbia at the close of this fiscal year.

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[23] See p. 16 of Third Annual Report.
[24] *Eastland Co. et al.* v. *F. C. C.*, 302 U. S. 735, 58 S. C. 120, 82 L. Ed. 37, and *Missouri Broadcasting Corporation* v. *F. C. C.*, 303 U. S. 655, 58 S. Ct. 75, 82 L. Ed. —.
[25] *Gross & Shields* v. *Saginaw Broadcasting Co.*, No. 123.

Part IV

Promotion of the Safety of Life and Property

INTRODUCTION

The Commission is continuing its study of methods for organizing all communication facilities, including all radio, telephone, and telegraph services, for the purpose of providing an immediate and efficient use of these facilities in connection with any sectional or national emergency.

The Seventy-fifth Congress added another purpose or objective to the functioning of the Federal Communications Commission in its administration of the Communications Act.[1] The new purpose is stated to be the promotion of "Safety of life and property through wire and radio communication." However, even prior to this amendment, the Commission had regularly licensed stations for operation in the police, marine, fire, aviation, and other safety services.

The ratification by the United States of the International Convention for the Safety of Life at Sea, London, 1929, and the passage of Public Law No. 97, approved May 20, 1937, have resulted in a great increase in the duties of the Commission with regard to maintaining radio for safety purposes on vessels of the United States and also with regard to the vessels of foreign countries that enter ports of the United States. The nature and effect of these laws were summarized in the Commission's Third Annual Report.[2] However, it was not until the past year that the additional work involved in the administration of the laws became fully apparent.

Under both the Safety Convention and Public Law No. 97, the Commission is authorized to grant exemptions from radio requirements when the vessels are navigated within certain specified limits, provided the Commission considers that the route and conditions of the voyage, or other circumstances, are such as to render the radio unnecessary or unreasonable for the purposes of the act and the treaty. During the past fiscal year the Commission received some 310 applications for exemption from radio requirements of law, and of these some 68 were set for hearing. The remainder of the applications either were withdrawn or were handled satisfactorily without the necessity of a hearing.

The requirements of the act with regard to the operation and maintenance of marine radio equipment, together with the detailed regulations of the Commission that were adopted in order to give effect to the broad generalizations contained in the law, have resulted in a very great number of violations, ranging from failure to carry some small piece of spare equipment to serious disregard of definite requirements contained in the law itself. As a result, the inspectors of the Commission served some 3,000 deficiency reports during the year. Because of the lack of personnel only the more serious of these violations could be referred to the law department for

[1] Public Law No. 97, 50 Stat. 189; 47 U. S. C. 151.
[2] P. 73

further proceedings. However, it is contemplated that with the forfeiture and mitigation provisions as now incorporated in the amended act it will be possible to work out a method of imposing penalties proportionate to the violation, which, with sufficient inducement for payment of the penalty without cumbersome court procedure, may permit the Commission with its present personnel to enforce more strictly the more important provisions of the law. We have handled these matters thus far by correspondence, under the belief that this was the proper course to pursue until such time as all parties could be afforded reasonable opportunity to become familiar with the law and its application.

Particular difficulty has been had with vessels of countries that were not a party to the Safety Convention, since these vessels were subject to the more strict provisions of the Communications Act when sailing from a port of the United States. It became necessary to assess forfeitures against two of these vessels, although such forfeitures were later mitigated in full when the vessels complied with the act.

The tests of the Howton burglar alarm reported in the Third Annual Report [3] have not been completed. A number of installations have been made. However, the number of these installations and the extensiveness of their use have not been sufficient to permit a proper decision to be made on the applications. A final decision was still pending at the close of the fiscal year.

[3] P. 73.

GREAT LAKES AND INLAND WATERS SURVEY

The Great Lakes and Inland Waters Survey was provided for in section 15, Public Law No. 97, which amended section 602 of the Communications Act of 1934, requesting and directing the Federal Communications Commission "to make a special study of the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and the inland waters of the United States, and to report its recommendation, and the reasons therefor, to the Congress, not later than December 31, 1939."

The Commission on May 26, 1937, designated Commissioner Brown to be in charge of the survey, including the selection of the necessary personnel.

A conference has been held with officials of the Department of Transport of Canada, in order to exchange views and to develop plans for cooperation in the conduct of the survey. Investigations have been instituted into the number and types of vessels, navigation conditions, the nature and extent of marine casualties on the Great Lakes, land-wire facilities, and existing radiotelegraph and radiotelephone facilities. The factual basis for recommendations with respect to radio communication requirements has received first consideration. Substantial progress has been made in these basic studies, and several of them were nearing completion at the close of this fiscal year.

The vessel survey, which includes an analysis of the types, tonnage, equipment, ages, and services of all commercial vessels on the Great Lakes operating under the American flag, is virtually completed. This study has been based upon questionnaires returned by owning and operating companies on the Lakes.

A study of the channels, routes, distances, ship lanes, and navigation aids has been conducted. A series of surveys of weather conditions and hazards to navigation has been undertaken. An analysis of the nature and volume of the commerce of the Great Lakes, including the ports at which the commerce originates and to which it is destined, the routes of movement, and the types of commodities, is being made.

A comprehensive study of marine casualties on the Great Lakes during the last two decades is nearing completion. This study includes the trends in marine casualties involving loss of life and damage to property on the Great Lakes, and an analysis of these casualties according to cause, type of vessel or vessels involved, and whether or not radio communication might have prevented or mitigated the losses.

A study of radio facilities on the Great Lakes now in process includes an analysis of shore radio stations and vessel radio facilities. This study is based upon returns from radiotelephone and radiotelegraph stations to questionnaires prepared by the survey.

In its studies and investigations the survey has had the benefit of the data relating to navigation and commerce on the Great Lakes that have been collected and published by other Government departments.

A number of Federal Government departments have a vital relationship to the promotion of safety of life at sea and on the Great Lakes. In recognition of this interest a general advisory committee has been formed. The membership of this committee includes representatives of the following executive departments and independent agencies:

Department of State, Treaty Division.
Treasury Department, United States Coast Guard.
Department of War, Board of Engineers for Rivers and Harbors.
Department of the Navy, Communications Division, Office of Naval Operations.
Department of Agriculture, Weather Bureau.
Department of Commerce:
    Bureau of Lighthouses.
    Bureau of Standards.
    Bureau of Marine Inspection and Navigation.
    Coast and Geodetic Survey.
United States Maritime Commission, Technical Division.
Federal Communications Commission.

The investigation has been directed toward the determination of the efficiency of radiotelegraph and radiotelephone communication facilities in the Great Lakes area. An engineering group for the Great Lakes and Inland Waters Survey work was organized by utilizing the services of the regular personnel of the Commission and an engineer especially employed for this purpose. In addition, communication personnel of the United States Coast Guard, Navy, Signal Corps, Bureau of Standards, and Lighthouse Service have rendered valuable cooperative assistance and are regularly available for consultation. Radio station facilities, personnel, and vessels of the respective Government departments have also been made available. Radio communication tests under practical conditions were made on Lake Huron, for the purpose of comparing the effectiveness of radiotelephony and radiotelegraphy from the standpoint of emergency and distress communications. Test transmissions made from a Coast Guard cutter at various points on Lake Huron were observed aboard other Coast Guard vessels off shore near Alpena, Mich., and on the beach at North Point, near Alpena.

Preliminary hearings were scheduled to be held on the Great Lakes and Inland Waters Survey, commencing July 18, 1938, at Cleveland, Ohio.[4]

Inland waterways other than the Great Lakes will receive study by the Survey, and the results thereof will also be included in the final report.

[4] Federal Communications Commission, Docket No. 5222.

MARINE SERVICES

The following classes of stations are licensed to operate in the Marine service: Coastal Telegraph, Marine Relay, Coastal Harbor, Coastal Telephone, Ship Telegraph, and Ship Telephone.

Although this service is operated for other purposes than the promotion of safety of life and property at sea,[5] the major objective is such purpose, and for convenience the discussion will not be divided.

Coastal telephone.—There has been no change in the number of coastal telephone stations operated, as reported in the previous fiscal year. Three American vessels, namely, the *Manhattan*, the *Washington*, and the *Matsonia*, were authorized to handle public telephone communications with these stations. This brings the total number of vessels in the world equipped to communicate with these coastal telephone stations to 24. New coastal harbor stations were authorized at Hialeah, Fla., and Lake Bluff, Ill., during the past fiscal year. Applications have been received and hearings held, but no decision has, as yet, been rendered by the Commission, on applications for the establishment of coastal harbor stations in Seattle, Wash., Port Sulphur, La., Port Washington, Wis., and Duluth, Minn. An application filed requesting additional facilities for the coastal harbor station now authorized at Lake Bluff, Ill., has been designated for hearing. An application to construct a public coastal harbor station at Memphis, Tenn., to communicate with vessels plying the Mississippi River, particularly vessels in the vicinity of Memphis, was denied after formal hearing.

Ship telephone.—As of June 30, 1937, there were 257 ship telephone stations licensed by the Commission to communicate with coastal harbor stations. As of June 30, 1938, this number had increased to 765.

Automatic alarms.—During the past year, 1,121 automatic alarms, approved by the Commission as reported in the last Annual Report, have been installed on ocean-going cargo vessels of the United States subject to the provisions of Public Law No. 97. In connection therewith, 20,000 copies have been compiled and distributed of a form, prepared for monthly submission to the Commission by vessels, showing the performance of this equipment, which data are being correlated for presentation to the Commission when final approval of this equipment is due to be considered prior to December 31, 1938. Subsequent to the tentative approval of the two types of alarm, official tests have also been conducted and performance recorded by observing the operation of auto-alarms in field offices of the Commission.

Studies made of the performance of this equipment disclosed that the auto-alarm signal transmitted by the coastal stations of Tuckerton, N. J., WSC, and Hialeah, Fla., WAX, at the time of the sinking of the Greek freighter *Tzenny Chandris* off Cape Hatteras on No-

[5] For a discussion of the common carrier service rendered by these stations see part II.

vember 13, 1937, was received by auto-alarms on 54 vessels. The transmission of the auto-alarm signal by the coastal stations at Bolinas, Calif., KPH, and Jupiter, Fla., WMR, at the time of distress involving the steamship *Nabesna*, while en route to San Francisco, Calif., from Astoria, Oreg., was intercepted by auto-alarms on 157 vessels.

Direction-finder apparatus.—No approval has yet been given for direction-finder apparatus. As a preliminary to the issuance of standard specifications and type-approval, statistics have been compiled as to the number of ocean-going vessels that are required to install direction-finding equipment, and studies have been and are being made with the view of ascertaining the most efficient equipment for installation on present vessels and those that will be constructed. A conference pertaining to this subject was held on May 23, 1938, with representatives of Government departments for the purpose of obtaining the benefit of experience with the performance of direction-finding equipment, and for the purpose of recommending changes for incorporation in future specifications to increase the efficiency of this equipment.

Record of sea disasters.—There have been no major sea disasters in the 12-month period covered by this report. A master record is maintained by the Commission and studies have been made of each case where vessels have been involved in distress. These studies require investigation as to the position of the vessel in distress, the position of each vessel that responded at the time of distress, and confirmation as to whether the auto-alarm installation responded to the auto-alarm distress signal. This fact is confirmed by collection of the original radio logs of each vessel, of which photo copies are made for future reference and for association with the individual cases. Charts also are compiled showing the position of each responding vessel and of the vessels that failed to receive the auto-alarm signal either manually or by means of the auto-alarm equipment. In the latter cases an investigation is made to ascertain the reason for the failure to receive the auto-alarm or distress signal.

Equipment.—In order to insure compliance with section 354 (e) of the Communications Act of 1934,[6] the Commission on January 18, 1938, modified the Ship Radiotelegraph Safety Rules with respect to the minimum standards for ship radio equipment. This modification met with objection from the shipowners, and, after an informal conference held on April 21, 1938, the matter of the modification of the rules was designated for a formal hearing scheduled for November 14, 1938. A number of other modifications of the Ship Radiotelegraph Safety Rules were made in the interest of raising the standards of operation and for the sake of clarity. These modifications have in general been well received by the industry and have had the desired effect.

In accordance with section 356 (a) (2) of the Communications Act of 1934, inspections have been made, tests conducted, and ap-

[6] This section requires that the main installation shall have a normal transmitting and receiving range of at least 200 nautical miles, that is to say, it must be capable of transmitting and receiving clearly perceptible signals from ship to ship over a range of at least 200 nautical miles by day under normal conditions and circumstances. The reserve installation, by subsection (f) of this section, must have a range of at least 100 nautical miles under the same conditions and circumstances.

proval given to three types of radiotelegraph transmitters manufactured by a commercial firm which meet the specifications of the Ship Radiotelegraph Safety Rules of May 21, 1937, for a main transmitter. Also one type of transmitter manufactured by the same firm was approved as meeting the specifications of these rules for a combined main and emergency transmitter. Four transmitters manufactured by a second commercial firm and one manufactured by a third firm have been inspected and tested and are now awaiting consideration. Preliminary tests relative to possible specifications for ship radio receivers have been made, and are at present in progress.

Marine safety watch.—Special marine safety watches were established at Baltimore, Md., and Portland, Oreg., for the purpose of securing information in the marine radio service in connection with the Commission's study of the safety of life and property at sea. Special marine receivers, auto-alarms, and frequency-measuring apparatus were installed at these stations. They are manned on a 24-hour basis. The personnel of the stations is charged with the duty of observing the conditions prevailing in the marine radio service, particularly during the periods when ships are in distress, whether or not any undue interference is caused by other stations that prevents the speedy handling of the distress calls or the messages relating thereto, interference to hydrographic, medico, or other urgent messages, occupancy of the various ship-frequency bands, performance of auto-alarms, and general adherence to the international procedure in the marine service.

AVIATION SERVICES[1]

The aviation service in the past year has been marked by a steady but not spectacular growth. On October 13, 1937, in connection with the general allocation of frequencies above 30000 kilocycles, the Commission set aside certain frequencies for the aviation service. Four frequencies were provided between 30 and 60 megacycles for instructional aviation. Above 60000 kilocycles, frequencies were set aside for instrument-landing, markers, airport-traffic control, and general aviation-communication purposes. Great interest has been shown in their capabilities, and a great deal of research is being conducted. It is expected that within the next fiscal year instrument-landing systems and other facilities will be available within the United States.

At the present moment tests are being conducted for the use of the ultra-high frequencies between New York and Pittsburgh, and installations for instrument-landing systems are being made at several of the major airports.

[1] See also p. 94 (under Experimental Services).

EMERGENCY SERVICES

In the emergency service, the Commission authorizes the operation of State and municipal police, marine fire, forestry, and special emergency stations. The function of this group of stations is regulated by the rules governing emergency services adopted in June 22, 1938, which embody the Commission's policy with respect to such stations.[8]

Before the adoption of these rules, no specific provision had been made for the licensing of forestry stations as such. All those interested in the use of radio for forest protection have been licensed to use special emergency stations. In view of the growing importance of the use of radio for these purposes, and since specific frequencies therefor have been allocated, it was decided to classify them separately. Inasmuch as this is a new service, in which very little experience has been obtained, the rules as now promulgated provide only generally for the operations of and restrictions on stations in this class. Further detailed rules may be found necessary, and if this proves to be the case they will be promulgated from time to time.

Under the policy of the Commission in force previous to the adoption of these rules, the use of the frequencies above 30000 kilocycles was authorized on an experimental basis only and all licensees were required to accept experimental licenses subject to cancelation and subject to changes in frequencies when permanent allocations were made. In adopting the rules and regulations on June 22, the Commission announced that the experimental licenses now outstanding, covering these emergency services, would not be renewed on their expiration, October 1, 1938, but that it was expected by that time that all licensees would request permanent licenses under the new rules and regulations. From all reports received from licensees up to the close of the fiscal year, it appeared that these new rules were meeting the needs of the services concerned and would materially aid in the use of radio in connection with the safety of life and property in the United States.

Several carriers (both telephone and telegraph) have requested and been granted licenses for special emergency stations to be used to replace interrupted wire or cable circuits and to aid in their rehabilitation. The details of interruption are discussed elsewhere in this report.[9] These stations have proved of great value in maintaining continuity of communication in case of disaster.

The use of radio in the emergency service has steadily grown and the expectations of the Commission as to its value, discussed in previous reports, have been fully realized.

[8] See also pp. 69, 70, and 72 of our Third Annual Report.
[9] See pp. 90 and 91.

Part V
Other Licensing Functions of the Commission

INTRODUCTION

The licensing of radio stations other than those in broadcast service experienced a very substantial increase in volume and demand for the consideration of the Commission.[1] This was brought about somewhat by the reallocation of the frequencies above 30000 kilocycles to various radio services.[2]

The Miscellaneous Radio Services discussed hereinafter [3] include geophysical, motion-picture, and mobile-press service.

The fixed services discussed hereinafter [4] include the stations that have been licensed to operate as common carriers in either the telephone or the telegraph service. To the extent that the Commission regulates their rates and tariffs, supervises their accounts, and gathers financial and other statistical data therefrom, they are mentioned in part II of this report. The licensing of these stations and the consideration given thereto by the Commission are discussed in this Part of the report.

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[1] The licensing activities of the Commission with respect to aviation, marine, and emergency radio stations is discussed at pp. 79, 82, 83. For more detailed information see appendix J.

[2] Commission Order No. 19, 4 F. C. C. 30.

[3] At p. 98.

[4] At p. 88.

FIXED SERVICES

All the licensees in these services (with the exception of the Alaskan stations and one licensee in the United States) are engaged in radio communication as carriers. The extent to which the Commission regulates their rates and tariffs, supervises their accounts, and secures financial and other statistical data from them, is discussed hereinbefore.[5]

FIXED PUBLIC RADIOTELEPHONE SERVICES

In addition to renewing the licenses for these services that had previously been granted by the Commission,[6] the Commission considered and acted on several requests for extensions or the establishment of new services.

American Telephone & Telegraph Co. application for special experimental license.—The application of the American Telephone & Telegraph Co. filed on February 9, 1937, seeking a special experimental license for communication to any fixed point beyond the continental limits of the United States, was heard before the Telephone Division on July 29 and 30, 1937. The applicant proposed to utilize 21 frequencies licensed for trans-Atlantic radiotelephone service at Lawrenceville, N. J., in connection with this project. The hearing disclosed that the applicant was interested at that time only in experimental research in connection with the establishment of direct circuits to Rome (Italy), Berne (Switzerland), Berlin (Germany), and Moscow (U. S. S. R.). The Division permitted an amendment to the application by limiting research to the four points mentioned above. Subsequently, on August 3, 1937, the American Telephone & Telegraph Co. filed 21 applications for modification of all the point-to-point radiotelephone licenses in the fixed public service, requesting the four additional points of communication for the establishment of commercial circuits. The hearing on the application for the special experimental license was continued until September 13 and the applications for modification of the fixed public licenses were designated for a hearing on the same date. As the applicant had made a previous motion to dismiss its application for experimental license insofar as it related to Berne (Switzerland), Rome (Italy), and Berlin (Germany), the Commission subsequently granted this motion. On November 10, 1937, the Telephone Division granted the application of the American Telephone & Telegraph Co. to establish commercial circuits to Berlin (Germany), Rome (Italy), and Berne (Switzerland). In addition, it authorized this company to conduct experimental research with the view of determining whether a direct radiotelephone circuit from the United States with Moscow (U. S. S. R.) would be commercially feasible. As a result of the prelimi-

[5] Rates and tariffs, p. 25; Supervision of accounts, p. 30; Financial and other statistical data, p. 33.
[6] See previous annual reports.

nary tests that were conducted, it did not appear that the volume of business that would be handled over a direct circuit between these two points would be of sufficient quantity to justify providing a commercial service. However, experimental research over the indirect route utilizing the New York-London radiotelephone circuit and wireline facilities between London and Moscow and an alternate route via Paris indicates a commercial possibility. Therefore, at the present time, efforts are being concentrated along these lines.

Application of the American Telephone & Telegraph Co. for an additional trans-Atlantic circuit.—On May 11, 1937, the American Telephone & Telegraph Co. filed an application for authority to operate on two additional frequencies to be used in connection with the establishment of an additional high-frequency radiotelephone circuit to Europe. These two frequencies represented two of a necessary complement of five frequencies required to establish a fifth circuit. The application was submitted for hearing before the Telephone Division on August 10, 1937, and was granted as of that date. On September 14, 1937, a hearing was held before the Division with respect to two additional frequencies to supplement the frequencies authorized by the Commission on August 10, 1937. These frequencies were granted on September 29, 1937. The American Telephone & Telegraph Co. later submitted an application for the fifth frequency to complete the complement of the frequencies necessary for the establishment of a radiotelephone circuit on a commercial basis, which application was granted without hearing.

Growth of overseas radiotelephone traffic.—Since the inauguration of trans-Atlantic radiotelephone service in 1927, the number of paid messages handled in both directions has steadily increased. For the calendar year 1927 only 2,296 paid messages were transmitted and received. This traffic increased to a total of 14,639 messages for the calendar year 1930 and to a total of 34,938 paid messages in both directions for the calendar year 1937. During the first 6 months of the calendar year 1938 a total of 15,865 messages were handled.

Extension of overseas services.—During the period July 1, 1937, to June 30, 1938, covered by this report, the overseas services offered by the American Telephone & Telegraph Co. have continued to expand as noted below.

While the present extension consists of service to a single point within a given country, it is reasonable to expect that service will be extended throughout those countries in the very near future as economic conditions tend to prove that such extensions are justified.

R. C. A. Communications, Inc., application to add Tokyo, Japan, as a primary point of communication.—On May 29, 1937, R. C. A. Communications, Inc., submitted an application to modify two of its point-to-point radiotelephone licenses at Kahuku, T. H., to add Tokyo, Japan, as a primary point of communication in addition to those now authorized at this location. The Commission designated the application for hearing and the hearing was conducted before the Telephone Division on October 18, 1937. As a result of this hearing the Telephone Division on November 3, 1937, granted the application for the modification of license requested. During March, 1938, the radiotelephone circuit between Honolulu, T. H., and Tokyo, Japan, was opened on a commercial basis, and telephone service is now avail-

able from all telephones in Hawaii to those in Japan through the facilities of connecting land lines.

Radio Corporation of Puerto Rico application to add Port au Prince, Haiti, as a primary point of communication.—On August 24, 1937, the Radio Corporation of Porto Rico, a subsidiary of the International Telephone & Telegraph Co., submitted an application to modify one of its point-to-point radiotelephone licenses in the fixed public service at San Juan, Puerto Rico, to add Port au Prince, Haiti, as a primary point of communication in order to establish a new radiotelephone circuit between Puerto Rico and Haiti. The application was designated for hearing and the matter was heard on March 3, 1938. From the evidence adduced at this hearing, the Commission determined that it was in the public interest and convenience to authorize the establishment of such a circuit and granted the application on June 28, 1938. The circuit was not open on a commercial basis as of June 30, 1938, but it is anticipated that telephone service will be available within a short time.

Disruption of radiotelephone facilities to Shanghai.—On October 12, 1937, the American Telephone & Telegraph Co. notified the Commission that all regular radiotelephone communications between the United States and Shanghai had been disrupted due to the existence of war conditions in Shanghai, and requested authority to communicate with Canton, China, for the purpose of handling paid-message traffic to the interior of that country. This temporary authority has been renewed from time to time, and service to Shanghai has not been resumed to date.

Additional extensions of overseas services.—In addition to the above-mentioned extensions of overseas radiotelephone services, the service of the American Telephone & Telegraph Co. has been expanded as follows:

July 1, 1937—Sofia, Bulgaria.
July 15, 1937—Jamaica interconnected via the United States with Europe, Bermuda, Hawaii, Philippine Islands, and Netherlands and with ship subscribers.
September 20, 1937—Port au Prince, Haiti.
December 15, 1937—Bagdad, Iraq.
April 27 and May 20, 1938—Additional localities in Sao Paulo, Brazil.

A table showing the overseas countries and territories to which telephone service is available from the United States as of June 30, 1938, is shown in Appendix K.

Failure of submarine telephone cable to Block Island, R. I.—On August 20, 1937, the New England Telephone & Telegraph Co. advised the Commission that partial failure of the submarine cable between Green Hill and Block Island, R. I., operated by the United States Coast Guard, carrying four telephone circuits, had occurred, and that complete failure appeared imminent, unless repairs were accomplished immediately. All communication facilities to the island would necessarily be completely interrupted during the period of time necessary to repair the cable. The New England Telephone & Telegraph Co., therefore, submitted an emergency request for special temporary authority to establish a connecting radiotelephone circuit between its coastal harbor station WOU, at Green Harbor, Mass., and a station on Block Island, in order to provide facilities for the

protection of life and property. Recognizing the serious emergency which existed, the Commission on that date granted authority for the establishment of such a temporary radiotelephone circuit. During the period of interruption, the telephone company handled a considerable number of telephone messages to the island. Repairs were completed on August 27, 1938, and the use of the temporary radiotelephone was then discontinued.

The use of radio during the Southern California flood.—On March 2, 1938, there occurred in the vicinity of Los Angeles a storm and flood which subsequently were reported to have been the worst experienced in 61 years. This storm resulted not only in considerable loss of life and property but in serious interruption of the land-wire facilities in that vicinity, creating a condition recognized as a major disaster. Considerable damage was done to the plant and trunk-line cable facilities as the result of numerous washouts on highways, bridges, and flood conditions in general. During the entire period of the flood, the telephone facilities within the area were taxed to capacity, and communication to the outside world was cut off except through the medium of radio communication. In order to provide communication from the disaster-struck counties surrounding Los Angeles, the Commission authorized the coastal harbor station at San Francisco to communicate with Los Angeles during the period of the emergency. Important distress communications were handled successfully during the evening and nighttime hours. However, due to the fact that the stations were not equipped for frequencies possessing the proper propagation characteristics for daylight transmission over land, it was impossible to operate successfully during daylight hours.

FIXED PUBLIC RADIOTELEGRAPH SERVICES

At the end of this fiscal year there were 434 point-to-point radiotelegraph stations licensed for fixed public service (a decrease of 5 stations for the past year), 58 licensed for fixed public press service (a decrease of 17 stations), and 7 licensed for agriculture service in the United States and its Territories (except Alaska) and possessions, subject to the jurisdiction of the Commission. Although the majority of these stations are licensed for, and operate primarily in, the international and overseas service, the figures include 175 stations that conduct domestic communications. Of this number, 69 stations operate exclusively in the domestic service, mainly between large cities. The use of frequencies above 6000 kilocycles for domestic service is granted on the condition that such use shall not interfere with international service. With the exception of those licensed for agriculture service, each licensee may transmit only public correspondence pursuant to tariffs filed with the Commission and service messages incidental to the expeditious movement of this traffic. Addressed program material to overseas points and press service to two or more fixed points and to ships at sea are included among the classes of traffic handled as public correspondence in conformity with the established tariffs.

Hearst Radio, Inc., informed the Commission that it was discontinuing all operations in the point-to-point fixed public press service of its stations located at Carlstadt, N. J., Tinley Park, Ill., and Redwood City, Calif., effective December 31, 1937, and relinquished its

frequencies to the Commission for reassignment to other services. This action leaves Press Wireless, Inc., as the only company licensed to operate a fixed public press service.

The Southern Radio Corporation also notified the Commission of the cessation of its operation of two point-to-point telegraph stations in the fixed public service located at Linden, N. J., which were licensed to communicate with Bolivia, effective May 31, 1938. However, very little public correspondence had been transmitted between the United States and Bolivia over the facilities of this company. Their deletion, therefore, had no material effect on the communication service between the United States and South America.

During the past year the Government of Puerto Rico deleted all points of communication authorized outside the island of Puerto Rico. Such points of communication had been inactive for a number of years and were being maintained solely for the purpose of emergency communications during flood, hurricane, etc. However, their maintenance was not deemed necessary in view of the provisions of Federal Communications Commission Rule 213, which may be invoked in time of disaster to obtain the same results.

Applications of R. C. A. Communications, Inc., Mackay Radio & Telegraph Co., Inc., Press Wireless, Inc., and Hearst Radio, Inc., for additional frequencies to be used in point-to-point telegraph service.—After hearings on these applications, R. C. A. Communications, Inc., was authorized to use two new frequencies in the 2000-kc band and Mackay & Radio Telegraph Co., Inc., two new frequencies in the 2000-kc band. Press Wireless, Inc., was granted renewal of licenses for two stations in conformity with its existing licenses, which permitted at each station the use of one frequency and the temporary use of an additional frequency for a limited period, and upon condition that one of the frequencies would be thereafter released. Hearst Radio, Inc., was granted the unlimited use of one frequency heretofore licensed for daytime operation only, the unlimited use of one new frequency in the 15000-kc band, and the use of one new frequency in the 7000-kc band for nighttime operation only. The grants to Hearst Radio, Inc., were made subject to certain conditions, including the requirement for filing certain traffic reports showing the extent to which such frequencies were used, and the Commission's future determination that the volume of traffic to primary points was sufficient to justify a need for the use of such frequencies.

Applications of Mackay Radio & Telegraph Co., Inc., to add Rome (Italy) and Warsaw (Poland) as primary points of communication.—Hearings were completed on these applications to modify certain licenses of the Mackay Radio & Telegraph Co., Inc., so as to add Rome and Warsaw as primary points of radiotelegraph communication for the extension of its existing international services. Examiners' reports were submitted recommending that the applications be denied. Exceptions were filed to the reports, and oral argument was held before the Commission. At the close of the fiscal year these matters were pending decision by the Commission.

Applications of Globe Wireless, Ltd., Press Wireless, Inc., and R. C. A. Communications, Inc., for new frequencies.—Near the close of the year a consolidated hearing was begun before an examiner upon the applications of Globe Wireless, Ltd., Press Wireless, Inc., and

R. C. A. Communications, Inc., for additional frequencies to be used in their public point-to-point radiotelegraph service, one frequency being requested by R. C. A. Communications, Inc., also for use in its public radiotelephone service. One frequency was applied for by all three companies, three frequencies by both Press Wireless, Inc., and Globe Wireless, Ltd., one frequency by Press Wireless, Inc., only, and three frequencies by Globe Wireless, Ltd., only. Seven of these frequencies were formerly licensed to Hearst Radio, Inc. The primary considerations involved were the extent to which a need could be shown for these frequencies and the use which would be made thereof if granted. The hearing had not been completed at the close of the year.

Applications of Press Wireless, Inc., to add telephone emission.—Near the close of the year covered by the Third Annual Report of the Commission, Press Wireless, Inc., which is licensed to transmit public press correspondence in both the domestic and international fields, submitted an application requesting authority to add telephone emission for the transmission of press material for public dissemination. This application departed from the existing rules and regulations governing the operation of stations in the fixed public press service and was, therefore, made the subject of a hearing. At the hearing the applicant submitted its proposal to establish three new types of service in addition to those now recognized. These were (1) transmission of multiple address messages by radiotelephony; (2) transmission of press material between two fixed points by radiotelephony; and (3) the transmission by radiotelephony of addressed program material for rebroadcast purposes, publication in newspapers, and other methods of public dissemination.

The hearing was held April 4, 1938, and was pending the decision of the Commission at the close of the fiscal year.

Applications of Globe Wireless, Ltd., to add Habana, Cuba, as a primary point of communication.—On January 25, 1937, Globe Wireless, Ltd., filed six applications to extend its radio-communication service to Habana, Cuba. The Commission on August 17, 1937, designated these applications for hearing. At the close of the fiscal year the hearing was still pending awaiting decision of the Commission on other Globe Wireless, Ltd., matters which might affect the proposed extension to Habana.

Investigations of propagation of radio waves.—Active research has been conducted by commercial communication companies during the past year on the propagation of radio waves. A large amount of data has been collected but there is still need for experimental data on the use and characteristics of the ultra-high frequencies.

Experimental investigations of the propagation of radio waves are being conducted both by means of the direct determination of the ionization of the upper atmosphere, commonly called Kennelly-Heaviside layer or the ionosphere, which is responsible for the propagation of radio waves to great distances by means of repeated refractions or reflections between the conducting surface of the earth and the ionized regions of the upper atmosphere, and by means of the transmission of messages on an experimental basis under conditions simulating those in practical operation.

Authority was granted by the Commission on January 25 to the Cruft Laboratory, Harvard University, to operate a special experimental station for the purpose of conducting ionosphere measurements. The equipment authorized operates in the same manner as that used by the Bureau of Standards and the Carnegie Institute of Washington. It is designed to make a complete record of the state of ionization of the upper atmosphere without causing interference to existing radio services.

During the past year approximately 2,505 stations conducted research in connection with the determination of the reliability and practicability of certain frequencies for specific services. Correlation and analysis of the technical data obtained from this experimentation will be extremely valuable to the Commission in assigning frequencies to specific services.

Developments of aids to aviation.[7]—In the past year considerable research has been conducted in connection with the development of aids to aviation. Results of this research indicate that there is a definite need for the ultra-high frequencies for aeronautical purposes.

During the past year continued improvements and new developments in instrument landing systems have been made. It is anticipated that such systems will be developed to the point where they can be established on a permanent or regular basis in the near future. These systems, when perfected, will permit aircraft to land at suitably equipped airports irrespective of the visibility.

From the beginning of aviation there has been a definite need for a positive and accurate method of indicating the height of aircraft above ground. Air-pressure types of altimeters have been highly developed and are in general use. These devices, however, are subject to error due to atmospheric conditions. Reports of experimentation with radio devices indicate that instruments that will provide a posi-

[7] See also p. 82.

tive and rapid determination of the altitude may soon be available. At present there are two methods under investigation. One method depends upon the reaction of the earth on an electrical circuit, the second is obtained by means of transmitting a short pulse of ultra-high frequency emission and determining the time interval elapsing before the echo returns, much in the same manner as the time delay of audio echoes is employed in depth finding in the marine service. A number of different systems are under investigation for determining the position of aircraft while in flight.

Apparatus for use on the ultra-high frequencies.—Considerable progress has been made in the development of the equipment for operation on the ultra-high frequencies. This is particularly true with respect to apparatus designed to operate on the frequencies above 300000 kilocycles. The equipment in general shows a marked dissimilarity to the conventional type operating on the lower frequencies not only with respect to the vacuum tubes employed but with respect to the associated circuits as well. Although such apparatus is not commercially available at the present time, recent developments in the laboratories indicate that such equipment can be constructed so as to give excellent operating characteristics.

Revision of experimental rules.—The Commission has been actively engaged in the study and revision of the rules and regulations governing the experimental service. The primary objective is to broaden the existing rules so as to encourage all forms of scientific research, and to facilitate the administration of the experimental service.

ALASKAN STATIONS

The Commission has now established an office at Anchorage, Alaska. However, because of the vast differences in, and the difficulty of, transportation, the Commission continues to employ a very lenient attitude with regard to the waiving of certain technical requirements in the matter of both operator and station licenses. Likewise, the Commission continues to function to some extent through the medium of the Alaska Communications System, a division of the Signal Corps of the Army, and very largely relies upon its recommendations with respect to station licenses. The procedure for bringing these matters to the attention of the Alaska Communications System was modified and clarified to some extent during the year. Over a period of years the communications system established by the Alaska Communications System has undergone a steady change, the main feature of which is that wire lines have been gradually abandoned in favor of radio systems.

On July 8, 1937, this system was extended by the establishment of a radiotelephone link between Seattle, Wash., and Juneau, Alaska, a distance of 890 statute miles, for the transmission of telephone messages between continental United States and the Territory of Alaska. The Alaska Communications System station at Seattle, Wash., connects with the land-line system of the American Telephone & Telegraph Co. and its associated companies. However, communication to Alaska is limited to the Alaska Communications System station at Juneau and one telephone in the territorial capitol at Juneau, due to lack of suitable land-line facilities within the Territory.

While the establishment of an office in Alaska has been of considerable benefit in its regulation of Alaskan stations, the Commission nevertheless recognizes the fact that there is much room for further improvement, and will therefore continue to cooperate in every manner possible with the Alaska Communications System and with other governmental agencies in Alaska.

A conference with the Alaska Aeronautics and Communications Commission was held at Juneau on August 6, 1937, and, as a result, the rules and regulations of the Commission governing the various classes of stations in Alaska, other than broadcast and amateur stations, were amended. Specific frequencies were set aside for various aviation chains in Alaska, and a policy of operation similar to that in effect in the continental United States was adopted. Under the plan, two specific chains of stations were provided for use in Alaska by aircraft flying normal routes, and what appears to be an adequate number of frequencies, considering aircraft operation, was assigned each of these chains. In addition, special frequencies were made available in Alaska for use by aircraft having no regular or specific route. These modifications of the rules have materially improved the communication situation in Alaska. However, there is further work to be done in coordinating operations, and it is expected that during the next fiscal year further improvement in safety and efficiency will be noted.

AMATEUR SERVICES

Many amateur stations rendered valuable service to the public during the past year. Considerable progress was made in the voluntary organization of amateur stations for emergency service. Throughout the winter months these stations provided emergency communication facilities for areas completely or partially isolated because of severe storms, particularly in Oregon, Oklahoma, Kansas, Indiana, and Nebraska.

In early March, during the lower California flood, amateus stations were valuable. Here, a number of amateurs with portable equipment preceded the flood waters to specified areas and established their stations in advance of actual isolation. Another instance of service to the public by an amateur station was the facsimile transmission of a picture of the flood area which was received by news agencies. The cooperation of amateurs with the American Red Cross and other relief organizations in furnishing the sole means of communication, in many instances, between stricken areas and outside aid enabled these organizations to function most efficiently.

A large number of amateur stations are affiliated with the Naval Communications Reserve and the Army Amateur Reserve System. These organizations offer excellent training, providing practice drills and instruction which enable their members to develop accuracy and speed in communication as well as to improve the technique in the operation of amateur stations.

During the year several scientific expeditions relied upon the amateur service for communication in the exchange of scientific data between the expeditions and their sponsors.

Technical improvements in equipment during the past year stimulated interest in radiotelephony in the 28000- to 30000-kilocycle amateur band, resulting in a tremendous increase in activity in this region. In order to provide for further technical developments and to accommodate the many additional amateur radiotelephone stations which had become active in this band, the Commission, on September 17, 1937, extended the frequency bands for radiotelephony, type A–3 emission, to include the frequencies between 28500 and 30000 kilocycles.

A study was completed during the year of the rules and regulations governing amateur stations and operators, and a general revision of these rules was in progress at the close of the fiscal year.

The development of inexpensive and efficient telephone equipment in recent years has led to a vast increase in the amount of unlicensed operation. This may be attributed in a large measure to the fact that it is unnecessary to be familiar with the international code and also because of the availability of cheap equipment which may be installed and operated with practically no technical knowledge.

Statistics with respect to the applications, examinations, and authorizations handled throughout the year are found in appendix L.

MISCELLANEOUS RADIO SERVICES

Geophysical and motion-picture services.—The purposes for which the stations in these services are authorized to operate are discussed at page 72 of our Third Annual Report. There has been no substantial change in the conditions surrounding the regulation or use of these stations, and they have continued to serve the purposes for which they were established. A statistical record of the growth of these stations is found at page 236 of this report.

Mobile-press service.—Relay press stations will be licensed to operate in the mobile-press service which is proposed to be established for the purpose of providing a link between a reporter at the scene of the news and the nearest wire terminal.

Frequencies for use by such stations were allotted by the Commission in the reallocation of the spectrum above 30000 mentioned previously. An informal conference was had with newspapers and newspaper associations with regard to the use to be made of such frequencies. The consensus of opinion was that these stations should be licensed only to newspapers and news associations for the purpose indicated above. Consideration was being given at the close of the year to a set of rules and regulations to govern the licensing and operation of these stations.

PROFESSIONAL RADIO OPERATORS

The general plan established by the Commission for the licensing of radio operators continued in force without change during the year. The increasing use of radio facilities for police and other services has been accompanied by a substantial increase in the number of persons holding licenses as radio operators, particularly radiotelephone third-class licenses, for which the requirements are relatively simple. The total number of licensed operators is rapidly nearing 40,000, more than half of whom are licensed as radiotelephone third-class operators. Nearly 10,000 are eligible as operators at broadcast stations by virtue of holding licenses as radiotelephone first-class operators or the equivalent endorsement on licenses as radiotelegraph first-class operators, while upwards of 7,500 hold radiotelegraph first- or second-class licenses, alone or in combination with one of the radiotelephone classes.

The Commission amended the rules with respect to the class of operator license required for the operation of the various classes of stations licensed by the Commission. This revised rule became effective April 1, 1938, except for the Territory of Alaska, where it is to become operative at a later date. The most significant change established by this amendment was with respect to the authority granted under the radiotelephone third-class license. Formerly, radiotelephone stations employing a licensed power of 50 watts or less could be serviced, maintained, and operated by radiotelephone third-class operators. The amended rule prohibits third-class radiotelephone operators from making adjustments that might result in improper transmitter operation, and requires that the service and maintenance work be performed by higher class operators holding licenses of the radiotelegraph or radiotelephone first or second class.

To permit quick service in qualifying radio operators, licenses are issued at Washington and 26 field offices of the Commission. The license issues and other related items are reported to the Washington office for a complete record at Washington. During the fiscal year 21,067 reports were received for posting. As a result of a study, specific rules and regulations have been proposed, which look to the improvement of the qualifications of radio operators and the simplification of the licensing by the Commission. An informal hearing on the proposed rules had been scheduled for July 11, 1938.

APPENDIXES

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APPENDIX A

Comments of the Commission on the following bills were requested by various Congressional Committees and furnished during this fiscal year:

S. 2700. A bill to provide for reorganizing the agencies of the Government, extending the classified civil service, establishing a General Auditing Office and a Department of Welfare, and for other purposes.

H. R. 7324 and 7474. A bill to amend the Interstate Commerce Act, as amended, to promote the safety of travel in air, and for other purposes.

S. 2407. A bill to amend the Communications Act of 1934 (U. S. C., 1934 edition, Title 47, Sec. 303) re qualifications of radio operators.

S. 2758. A bill to prohibit the transmission of gambling information in interstate commerce by communication facilities.

H. R. 8251. A bill to amend section 353 (b) of the Communications Act of 1934, for the purpose of promoting safety of life and property at sea through the use of wire and radio communications, to make more effective the International Convention for the Safety of Life at Sea, 1929, and for other purposes, approved May 20, 1937.

S. 2580. The Senate bill corresponding to H. R. 8251.

H. R. 8840. A bill to provide overtime pay for customs officers.

S. 3371. A bill for the purpose of defining certain terms used in the navigation and steamboat inspection laws, etc., relative to inspection.

S. 1273. A bill to adopt regulations for preventing collisions at sea.

S. 3676. A bill for establishing a United States Court of Appeals for administration to receive, decide, and expedite appeals from Federal commissions, administrative authorities, etc.

S. 3456–H. R. 9548. A bill proposing an amendment to section 094 of Rural Electrification Act. (Bills are identical.)

H. R. 9898–S. 3756. A bill to prohibit the use of communication facilities for criminal purposes and to permit the introduction in evidence of information obtained by "wire-tapping" under certain circumstances.

S. 2580. A bill to promote safety at sea by requiring proper design, construction, maintenance, inspection, and operation of ships; to give effect to the Convention for Promoting Safety of Life at Sea, 1929; and for other purposes.

S. 3875–H. R. 10348. A bill to amend section 313 of the Communications Act of 1934 by adding a new paragraph declaring it to be the Congressional policy "to prevent monopoly and to encourage competition in direct, foreign radiotelegraph communication."

H. R. 92. Authorizing the Speaker to appoint a committee of seven members of the House of Representatives to investigate the allegations and charges that a monopoly or monopolies exist in radio broadcasting.

H. R. 6440. A bill to provide for the taxation of operators of radio broadcast stations.

H. R. 9624. A bill to amend the Communications Act of 1934 to prohibit the advertising of alcoholic beverages by radio.

H. R. 10307 and 10724. A bill to amend paragraph (k) of section 303 and paragraph (b) of section 319 of the Communications Act of 1934 so as to exempt portable-mobile stations operated by forest-protection agencies exclusively for forest-protection communication purposes from certain requirements, including the requirement that a permit be obtained for the construction of such stations.

S. Res. 247. A resolution providing for the investigation of certain aspects of the wire-communications industry in the United States.

S. Res. 294. A resolution opposing the operation of radio stations in the standard broadcast band with power in excess of fifty kilowatts.

S. 3342. A bill to authorize the construction and operation of a radio broadcasting station designed to promote friendly relations among the nations of the Western Hemisphere.

S. 4074. A bill to amend an Act entitled, "The Communications Act of 1934, as Amended." (Interference from apparatus using radio-frequency electrical currents.)

S. 4098 (H. R. 10869). A bill to amend the Communications Act of 1934 so as to prevent monopolies and to prohibit the excessive duplication of broadcast programs in any area.

APPENDIX B

PUBLICATIONS

The following material has been printed and placed on sale by the Government Printing Office:

Federal Communications Act of 1934 with Amendments and Index Thereto (Revised to May 20, 1937)..

First Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1935.

Second Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1936.

Third Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1937.

Federal Communications Commission Practice and Procedure Promulgated Pursuant to the Communications Act of 1934, effective December 19, 1935.

Federal Communications Commission Reports—Volume 1: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1934 to July 1935.

Federal Communications Commission Reports—Volume 2: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1, 1935, to June 30, 1936.

Federal Communications Commission Reports—Volume 3: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1936 to February 1937.

Federal Communications Commission Reports—Volume 4: Decisons, Reports, and Orders of the Federal Communications Commission of the United States, March 1937 to November 15, 1937.

Proposed Report, Telephone Investigation.

Periodic Reports of Broadcast and other Applications Received.

Reports of Action Taken by the Commission at its Weekly Meetings.

Reports of Examiners on Matters Heard by Them.

Reports of Statements of Facts and Grounds for Decision in all Formal Cases Decided by the Commission.

Uniform System of Accounts for Telephone Companies, Issue of June 19, 1935, Effective January 1, 1937.

Uniform System of Accounts for Telegraph and Cable Companies, Effective January 1, 1914.

Tariff Circular No. 1, Issue of July 31, 1935—Rules Governing the Construction, Filing, and Posting of Tariffs Relating to Interstate and Foreign Wire or Radio Communications, by Carriers Subject to the Communications Act of 1934, Excepting Connecting Carriers as Defined in Section 3 (u) of the Act and Excepting Carriers Operating in Alaska.

Ship Radiotelegraph Safety Rules, Effective May 21, 1937.

Rules Governing Classification of Telephone Employees, Effective July 1, 1917.

Mimeographed material.—The following material has been prepared in mimeographed form and is available at the offices of the Commission:

Rules and regulations of the Federal Communications Commission governing the various radio services.

Uniform system of accounts for class C telephone companies, effective January 1, 1939.

Radio station lists, arranged by services (not all services included).

Radio Service Bulletin.

Descriptive list of Berne publications. (World lists of radio stations are published by the Bureau of the International Telecommunication Union, Berne, Switzerland.)

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1936.

Selected financial and operating data from annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1936.

Salary report of telephone and telegraph carriers, December 31, 1936.

Summary of monthly reports of large telephone carriers.

Selected financial and operating data from monthly reports of telegraph carriers.

Public reference rooms.—The Commission maintains public reference rooms for the purpose of opening to public inspection such records and material as are made public under the act and under the regulations of the Commission. This service to the public includes the annual and monthly reports and the schedules of charges filed by telephone and telegraph carriers; the annual reports filed by holding companies; formal dockets; and applications for radio or wire facilities.

Information of interest is made available to the public by means of frequent press releases.

APPENDIX C

FINANCIAL AND OTHER STATISTICAL DATA CONCERNING TELEPHONE AND TELEGRAPH CARRIERS AND CONTROLLING COMPANIES

The statistical tables and charts contained in this appendix are assembled in the following groups:

(A) Statistics relating to telephone and telegraph carriers, and holding companies, from annual reports, on pages 112 to 148 of this appendix;

(B) Statistics relating to telephone and telegraph carriers from monthly reports, on pages 149 to 169 of this appendix; and

(C) Data concerning intercorporate relations, on pages 170 to 175 of this appendix.

(A) STATISTICS RELATING TO TELEPHONE AND TELEGRAPH CARRIERS, AND HOLDING COMPANIES, FROM ANNUAL REPORTS

Arrangement of data.—There are contained in this part of the appendix tables and charts showing statistical data concerning telephone and telegraph carriers and holding companies, based principally on the annual reports of those companies filed with the Commission. With some exceptions, these tables and charts are arranged as follows: First, those relating to telephone carriers; second, those relating to telegraph carriers; and third, those relating to both telephone and telegraph carriers. Only tables XI and XXXVII relate, in whole or in part, to holding companies.

Bell telephone statistics.—The statistical data shown in this appendix for the Bell System carriers exclude returns from the Cincinnati and Suburban Bell Telephone Co. and the Southern New England Telephone Co. unless otherwise stated.

Geographical groupings.—For statistical purposes, telephone carriers have been grouped geographically into three districts, which have been subdivided into nine regions, as follows:

EASTERN DISTRICT

New England region.—This region comprises the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Middle Atlantic region.—This region comprises the following States: Delaware, New Jersey, New York, and Pennsylvania.

Great Lakes region.—This region comprises the following States: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

SOUTHERN DISTRICT

Chesapeake region.—This region comprises the following States and District: District of Columbia, Maryland, Virginia, and West Virginia.

Southeastern region.—This region comprises the following States: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

WESTERN DISTRICT

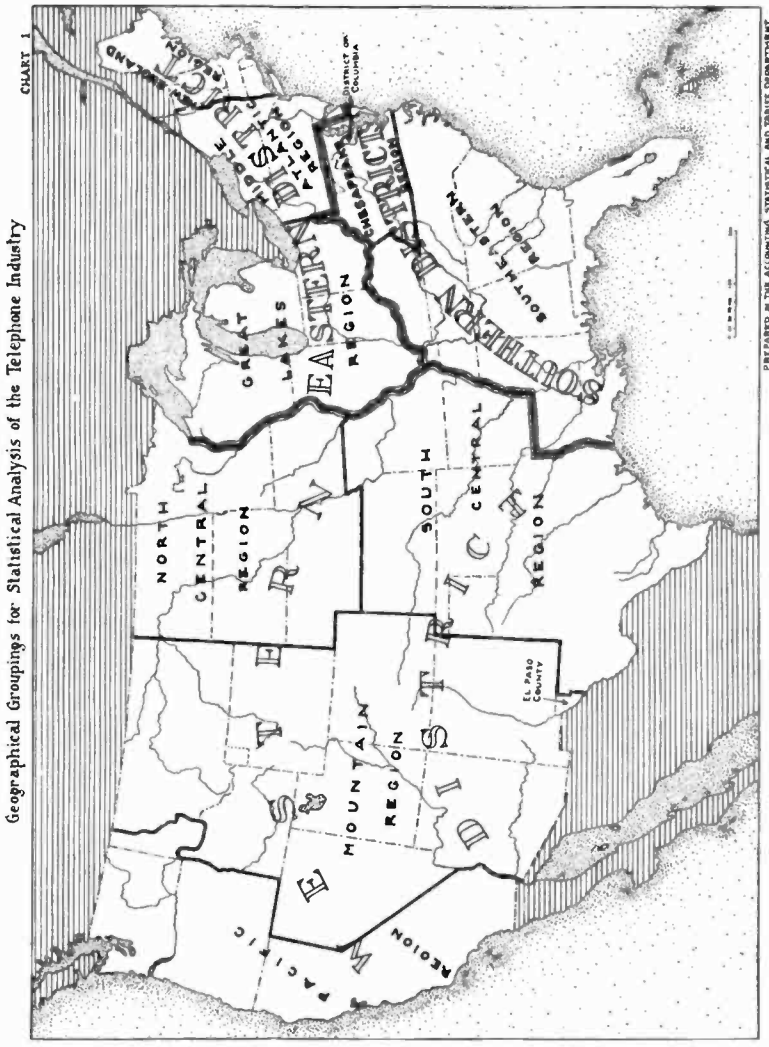
North Central region.—This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

South Central region.—This region comprises the following States: Arkansas, Kansas, Missouri, Oklahoma, and Texas (except El Paso County).

Mountain region.—This region comprises the following States: Arizona, Colorado, Idaho (south of Salmon River), Montana, Nevada, New Mexico, Texas (El Paso County), Utah, and Wyoming.

Pacific region.—This region comprises the following States: California, Idaho (north of Salmon River), Oregon, and Washington.

These geographical groupings are shown by chart 2, which follows:



Names of telephone carriers.—The names of the 93 telephone carriers which filed annual reports with the Commission for the calendar year 1937 are listed in table I. There were 10 telephone carriers which filed reports for the year 1936 but which did not file reports for 1937, owing to the provisions of section 2 (b) (2) of the Communications Act of 1934, these carriers being deemed to be subject only to the provisions of sections 201–5 of the act, although 8 other carriers similarly situated voluntarily continued to file annual reports with the Commission for statistical purposes and are included in the 93 carriers listed in table I. The carriers listed in this table and comprehended by statistics contained in the following tables and charts based on the annual reports represent approximately 95 percent of the total telephone industry in the United States as determined by a comparison of revenues received by these respective carriers.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1937 showing classification and geographical region to which each carrier has been assigned for statistical purposes* [1]

Name of carrier	Class of carrier	Geographical region
American Telephone Co	A	South Central.
*American Telephone & Telegraph Co	A	Middle Atlantic.
Ashtabula Telephone Co	A	Great Lakes.
*Bell Telephone Co. of Nevada	A	Mountain.
*Bell Telephone Co. of Pennsylvania	A	Middle Atlantic.
Bluefield Telephone Co	A	Chesapeake.
Carolina Telephone & Telegraph Co	A	Southeastern.
Champaign Telephone Co	B	Great Lakes.
Chenango & Unadilla Telephone Corporation	A	Middle Atlantic.
*Chesapeake & Potomac Telephone Co	A	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	A	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	A	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	A	Do.
*Christian-Todd Telephone Co	A	Southeastern.
Cincinnati & Suburban Bell Telephone Co	A	Great Lakes.
Colusa County Telephone Co	B	Pacific.
*Crown Point Telephone Co	B	Great Lakes.
*Dakota Central Telephone Co	A	North Central.
Del Rio & Winter Garden Telephone Co	A	South Central.
*Diamond State Telephone Co	A	Middle Atlantic.
Eastern Kansas Telephone Co	B	South Central.
*Eastern Telephone & Telegraph Co. (Maine)	A	New England.
Eastern Telephone & Telegraph Co. (New Jersey)	A	Middle Atlantic.
Greenville Telephone Co	B	South Central.
Home Telephone & Telegraph Co. (Indiana)	A	Great Lakes.
Home Telephone & Telegraph Co. of Virginia	B	Chesapeake.
*Illinois Bell Telephone Co	A	Great Lakes.
Indiana Associated Telephone Corporation	A	Do.
*Indiana Bell Telephone Co	A	Do.
Inter-Mountain Telephone Co	A	Southeastern.
Interstate Telegraph Co	A	Pacific.
Interstate Telephone Co	A	Do.
Kansas State Telephone Co	B	South Central.
Kansas Telephone Co	A	Do.
Keystone Telephone Co. of Philadelphia	A	Middle Atlantic.
Kittanning Telephone Co	A	Do.
*Lebanon Telephone Co.[2]	B	Great Lakes.
Lee Telephone Co	A	Chesapeake.
Lincoln Telephone & Telegraph Co	A	North Central.
Michigan Associated Telephone Co	A	Great Lakes.
*Michigan Bell Telephone Co	A	Do.
Middle States Utilities Co. of Iowa	B	North Central.
Middle States Utilities Co. of Missouri	A	South Central.
*Moosehead Telephone & Telegraph Co	B	New England.
*Mountain States Telephone & Telegraph Co	A	Mountain.
Nebraska Continental Telephone Corporation	A	North Central.
*New England Telephone & Telegraph Co	A	New England.
*New Jersey Bell Telephone Co	A	Middle Atlantic.
New Jersey Telephone Co	A	Do.
*New York Telephone Co	A	Do.
*Nicollet County Telephone & Telegraph Co	B	North Central.
Norfolk & Carolina Telephone & Telegraph Co	A	Southeastern.
North-West Telephone Co	A	Great Lakes.
North-Western Indiana Telephone Co	A	Do.
Northern States Power Co	A	North Central.
*Northwestern Bell Telephone Co	A	Do.
Ohio Associated Telephone Co	A	Great Lakes.
*Ohio Bell Telephone Co	A	Do.
Ohio Telephone Service Co	A	Do.
Oregon-Washington Telephone Co	A	Pacific.
Oxnard Home Telephone Co	B	Do.
Ozark Central Telephone Co	A	South Central.
*Pacific Telephone & Telegraph Co	A	Pacific.
Palestine Telephone Co	B	South Central.
Pennsylvania Telephone Corporation	A	Middle Atlantic.
Platte Valley Telephone Corporation	A	North Central.
Public Utilities California Corporation	A	Pacific.
Rochester Telephone Corporation	A	Middle Atlantic.
San Angelo Telephone Co	A	South Central.
Santa Barbara Telephone Co	A	Pacific.
Santa Paula Home Telephone Co	B	Do.

* Represents carriers included in the Bell System.

[1] Telephone carriers filing annual reports are classified as follows: Class A carriers are those having average annual operating revenues exceeding $100,000; class B carriers are those having average annual operating revenues exceeding $50,000, but not more than $100,000. Telephone carriers having average annual operating revenues not exceeding $50,000 are not required to file annual reports.

[2] Merged with the Indiana Bell Telephone Co. as of June 30, 1937.

TABLE 1.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1937 showing classification and geographical region to which each carrier has been assigned for statistical purposes*—Continued

Name of carrier	Class of carrier	Geographical region
Southeast Missouri Telephone Co	A	South Central.
*Southern Bell Telephone & Telegraph Co	A	Southeastern.
*Southern California Telephone Co	A	Pacific.
Southern New England Telephone Co	A	New England.
Southwest Telephone Co. (Kansas)	A	South Central.
Southwestern Associated Telephone Co	A	Do.
*Southwestern Bell Telephone Co	A	Do.
Tri-State Associated Telephone Corporation	B	Middle Atlantic.
*Tri-State Telephone & Telegraph Co	A	North Central.
Two States Telephone Co	A	South Central.
Union Telephone Co. (Indiana)	A	Great Lakes.
*United Telephone Co. (Kansas)	A	South Central.
United Telephone Co. (Missouri)	A	Do.
United Telephone Co. (Texas)	B	Do.
United Telephone Companies, Inc	A	Great Lakes.
United Telephone Co. of Pennsylvania	A	Middle Atlantic.
West Coast Telephone Co	A	Pacific.
*Westerly Automatic Telephone Co	A	New England.
Western Arkansas Telephone Co	B	South Central.
*Western New England Telephone Co	B	New England.
*White River Valley Telephone Co	B	Do.
*Wisconsin Telephone Co	A	Great Lakes.

Selected statistics of telephone carriers by geographical divisions.—Selected financial and operating data compiled from annual reports filed by 74 class A and 19 class B telephone carriers for the year ended December 31, 1937, are shown in table II. Intercorporate duplications have not been excluded. This summary includes operating data for the period of operations of one class B carrier that merged with a class A carrier during 1937.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*

[Year ended Dec. 31, 1937]

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district [1]	Southern district	Western district	United States	Eastern district [1]	Southern district	Western district
1	Number of carriers	93	40	12	41	34	18	6	10
	Investment in telephone plant:								
2	Telephone plant in service	$4,612,012,594	$3,061,236,802	$415,024,548	$1,135,751,244	$4,329,588,998	$2,845,986,698	$403,995,495	$1,079,606,805
3	Telephone plant under construction	40,103,039	26,212,272	4,149,246	9,741,521	34,652,022	20,994,420	4,023,563	9,634,039
4	Property held for future telephone use	13,739,176	10,488,650	543,141	2,707,385	13,362,826	10,144,583	543,141	2,675,102
5	Telephone plant acquisition adjustment	19,376,574	5,530,931	4,267,090	9,578,553	15,027,612	4,557,271	4,136,277	6,334,064
6	Total investment in telephone plant	4,685,231,383	3,103,468,655	423,984,025	1,157,778,703	4,392,631,458	2,881,682,972	412,698,476	1,098,250,010
7	Investments other than telephone plant	2,691,759,142	2,487,443,868	5,740,424	198,574,850	2,682,822,443	2,482,920,578	5,679,870	194,221,995
8	Cash	64,558,263	50,809,084	4,318,422	9,470,157	59,105,054	47,027,120	4,196,073	7,881,861
9	Material and supplies	56,315,741	37,563,716	4,866,871	13,885,154	51,726,815	34,591,807	4,699,535	12,435,473
10	Total current assets	345,839,040	275,057,582	20,587,811	50,193,647	327,449,033	262,021,507	19,874,538	45,552,988
11	Capital stock	4,278,656,721	3,287,794,518	217,780,500	773,081,703	4,141,697,037	3,182,926,965	212,156,400	746,613,672
12	Funded debt	942,699,880	772,110,080	49,677,200	120,912,600	871,658,480	723,185,380	48,858,200	99,614,900
13	Total long-term debt	1,287,818,073	933,939,837	105,646,978	248,231,258	1,204,071,430	875,486,631	104,628,571	223,956,228
14	Total current liabilities	113,681,787	76,285,171	13,173,288	24,223,328	102,237,488	67,106,695	12,400,519	22,730,274
15	Taxes accrued	76,290,888	50,820,670	5,235,419	20,234,799	72,373,956	47,840,017	5,012,937	19,521,002
16	Unmatured interest, dividends, and rents accrued	56,104,620	51,741,507	589,587	3,773,526	53,521,353	49,538,720	551,755	3,430,878
17	Depreciation reserve	1,263,953,223	852,805,499	96,505,623	314,642,101	1,196,166,837	801,583,276	93,057,112	301,526,449
18	Amortization reserve	3,221,040	1,381,161	802,832	1,037,047	3,235,214	1,405,794	775,097	1,054,323
19	Total surplus	390,378,032	344,802,923	14,624,374	30,950,735	375,099,237	332,732,974	13,671,543	28,694,720
	Operating revenues:								
20	Local service	748,791,095	486,015,531	74,242,640	188,532,924	703,891,462	450,805,107	72,439,033	180,647,322
21	Toll service	334,993,843	226,341,114	28,926,554	79,726,175	321,690,916	217,981,370	27,745,304	75,964,242
22	Miscellaneous	59,882,685	44,089,934	4,733,580	11,059,171	57,464,400	42,191,840	4,658,195	10,614,365
23	Uncollectible—Dr	4,133,289	2,611,103	404,180	1,118,006	3,955,482	2,499,590	389,009	1,066,883
24	Total operating revenues	1,139,534,334	753,835,476	107,498,594	278,200,264	1,079,091,296	708,478,727	104,453,523	266,159,046

[1] Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the Eastern district inasmuch as only aggregate figures are reported.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district	Southern district	Western district	United States	Eastern district	Southern district	Western district
	Operating expenses:								
25	Maintenance	$214,240,888	$143,473,893	$18,949,411	$51,817,584	$203,634,242	$135,235,470	$18,527,759	$49,871,013
26	Depreciation and amortization	171,617,060	112,426,830	16,447,856	42,742,374	161,736,565	105,006,607	15,966,056	40,763,902
27	Traffic	168,185,896	106,295,264	18,361,880	43,528,752	158,951,255	99,478,206	17,850,429	41,622,620
28	Commercial	88,299,164	56,908,887	8,481,260	22,909,017	84,223,164	53,877,644	8,328,965	22,016,555
29	General office salaries and expenses	62,936,887	44,908,051	4,382,549	13,646,287	59,524,817	42,456,144	4,162,543	12,906,130
30	Other	70,328,322	53,064,845	5,544,321	11,719,156	67,966,456	51,208,031	5,429,885	11,328,540
31	Total operating expenses	775,608,217	517,077,770	72,167,277	186,363,170	736,036,499	487,262,102	70,265,637	178,508,760
32	Operating ratio—percent	68.06	68.59	67.13	66.99	68.21	68.78	67.27	67.07
	Operating taxes:								
33	Other than U. S. Government	$100,633,312	$65,335,842	$9,810,226	$25,487,244	$96,711,336	$62,611,691	$9,485,966	$24,613,779
34	U. S. Government	41,674,668	27,559,403	3,556,028	10,559,237	39,254,939	25,667,607	3,412,431	10,174,901
35	Total operating taxes	142,307,980	92,895,245	13,366,254	36,046,481	135,966,275	88,279,298	12,898,297	34,788,680
36	Net operating income	221,618,297	143,862,463	21,965,063	55,790,771	207,089,443	132,937,328	21,289,589	52,862,526
37	Other income	197,232,975	184,069,898	405,814	12,757,263	196,759,379	183,836,476	397,314	12,525,589
38	Miscellaneous deductions from income	1,980,978	1,124,246	178,823	677,909	1,780,230	1,003,492	151,301	625,437
39	Interest deductions	52,281,585	38,705,634	4,192,326	9,383,625	48,419,130	36,121,019	4,152,471	8,145,640
40	Miscellaneous fixed charges	790,720	562,584	167,262	60,874	646,204	485,853	165,469	[1] *5,118*
41	Net income	363,787,608	287,539,897	17,857,077	58,390,634	353,003,258	279,163,440	17,217,662	56,622,156
	Dividends declared:								
42	Common stock	339,528,040	271,466,661	18,000,298	50,061,081	331,484,436	264,808,679	17,046,920	49,628,837
43	Preferred stock	11,639,342	3,626,073	98,826	7,914,443	9,199,714	2,558,790	15,000	6,625,924
	Miles of wire in cable:								
44	Aerial	[1] 29,102,250	[1] 18,969,810	3,295,722	6,836,718	27,493,460	17,795,367	3,196,308	6,501,785
45	Underground	[1] 51,187,479	[1] 35,334,054	4,013,858	11,839,567	48,624,960	32,925,886	3,990,937	11,708,137
46	Buried	[1] 757,222	[1] 339,141	22,576	395,505	720,161	321,365	22,576	376,220
47	Submarine	[1] 197,181	[1] 132,515	17,547	47,119	188,174	123,901	17,449	46,924
48	Total miles of wire in cable	81,246,007	54,777,395	7,349,703	19,118,909	77,026,755	51,166,419	7,227,270	18,633,066
49	Miles of aerial wire	4,360,172	1,929,043	690,888	1,740,241	3,842,048	1,685,611	648,465	1,507,972
50	Total miles of wire	85,606,179	56,706,438	8,040,591	20,859,150	80,868,803	52,852,030	7,875,735	20,141,038
51	Miles of pole line	504,255	212,112	54,419	237,724	405,645	171,144	49,314	185,187
52	Miles of underground conduit (single duct)	128,043	90,861	8,666	28,516	118,263	81,616	8,603	28,044

	Central offices-type of switchboard:								
53	Magneto-manual	4,221	1,421	690	2,110	3,275	1,112	670	1,493
54	Common battery-manual	2,946	1,271	506	1,169	2,521	1,082	462	977
55	Auto-manual	16	10		6	7	5		2
56	Dial (automatic) system	1,440	755	263	422	1,191	647	177	367
57	Total central offices	8,623	3,457	1,459	3,707	6,994	2,846	1,309	2,839
58	Company telephones	16,670,632	9,934,421	1,940,670	4,795,541	15,348,293	8,977,751	1,871,760	4,498,782
59	Service telephones	292,046	46 919	39,708	205,419	249,313	38,626	37,628	173,059
60	Private line telephones	84,908	53,344	6,068	25,496	82,184	50,930	6,051	25,203
61	Total telephones	17,047,586	10,034,684	1,986,446	5,026,456	15,679,790	9,067,307	1,915,439	4,697,044
62	Other stations	23,640	16,196	1,598	5,846	23,154	15,744	1,598	5,812
	Company telephones by type of switchboard: [4]								
63	Magneto-manual	763,707	367,500	125,022	271,185	601,320	292,215	121,976	187,129
64	Common battery-manual	7,758,622	4,550,926	1,072,010	2,135,686	7,106,609	4,098,888	1,022,419	1,985,302
65	Auto-manual	16,089	12,956		3,133	4,224	4,149		75
66	Dial (automatic) system	8,132,187	5,003,012	743,638	2,385,537	7,636,113	4,582,472	727,365	2,326,276
	Company telephones by type of customer:								
67	Business	6,506,362	3,935,059	783,173	1,788,130	6,043,717	3,590,408	757,357	1,695,952
68	Residential	10,163,666	5,998,758	1,157,497	3,007,411	9,304,576	5,387,343	1,114,403	2,802,830
	Company telephones by class:								
69	Main	11,821,605	6,897,881	1,375,425	3,548,299	10,807,567	6,194,193	1,320,204	3,293,170
70	P. B. X	3,161,605	2,041,309	350,041	770,255	2,993,642	1,897,311	344,419	751,912
71	Extension	1,687,422	995,231	215,204	476,987	1,547,084	886,247	207,137	453,700
	Average number of calls originated per month:								
72	Local calls	2,438,219,556	1,247,902,058	376,257,648	814,059,850	2,238,557,564	1,110,862,594	363,396,412	764,298,558
73	Toll calls	74,250,697	50,267,885	6,031,401	17,951,411	68,907,915	46,517,321	5,716,974	16,673,620
74	Average number of company and service telephones	16,550,364	9,768,026	1,911,916	4,870,422	15,215,344	8,824,927	1,844,212	4,546,205
	Private line service revenues: [5]								
75	Commercial, broadcasting	$7,214,980	$6,442,311	$172,884	$599,785	$7,172,648	$6,400,421	$172,884	$599,343
76	Commercial, miscellaneous	17,916,055	17,354,303	69,543	492,209	17,827,845	17,273,634	69,219	484,992
77	Government	971,578	923,551	43,047	4,980	971,452	923,425	43,047	4,980
78	Press	4,172,092	4,053,585	285	118,222	4,169,148	4,051,391	285	117,472
	Telegraph stations:								
	Private line Morse:								
79	Number	3,499	3,084	12	403	3,482	3,077	11	394
80	Revenue	$6,960,958	$6,458,026	$118,456	$384,476	$6,927,834	$6,443,846	$114,959	$369,029
	Private line teletypewriter:								
81	Number	7,640	6,205	246	1,189	7,464	6,062	245	1,157
82	Revenue	$11,592,135	$9,516,413	$246,161	$1,829,561	$11,484,110	$9,425,604	$242,438	$1,816,068

[3] Deficit or other reverse item.
[4] Does not include data of 1 telephone company which submitted returns in the aggregate only.
[4] Excludes 27 telephones of the American Telephone & Telegraph Co. which were not connected with exchange offices.
[5] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

[Year ended Dec. 31, 1937]

No.	Item	All carriers				Bell System carriers			
		United States	Eastern district	Southern district	Western district	United States	Eastern district	Southern district	Western district
	Telegraph stations—Continued.								
	Teletypewriter exchange service:								
83	Number	12,513	6,907	1,342	4,264	12,208	6,605	1,342	4,261
84	Revenue	$6,792,144	$4,836,251	$363,803	$1,592,090	$6,687,927	$4,736,982	$363,803	$1,587,142
85	Telephotograph service revenue	$475,240	$398,146	$288	$76,806	$475,240	$398,146	$288	$76,806
86	Other telegraph service revenue	$357,791	$64,043	$986	$292,762	$328,588	$57,036	$986	$270,566
87	Number of employees at close of June	302,164	180,938	35,878	85,348	282,523	167,725	34,641	80,157
88	Male employees	116,773	71,246	13,031	32,496	109,153	65,829	12,588	30,736
89	Female employees	185,391	109,692	22,847	52,852	173,370	101,896	22,053	49,421
90	Number of employees at close of year	295,774	178,005	34,956	82,813	276,225	164,893	33,741	77,591
91	Male employees	115,110	71,065	12,518	31,527	107,457	65,673	12,093	29,691
92	Female employees	180,664	106,940	22,438	51,286	168,768	99,220	21,648	47,900
93	Total compensation for year	$489,420,830	$320,682,949	$46,462,209	$122,275,672	$463,949,510	$301,174,459	$45,251,194	$117,523,857
94	Compensation chargeable to operating expenses	$415,144,840	$275,271,725	$37,301,725	$102,571,390	$394,304,525	$259,431,824	$36,328,710	$98,543,991
	Benefits:								
95	Number of cases handled during year	56,545	37,288	6,499	12,758	53,602	34,770	6,398	12,434
96	Amount paid during year	$7,852,777	$5,429,904	$772,398	$1,650,475	$7,516,787	$5,127,555	$763,648	$1,625,584
	Pensions:								
97	Number of cases being paid at end of year	7,720	5,379	708	1,633	7,280	4,998	698	1,584
98	Disbursements from pension fund	$5,466,270	$4,032,684	$385,436	$1,048,150	$5,226,694	$3,822,190	$379,886	$1,024,618
99	Relief and pension charges to operating expenses	$19,672,657	$13,090,477	$1,701,138	$4,881,042	$18,746,377	$12,304,481	$1,652,374	$4,789,522
100	Balance in pension fund at beginning of year	$169,406,830	$115,938,646	$14,045,036	$39,423,148	$163,378,249	$110,661,154	$13,888,210	$38,828,885
101	Balance in pension fund at end of year	$183,654,065	$124,722,050	$15,388,497	$43,543,518	$177,014,037	$118,921,834	$15,189,090	$42,903,113

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region [1]	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
1	Number of carriers	7	14	19	7	5	9	19	2	11
	Investment in telephone plant:									
2	Telephone plant in service	$397,862,867	$1,792,815,890	$870,558,045	$158,459,804	$256,564,744	$188,000,943	$370,996,972	$109,223,973	$467,529,356
3	Telephone plant under construction	4,467,637	12,279,167	9,465,468	2,721,193	1,428,053	2,697,001	3,072,042	820,354	3,152,124
4	Property held for future telephone use	1,070,665	5,985,451	3,432,534	288,838	254,303	48,461	905,504	242,367	1,511,053
5	Telephone plant acquisition adjustment	[2] *86,523*	2,773,118	2,844,136	1,544,259	2,722,831	608,121	3,789,018	600,808	4,580,606
6	Total investment in telephone plant	403,314,846	1,813,853,626	886,300,183	163,014,094	260,969,931	191,354,526	378,763,536	110,887,502	476,773,139
7	Investments other than telephone plant	6,641,902	2,470,400,037	10,401,929	279,769	5,460,655	34,973,404	15,382,027	405,443	147,813,976
8	Cash	2,480,508	37,924,789	10,464,387	737,820	3,580,602	1,237,143	4,673,511	686,316	2,873,187
9	Material and supplies	3,446,724	22,794,934	11,322,058	1,826,675	3,040,196	2,753,460	3,760,100	1,475,968	5,895,626
10	Total current assets	17,614,262	207,628,812	49,814,508	7,007,869	13,579,942	8,102,262	17,196,487	4,575,976	20,318,922
11	Capital stock	174,325,565	2,585,807,003	527,661,950	87,452,100	130,328,400	118,738,650	206,156,340	52,899,700	395,287,013
12	Funded debt	94,149,300	624,006,780	53,954,000	4,080,700	45,596,500	4,918,400	53,434,800		62,559,404
13	Total long-term debt	128,314,491	708,821,608	96,803,738	29,910,046	75,736,932	48,167,367	68,850,387	24,134,320	107,079,185
14	Total current liabilities	6,008,235	50,754,444	19,522,492	5,482,911	7,690,377	4,298,818	9,138,990	2,018,875	8,766,649
15	Taxes accrued	2,359,671	23,548,046	24,912,953	2,127,021	3,108,398	4,160,607	6,998,139	2,161,214	6,914,830
16	Unmatured interest, dividends, and rents accrued	1,424,617	48,416,028	1,900,862	89,966	499,621	368,081	798,439	997,515	1,609,491
17	Depreciation reserve	107,457,023	517,656,969	227,691,507	34,997,660	61,507,963	55,275,600	99,555,964	32,833,448	126,977,089
18	Amortization reserve	[2] *51,355*	187,109	1,245,407	[2] *9,768*	812,600	[2] *37,935*	845,128	[2] *17,562*	247,416
19	Total surplus	11,955,769	283,438,711	49,408,443	11,051,250	3,573,124	3,835,854	20,270,932	1,058,910	5,785,039
	Operating revenues:									
20	Local service	67,089,418	255,225,883	163,700,230	32,548,438	41,694,202	30,764,025	60,340,535	16,384,169	81,044,195
21	Toll service	23,046,825	157,539,911	45,754,378	8,223,719	20,702,835	11,787,852	28,197,099	7,944,771	31,796,453
22	Miscellaneous	3,221,090	32,931,841	7,937,003	1,944,516	2,789,064	2,217,167	4,643,250	1,004,621	3,194,133
23	Uncollectible-Dr	294,769	1,867,560	448,774	150,140	254,040	171,526	338,530	82,791	525,159
24	Total operating revenues	93,062,564	443,830,075	216,942,837	42,566,533	64,932,061	44,597,518	92,842,354	25,250,770	115,509,622

[1] Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the Eastern district inasmuch as only aggregate figures are reported.

[2] Deficit or other reverse item.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographic divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
	Operating expenses:									
25	Maintenance	$19,147,712	$84,691,502	$39,634,679	$7,350,024	$11,599,387	$9,140,122	$16,143,862	$4,185,596	$22,348,004
26	Depreciation and amortization	14,961,624	65,277,605	32,187,601	6,342,288	10,105,568	6,624,638	14,347,201	3,745,990	18,024,545
27	Traffic	16,635,168	55,518,987	34,141,109	7,703,011	10,658,869	7,236,742	14,139,817	4,412,928	17,739,265
28	Commercial	7,306,189	32,806,236	16,796,462	3,801,284	4,679,976	3,711,539	7,255,659	2,401,441	9,540,378
29	General office salaries and expenses	4,160,979	30,448,641	10,298,431	1,995,410	2,387,139	2,613,584	4,150,737	1,417,900	5,464,066
30	Other	4,460,049	39,904,335	8,700,461	1,936,849	3,607,472	2,031,393	3,970,516	1,091,470	4,625,777
31	Total operating expenses	66,671,721	308,647,306	141,758,743	29,128,866	43,038,411	31,358,018	60,007,792	17,255,325	77,742,035
32	Operating ratio—percent	71.64	69.54	65.34	68.43	66.28	70.31	64.63	68.34	67.30
	Operating taxes:									
33	Other than U. S. Government	7,028,924	36,550,547	21,756,371	3,437,756	6,372,470	3,826,710	7,624,468	2,643,607	11,392,459
34	U. S. Government	2,574,668	16,325,480	8,659,255	1,621,387	1,934,641	1,621,995	3,808,616	754,582	4,374,044
35	Total operating taxes	9,603,592	52,876,027	30,415,626	5,059,143	8,307,111	5,448,705	11,433,084	3,398,189	15,766,503
36	Net operating income	16,787,251	82,306,743	44,768,469	8,378,524	13,586,539	7,790,795	21,401,778	4,597,286	22,000,912
37	Other income	367,882	182,838,125	863,891	130,374	275,440	979,994	755,113	105,759	10,916,397
38	Miscellaneous deductions from income	199,045	578,053	347,148	64,474	114,349	132,894	313,674	59,555	171,786
39	Interest deductions	5,497,145	29,319,049	3,889,440	1,097,551	3,094,775	2,069,372	2,710,943	1,064,156	3,539,154
40	Miscellaneous fixed charges	166,306	362,830	33,448	11,678	155,584	12,268	29,880	----------	18,726
41	Net income	11,292,637	234,884,936	41,362,324	7,335,195	10,521,882	6,521,263	19,102,394	3,579,334	29,187,643
	Dividends declared:									
42	Common stock	11,505,698	220,379,927	39,581,036	7,148,916	10,851,382	6,139,885	15,460,970	3,965,226	24,495,000
43	Preferred stock	----------	2,746,763	879,310	19,068	79,758	461,562	2,114,349	----------	5,338,532
	Miles of wire in cable:									
44	Aerial	2,652,769	11,145,002	[3] 5,172,039	1,007,260	2,288,462	957,727	2,649,817	530,651	2,698,823
45	Underground	4,098,895	19,552,506	[3] 11,682,653	1,796,786	2,217,072	1,711,418	3,812,010	811,638	5,504,501
46	Buried	36,459	246,654	[3] 56,028	8,167	14,409	84,611	262,003	13,714	35,177
47	Submarine	23,932	79,792	[3] 28,791	5,074	12,473	715	2,754	----------	43,650
48	Total miles of wire in cable	6,812,055	31,023,954	16,941,386	2,817,287	4,532,416	2,754,471	6,726,284	1,356,003	8,282,151
49	Miles of aerial wire	244,977	1,094,010	590,056	145,103	545,785	447,175	631,135	291,512	370,419
50	Total miles of wire	7,057,032	32,117,964	17,531,442	2,962,390	5,078,201	3,201,646	7,357,419	1,647,515	8,652,570
51	Miles of pole line	34,178	83,828	94,106	14,350	40,069	81,601	77,986	41,294	36,843
52	Miles of underground conduit (single duct)	10,720	51,094	29,047	4,042	4,624	4,206	8,316	1,969	14,025

	Central offices-type of switchboard:									
53	Magneto-manual	388	401	632	107	583	562	774	278	496
54	Common battery-manual	240	570	461	177	329	257	430	211	271
55	Auto-manual		1	9				3		3
56	Dial (automatic) system	100	399	256	101	162	91	127	19	185
57	Total central offices	728	1,371	1,358	385	1,074	910	1,334	508	955
58	Company telephones	1,564,490	4,695,920	3,674,011	799,329	1,141,341	892,315	1,563,792	485,478	1,853,956
59	Service telephones	1,890	19,395	25,634	8,121	31,587	62,980	80,222	15,118	47,099
60	Private line telephones	5,588	32,497	15,259	4,102	1,966	3,178	5,620	1,390	15,308
61	Total telephones	1,571,968	4,747,812	3,714,904	811,552	1,174,894	958,473	1,649,634	501,986	1,916,363
62	Other stations	1,665	9,721	4,810	554	1,044	549	1,509	508	3,280
	Company telephones by type of switchboard: [4]									
63	Magneto-manual	117,654	99,778	150,068	26,407	98,615	84,565	113,121	28,845	44,654
64	Common battery-manual	776,126	1,920,970	1,853,830	462,460	609,550	430,646	659,178	319,716	726,146
65	Auto-manual		89	12,867				424		2,709
66	Dial (automatic) system	670,710	2,675,056	1,657,246	310,462	433,176	377,104	791,069	136,917	1,080,447
	Company telephones by type of customer:									
67	Business	548,551	2,036,766	1,349,742	311,176	471,997	287,247	584,672	191,944	724,267
68	Residential	1,015,939	2,659,154	2,323,665	488,153	669,344	605,068	979,120	293,534	1,129,689
	Company telephones by class:									
69	Main	1,166,906	3,059,421	2,671,554	520,855	854,570	700,319	1,177,651	361,565	1,308,764
70	P. B. X	229,808	1,124,051	687,450	179,605	170,436	114,819	222,000	74,195	359,241
71	Extension	167,776	512,448	315,007	98,869	116,335	77,177	164,141	49,718	185,951
	Average number of calls originated per month:									
72	Local calls	201,453,301	562,583,059	483,865,698	113,602,141	262,655,507	149,495,231	321,080,240	76,455,979	267,028,400
73	Toll calls	9,798,868	27,789,951	12,679,066	2,477,779	3,553,622	2,325,490	5,348,168	1,455,252	8,822,501
74	Average number of company and service telephones	1,551,562	4,631,744	3,584,720	780,578	1,131,338	942,963	1,604,600	485,484	1,837,375
	Private line service revenues: [5]									
75	Commercial, broadcasting	$63,708	$6,159,494	$219,109	$58,572	$114,312	$94,871	$135,279	$41,048	$328,587
76	Commercial, miscellaneous	$247,384	$16,778,187	$328,732	$14,462	$55,081	$40,975	$94,652	$10,350	$346,232
77	Government		$922,906	$645	$5,211	$37,836	$1,248		$3,732	
78	Press		$4,051,391	$2,194		$285	$270			$117,952
	Telegraph stations:									
	Private line Morse:									
79	Number	130	2,253	701	2	10	17	122	46	218
80	Revenue	$36,406	$5,986,598	$435,022	$28,969	$89,487	$34,532	$101,052	$61,488	$187,404
	Private line teletypewriter:									
81	Number	560	4,327	1,318	126	120	84	213	30	862
82	Revenue	$292,075	$8,056,942	$1,167,396	$102,677	$143,484	$68,961	$280,717	$213,322	$1,266,561

[3] Does not include data of 1 telephone company which submitted returns in the aggregate only.
[4] Excludes 27 telephones of American Telephone & Telegraph Co. which were not connected with exchange offices.
[5] Relates, except in minor instances, to interstate services furnished to customers and includes revenues from intrastate lines used in interstate communication.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Con.

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
	Telegraph stations Continued.									
	Teletypewriter exchange services:									
83	Number	975	3,141	2,791	426	916	448	1,174	432	2,210
84	Revenue	$247,188	$3,233,547	$1,355,516	$101,604	$262,199	$134,544	$360,656	$113,918	$982,972
85	Telephotograph service revenue	$180	$374,365	$23,601	$288	----------	$486	$1,135	$23,477	$51,708
86	Other telegraph service revenue	$7,007	$42,208	$14,828	$986	----------	----------	$2,986	$12,505	$277,271
87	Number of employees at close of June	27,275	94,261	59,402	13,527	22,351	15,125	29,141	8,772	32,310
88	Male employees	9,959	39,588	21,699	4,625	8,406	5,900	10,506	3,337	12,753
89	Female employees	17,316	54,673	37,703	8,902	13,945	9,225	18,635	5,435	19,557
90	Number of employees at close of year	26,716	92,607	58,682	13,148	21,808	14,277	28,148	8,408	31,980
91	Male employees	9,968	39,434	21,663	4,574	7,944	5,472	10,165	3,134	12,756
92	Female employees	16,748	53,173	37,019	8,574	13,864	8,805	17,983	5,274	19,224
93	Total compensation for year	$44,423,293	$184,163,928	$92,095,728	$19,772,290	$26,689,919	$20,894,744	$36,504,259	$11,291,627	$53,585,042
94	Compensation chargeable to operating expenses	$37,468,851	$157,894,945	$79,907,929	$16,138,935	$21,162,790	$17,522,834	$30,554,664	$9,160,699	$45,333,193
	Benefits:									
95	Number of cases handled during year	5,354	21,561	10,373	2,120	4,379	2,063	3,705	1,275	5,715
96	Amount paid during year	$820,401	$3,128,566	$1,480,937	$268,373	$504,025	$246,015	$489,207	$148,375	$766,878
	Pensions:									
97	Number of cases being paid at end of year	1,004	3,017	1,358	244	464	360	521	133	619
98	Disbursements from pension fund	$701,819	$2,453,290	$877,575	$156,507	$228,929	$216,941	$314,748	$77,256	$439,205
99	Relief and pension charges to operating expenses	$2,394,496	$7,375,871	$3,320,110	$781,124	$920,014	$685,031	$1,236,544	$353,024	$2,606,443
100	Balance in pension fund at beginning of year	$12,210,387	$69,935,555	$33,792,704	$5,573,043	$8,471,993	$7,449,795	$13,703,661	$3,770,959	$14,498,733
101	Balance in pension fund at end of year	$13,823,249	$74,685,126	$36,213,675	$6,254,345	$9,134,152	$7,994,191	$14,670,115	$4,094,320	$16,784,892

Proportion of the telephone industry covered by annual reports.—In table III statistical data shown in the reports filed with the Commission for the year 1937 are compared with returns for 1937 from all classes A and B carriers obtained from unofficial sources. The data applicable to 1932 for the same group of carriers that reported to the Commission for 1937 are further compared with the figures for all telephone systems and lines in the United States shown in the "Census of Electrical Industries, Telephones and Telegraphs: 1932." Notwithstanding, the fact that the number of telephone carriers reporting to the Commission represent less than one-fourth of 1 percent of the total number of systems and lines, the returns indicate that they handle most of the telephone business in the United States.

TABLE III.—*Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census for 1932, and reports filed with the Commission and data secured from unofficial sources*

Item	Census figures 1932	Interstate Commerce Commission, 1932 [1]		Total classes A and B carriers 1937 [2]	Federal Communications Commission, 1937	
		Amount	Percent of census figures		Amount	Percent of total
Number of systems and lines	44,828	109	0.24	240	93	38.8
Investment in telephone plant	$4,791,902,525	$4,433,064,453	92.5	$4,881,358,487	$4,685,231,383	96.0
Operating revenues	$1,061,530,140	$1,012,489,161	95.4	$1,176,994,154	$1,139,534,334	96.8
Central offices	19,228	8,546	44.4	10,601	8,623	81.3
Total telephones	17,424,406	15,041,294	86.3	18,164,443	17,047,586	93.9
Number of employees	334,085	285,268	85.4	(3)	295,774	----
Total compensation	$458,116,677	(3)	----	(3)	$489,420,830	----

[1] Represents data applicable to 1932 for carriers reporting to the Federal Communications Commission in 1937.
[2] Data secured from annual reports filed with the Commission and from unofficial sources.
[3] Data not available.

Development of class A telephone carriers from 1926 to 1937.—Comparative selected data for the years 1926 to 1937, relative to class A telephone carriers that reported to the Commission for the year 1937, are shown in table IV and the trends reflected in chart 2. The difference in the number of carriers reporting is due to mergers and consolidations. The investment in telephone plant increased from $2,976,013,534 to $4,678,893,476 during this period.

TABLE IV.—*Comparative statement of selected data of class A telephone carriers which reported for the year 1937* [1]

[Years 1926 to 1937]

Year	Number of carriers	Investment in telephone plant	Depreciation reserve	Net book investment	Ratio of depreciation to investment
					Percent
1926	142	$2,976,013,534	$601,786,222	$2,374,227,312	20.22
1927	148	3,217,579,417	624,949,452	2,592,629,965	19.42
1928	143	3,483,470,950	674,832,705	2,808,638,245	19.37
1929	138	3,864,538,510	724,542,276	3,139,996,234	18.75
1930	136	4,220,599,066	762,716,877	3,457,882,189	18.07
1931	109	4,388,147,537	814,639,530	3,573,508,007	18.56
1932	91	4,427,116,207	846,648,365	3,580,467,842	19.12
1933 [2]	83	4,436,496,676	930,092,421	3,506,404,255	20.96
1934	84	4,445,731,817	1,008,438,956	3,437,292,861	22.68
1935	83	4,463,652,345	1,103,011,314	3,360,641,031	24.71
1936	77	4,540,690,297	1,188,469,599	3,352,220,698	26.17
1937 [2]	74	4,678,893,476	1,262,171,574	3,416,721,902	26.98

See footnotes at end of table on following page.

TABLE IV.—*Comparative statement of selected data of class A telephone carriers which reported for the year 1937* [1]—Continued

Year	Total telephone capital	Capital stock	Funded debt	Ratio of debt to capital	Total surplus
				Percent	
1926	$3,573,153,760	$2,583,975,569	$989,178,191	27.68	$344,775,313
1927	3,840,393,186	2,864,867,591	975,525,595	25.40	477,785,488
1928	4,156,679,033	3,181,692,285	974,986,748	23.46	545,598,868
1929	4,466,015,568	3,321,097,115	1,144,918,453	25.64	631,765,144
1930	5,187,103,339	4,091,078,134	1,096,025,205	21.13	638,479,342
1931	5,300,731,380	4,277,898,727	1,022,832,653	19.30	639,762,144
1932	5,215,077,810	4,218,756,373	996,321,437	19.10	589,969,990
1933 [2]	5,244,453,717	4,255,118,709	989,335,008	18.86	523,370,235
1934	5,261,049,672	4,274,556,849	986,492,823	18.75	460,023,014
1935	5,290,213,961	4,274,962,136	1,015,251,825	19.19	412,229,694
1936	5,280,032,625	4,306,192,025	973,840,600	18.44	386,734,872
1937 [2]	5,217,729,412	4,276,220,332	941,509,080	18.04	390,180,025

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Net operating income
			Percent		
1926	$880,084,511	$589,644,032	67.00	$73,341,652	$211,718,914
1927	948,849,488	637,605,336	67.20	79,539,070	225,777,258
1928	1,032,572,065	691,316,513	66.95	84,859,057	249,952,202
1929	1,133,081,398	766,268,193	67.63	87,150,919	272,289,897
1930	1,167,200,160	804,354,143	68.91	89,822,005	263,767,944
1931	1,137,235,546	768,625,570	67.59	94,004,725	265,476,177
1932	1,011,244,065	690,245,184	68.26	89,662,579	218,095,025
1933 [2]	933,469,503	666,878,438	71.44	87,901,688	178,588,274
1934	944,849,539	665,636,960	70.45	92,595,760	186,528,190
1935	997,325,438	702,567,537	70.45	98,996,370	195,693,862
1936	1,076,619,047	721,975,372	67.06	121,341,218	233,255,895
1937 [2]	1,138,132,784	774,549,427	68.05	142,167,406	221,416,111

Year	Miles of wire [3]	Total telephones	Number of employees	Total compensation	Average compensation per employee per annum
1926	54,630,161	14,389,261	322,793	(4)	----------
1927	60,462,194	15,202,803	328,149	(4)	----------
1928	65,899,972	16,044,270	350,159	(4)	----------
1929	73,678,373	16,991,193	387,166	(4)	----------
1930	80,577,114	17,108,141	346,511	(4)	----------
1931	84,353,020	16,815,165	314,934	(4)	----------
1932	85,926,212	15,000,335	284,633	(4)	----------
1933 [2]	82,369,325	14,310,699	267,268	$369,427,904	$1,382
1934	82,142,198	14,634,715	267,817	386,028,511	1,441
1935	82,492,473	15,130,285	265,053	402,136,977	1,517
1936	83,322,628	16,059,625	281,243	433,363,452	1,541
1937 [2]	85,525,108	17,005,401	295,088	488,797,654	1,656

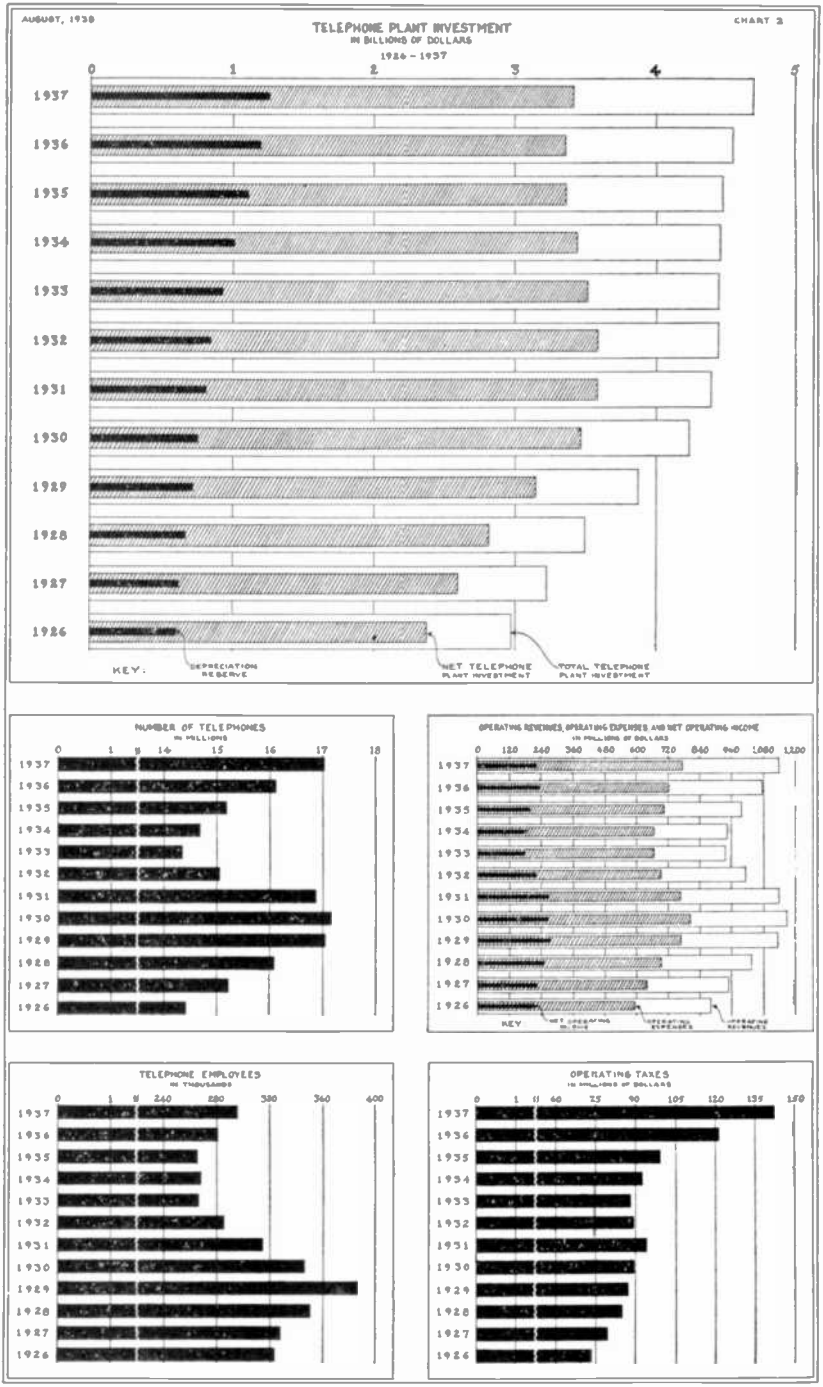
[1] Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

[2] In comparing data in this table, consideration should be given to the effect of the revisions of the Uniform System of Accounts, First Revised Issue, and the Issue of June 19, 1935, as amended, resulting in certain changes and rearrangements of both the balance sheet and the income statement.

[3] The revision of the instructions in 1933 concerning the reporting of wire mileage by telephone carriers accounts for most of the decrease shown for that year.

[4] Data not reported.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Membership dues and contributions paid to noncommercial organizations.—The following statement pertains to membership dues and contributions paid by all telephone carriers reporting to the Commission during 1937, to organizations such as boards of trade, chambers of commerce, social and athletic clubs, professional and scientific societies, etc.:

Item	Number		Amount
	Organizations	Memberships	
Boards of trade, chambers of commerce, and other businessmen's organizations	4,635	7,666	$362,840
Social, athletic, and other clubs	384	474	21,304
Associations of telephone companies	106	144	83,093
Professional and scientific organizations	304	446	13,626
Other organizations	127	146	13,539
Total	5,556	8,876	494,402

Names and selected statistics of telegraph carriers.—The names of the 16 wire-telegraph and 20 radiotelegraph carriers that filed annual reports for the calendar year 1937 are listed in table V, and selected financial and operating data compiled from these reports are shown in table VI.

TABLE V.—*List of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission for the year 1937*

Name of carrier	Type of carrier
All America Cables, Inc	Ocean cable.
Canadian Pacific Ry. Co	Land line telegraph.
Central Idaho Telegraph & Telephone Co	Do.
Central Radio Telegraph Co	Radiotelegraph.
City of Seattle, Harbor Department	Do.
Colorado & Wyoming Telegraph Co	Land line telegraph.
Commercial Cable Co	Ocean cable.
Commercial Pacific Cable Co	Do.
Continental Telegraph Co	Land line telegraph.
French Telegraph Cable Co	Ocean cable.
Globe Wireless, Ltd	Radiotelegraph.
Great North Western Telegraph Co. of Canada	Land line telegraph.
Hearst Radio, Inc	Radiotelegraph.
Interstate Telephone & Telegraph Co	Land line telegraph.
Mackay Radio & Telegraph Co. (California)	Radiotelegraph.
Mackay Radio & Telegraph Co. (Delaware)	Do.
Magnolia Radio Corporation	Do.
Mexican Telegraph Co	Ocean cable.
Michigan Wireless Telegraph Co	Radiotelegraph.
Minnesota & Manitoba R. R	Land line telegraph.
Mountain Telegraph Co	Do.
Northern Telegraph Co	Do.
Olympic Radio Co	Radiotelegraph.
Pere Marquette Radio Corporation	Do.
Postal Telegraph-Cable Co. (Land Line System)	Land line telegraph.
Press Wireless, Inc	Radiotelegraph.
R. C. A. Communications, Inc	Do.
Radiomarine Corporation of America	Do.
South Porto Rico Sugar Co. (of Puerto Rico)	Do.
Southern Radio Corporation	Do.
Tidewater Wireless Telegraph Co	Do.
Tropical Radio Telegraph Co	Do.
United States-Liberia Radio Corporation	Do.
Wabash Radio Corporation	Do.
Western Radio Telegraph Co	Do.
Western Union Telegraph Co	Land line telegraph and ocean cable.

TABLE VI.—*Statistics of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission classified by kinds of carriers*

[Year ended Dec. 31, 1937]

No.	Item	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
1	Number of carriers	16	20	36
2	Investment in plant and equipment	$504,251,121	$32,632,697	$536,883,818
3	Other investments	53,353,228	13,107,142	66,460,370
4	Cash	16,856,741	1,455,882	18,312,623
5	Materials and supplies	8,979,093	902,681	9,881,774
6	Total working assets	62,368,256	6,045,751	68,414,007
7	Capital stock	164,126,356	8,784.457	172,910,813
8	Unmatured funded debt	111,161,000	3,579,918	114,740,918
9	Total long-term debt	166,398,632	12,863,897	179,262,529
10	Total current liabilities	43,331,360	7,030,076	50,361,436
11	Reserve for accrued depreciation	144,957,979	17,382,981	162,340,960
12	Total corporate surplus	69,108,014	1,008,315	70,116,329
	Telegraph operating revenues:			
13	Transmission-telegraph	108,151,263	4,574,189	112,725,452
14	Transmission-cable	18,340,194	5,155,756	23,495,952
15	Nontransmission	10,682,458	1,002,959	11,685,417
16	Contract-Dr	1,607,103		1,607,103
17	Total operating revenues	135,566,814	10,732,904	146,299,718
	Telegraph operating expenses:			
18	Depreciation and extraordinary depreciation	8,385,326	1,548,824	9,934,150
19	All other maintenance	17,332,846	628,781	17,961,627
20	Conducting operations	85,206,614	5,638,982	90,845,596
21	Relief department and pensions	3,218,002	13,150	3,231,152
22	All other general	3,276,452	1,266,314	4,542,766
23	Total operating expenses	117,419,240	9,096,051	126,515,291
24	Other operating revenues		1,680,527	1,680,527
25	Other operating expenses		1,875,856	1,875,856
	Operating taxes:			
26	Other than U. S. Government	5,733,052	248,465	5,981,517
27	U. S. Government	1,217,363	427,650	1,645,013
28	Total operating taxes	6,950,415	676,115	7,626,530
29	Operating income	10,733,681	727,019	11,460,700
30	Nonoperating income	2,517,476	1,224,432	3,741,908
31	Total interest deductions	8,070,537	682,851	8,753,388
32	All other deductions	3,869,862	296,033	4,165,895
33	Net income	1,310,758	972,567	2,283,325
	Dividends declared:			
34	Preferred stock		17,318	17,318
35	Common stock	3,096,465	1,382,474	4,478,939
	Miles of wire in cable:			
36	Aerial	117,213		117,213
37	Underground	335,029		335,029
38	Submarine	115,488		115,488
39	Total miles of wire in cable	[1] 567,730		567,730
40	Miles of aerial wire	1,861,020		1,861,020
41	Total miles of wire	2,428,750		2,428,750
42	Miles of pole line	252,136		252,136
43	Miles of underground conduit (single duct)	6,247		6,247
	Service equipment furnished free to customers: Average number:			
44	Telegraph printers	18,550	98	18,648
45	Telegraph printer tie lines	18,270	98	18,368
46	Morse tie lines	915	32	947
47	Telephones	8,686	212	8,898
48	Telephone tie lines	9,707	265	9,972
49	Pneumatic tubes	54		54
50	Call boxes	517,645	1,180	518,825
51	Automatic transmitting apparatus	14		14
52	Other	43	1	44

[1] Includes 59,389 nautical miles of wire.

TABLE VI.—*Statistics of wire-telegraph and radiotelegraph carriers reporting on an annual basis to the Commission classified by kinds of carriers*—Continued

No.	Item	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
	Leased wire revenues:			
	Commercial:			
53	Broadcasting	$15,596		$15,596
54	Miscellaneous	802,461	$2,342	804,803
55	Government	2,554		2,554
56	Press	617,694		617,694
	Telegraph offices:			
57	United States [1]	25,266	135	25,401
58	Foreign	187	34	221
59	Total offices	25,453	169	25,622
	Telegraph revenue messages transmitted:			
	Number of messages:			
60	Domestic	202,000,042	3,996,572	205,996,614
61	Foreign	10,620,499	4,941,014	15,561,513
62	Mobile		873,350	873,350
63	Total messages	212,620,541	9,810,936	222,431,477
	Amount of revenue:			
64	Domestic	$110,263,814	$1,995,623	$112,259,437
65	Foreign	17,095,007	6,579,387	23,674,394
66	Mobile		954,483	954,483
67	Total revenue	127,358,821	9,529,493	136,888,314
	Number of employees:			
68	Close of June	73,399	3,144	76,543
69	Close of year	69,680	3,140	72,820
70	Total compensation for year	$85,228,074	$5,185,489	$90,413,563
71	Compensation chargeable to operating expenses	76,720,654	4,551,447	81,272,101

[1] Includes Territories and possessions of the United States except the Philippine Islands.

Development of telegraph industry from 1926 to 1937.—Comparative data relative to wire-telegraph carriers that reported to the Commission for the year 1937 showing the development of such carriers through the years 1926 to 1937, inclusive, are shown in table VII. Similar data for radiotelegraph carriers from 1934 to 1937, inclusive, are given table VIII. The gross operating revenues of one of the larger reporting radiotelegraph carriers, the statistics of which are included in table VIII, include substantial amounts reported as other non-transmission revenues covering miscellaneous sales, rentals, service fees, etc.

TABLE VII.—*Selected data showing the development through the years 1926 to 1937, inclusive, of wire-telegraph carriers which reported for the year 1937* [1]

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization	
						Percent	
1926	16	$393,364,255	$176,014,710	$117,058,158	$293,072,868	39.94	$124,271,528
1927	15	423,459,022	176,185,187	96,637,000	272,822,187	35.42	135,596,396
1928	16	428,965,837	178,892,559	97,187,000	276,079,559	35.20	143,667,517
1929	16	441,487,928	178,893,927	97,025,000	275,918,927	35.16	141,487,599
1930	16	486,095,374	178,896,158	132,005,000	310,901,158	42.46	137,890,928
1931	15	497,824,144	171,042,979	128,980,000	300,022,979	42.99	130,704,803
1932	15	500,010,818	170,408,910	127,955,000	298,363,910	42.89	108,308,323
1933	15	501,050,705	170,527,660	127,916,000	298,443,660	42.86	108,654,801
1934	15	501,753,560	166,398,823	126,564,000	292,962,823	43.20	107,178,422
1935	16	501,141,370	166,402,308	126,237,036	292,639,344	43.14	105,369,020
1936	16	502,005,481	166,349,603	114,250,913	280,600,516	40.72	109,683,479
1937	16	504,251,121	164,126,356	111,161,000	275,287,356	40.38	69,108,014

[1] Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

TABLE VII.—*Selected data showing the development through the years 1926 to 1937, inclusive, of wire-telegraph carriers which reported for the year 1937*—Continued

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Operating income	Total interest deductions	Net income
			Percent				
1926	$180,303,883	$145,647,745	80.78	$6,970,766	$27,086,661	$3,508,065	$22,999,900
1927	177,623,792	142,286,508	80.11	7,028,047	27,706,514	4,779,357	23,223,633
1928	185,194,759	149,189,598	80.56	6,824,541	28,642,023	4,817,449	24,065,296
1929	196,476,995	160,335,883	81.61	6,065,655	29,553,041	4,804,649	25,438,521
1930	176,723,620	151,213,665	85.57	5,246,794	19,776,108	7,057,065	13,298,864
1931	148,564,656	129,783,571	87.36	4,512,452	13,845,421	7,452,536	5,539,547
1932	115,037,160	103,228,598	89.74	4,419,662	6,658,999	7,716,655	[1] *2,428,471*
1933	114,350,700	96,753,445	84.61	4,434,454	12,257,562	7,789,755	4,045,362
1934	119,053,078	102,802,369	86.35	4,354,451	11,024,120	8,734,576	1,057,874
1935	122,207,928	102,575,187	83.93	4,387,300	14,426,334	8,801,467	4,251,329
1936	132,699,187	109,989,251	82.89	5,239,683	16,817,978	8,470,926	6,928,354
1937	135,566,814	117,419,240	86.61	6,950,415	10,733,681	8,070,537	1,310,758

Year	Dividends declared	Miles of wire		Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum
		In cable	Aerial wire				
1926	$14,854,851	374,522	1,754,281	199,936,424	87,213	[4]	----------
1927	14,359,339	393,321	1,858,323	197,282,600	83,668	[4]	----------
1928	15,031,275	417,362	1,942,116	226,249,325	85,388	[4]	----------
1929	22,328,254	453,032	1,954,924	213,703,866	95,068	[4]	----------
1930	23,680,247	471,995	1,956,980	188,996,181	92,709	[4]	----------
1931	11,668,081	515,736	1,880,753	148,899,958	79,568	[4]	----------
1932	4,460,782	526,647	1,856,706	130,583,323	67,136	[4]	----------
1933	2,815,756	531,278	1,857,618	147,425,409	64,206	[4]	----------
1934	1,796,498	542,645	1,856,402	160,700,029	68,621	$73,129,228	$1,066
1935	4,816,031	546,901	1,853,723	183,769,723	66,172	72,171,075	1,091
1936	1,845,035	570,354	1,855,550	200,470,722	69,998	78,483,418	1,121
1937	3,096,465	567,730	1,861,020	212,620,541	73,399	85,228,074	1,161

[1] Deficit or other reverse item.
[3] Represents total compensation for the year divided by the number of employees at the close of June.
[4] Data not reported.

TABLE VIII.—*Selected data showing the development through the years 1934 to 1937, inclusive, of radiotelegraph carriers which reported for the year 1937*

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization	
						Percent	
1934	20	$30,905,975	$7,465,857	$3,789,000	$11,254,857	33.67	$4,078,411
1935	20	31,420,019	7,666,757	4,144,040	11,810,797	35.09	1,897,023
1936	20	31,352,900	8,694,757	967,808	9,662,565	10.02	1,959,898
1937	20	32,632,697	8,784,457	3,579,918	12,364,375	28.95	1,008,315

Year	Operating revenues	Operating expenses	Operating ratio	Operating taxes	Operating income	Total interest deductions
			Percent			
1934	$7,927,369	$7,424,139	93.65	$278,532	$165,849	$770,996
1935	8,454,357	8,232,106	97.37	213,764	[1] *275,378*	813,196
1936	9,407,679	8,698,225	92.46	396,666	172,018	703,347
1937	10,732,904	9,096,051	84.75	676,115	727,019	682,851

TABLE VIII.—*Selected data showing the development through the years 1934 to 1937, inclusive, of radiotelegraph carriers which reported for the year 1937*—Continued

Year	Net income	Dividends declared	Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum
1934	[1] *$140,652*	$300,000	5,086,430	2,362	$4,041,538	$1,711
1935	[1] *641,301*	1,400,000	6,875,974	2,815	4,205,457	1,494
1936	[1] *45,768*	542,637	8,421,092	3,026	4,569,308	1,510
1937	972,567	1,399,792	9,810,936	3,144	5,185,489	1,649

[1] Deficit or other reverse item.

Revenue messages handled by telegraph carriers.—The number of each class of messages handled by wire-telegraph and radiotelegraph carriers during 1937 and the amount of revenues applicable to each class are shown in table IX and are segregated into the following major groups: (*a*) Domestic—Telegraph, (*b*) Foreign—Cable and radiotelegraph, and (*c*) Mobile—Including marine. The average revenue per message for transmitting "full-rate messages" in the domestic group was $0.55, "full-rate ordinary messages" in the foreign group $2.32, and "full-rate messages" in the mobile group $1.23. The returns for "Miscellaneous" in the foreign group include revenues from handling contract messages.

TABLE IX.—*Revenue messages transmitted, showing number of messages and amount of revenues, by classes, as reported by wire-telegraph and radiotelegraph carriers*

[Year ended Dec. 31, 1937]

Class of messages	Land-wire telegraph		Ocean cable [1]		Radiotelegraph		Total		
	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Average per message
Domestic—Telegraph: [1]									
Commercial messages:									
Full-rate messages	92,430,402	$50,787,837	103,985	$133,983	1,213,052	$648,426	93,747,439	$51,570,246	$0.55
Night messages	660,424	332,530	29,712	21,311	74,003	37,555	764,139	391,396	.51
Day letters	21,504,304	19,089,111	33,563	57,907	358,176	313,451	21,896,043	19,460,469	.89
Night letters	20,554,815	10,688,027	67,747	74,260	196,751	121,213	20,819,313	10,883,500	.52
Serial service (sections)	9,305,303	4,547,114			711,060	273,467	10,016,363	4,820,581	.48
Timed wire service	3,390,988	3,261,658			19,438	17,466	3,410,426	3,279,124	.96
Mobile messages (domestic haul)	550,822	223,410	841	1,077	224,624	26,244	776,287	250,731	.32
Foreign messages (domestic haul)	5,841,339	3,561,844			752,351	451,729	6,593,690	4,013,573	.61
Money-order messages	4,209,358	2,755,880	3,424	4,458			4,212,782	2,760,338	.66
Greeting messages	15,016,748	4,501,962	2,315	1,308			15,019,063	4,503,270	.30
Miscellaneous messages	746,956	724,530			25,350	14,865	772,306	739,395	.96
Stock and commercial news messages	4,748,481	5,315,740					4,748,484	5,315,740	1.12
United States Government messages:									
Ordinary messages	2,512,229	1,163,330	1,182	2,537	49,987	20,054	2,563,398	1,185,921	.46
Weather reports	5,988,909	375,935			550		5,989,459	375,935	.06
Press messages	14,286,524	2,629,811	9,668	8,254	371,230	71,153	14,667,422	2,709,218	.18
Total domestic	201,747,605	109,958,719	252,437	305,095	3,996,572	1,995,623	205,996,614	112,259,437	.54
Foreign—Cable and radiotelegraph: [1]									
Commercial messages:									
Full-rate urgent messages	7,537	33,588	9,704	46,481	7,812	41,167	25,053	121,236	4.84
Full-rate ordinary messages	226,850	516,043	180,239	508,202	212,931	416,179	620,020	1,440,424	2.32
CDE urgent messages	352,949	480,583	285,257	340,530	97,469	99,962	735,675	921,075	1.25
CDE ordinary messages	1,489,568	1,648,646	2,456,575	3,916,118	1,840,235	2,171,387	5,786,381	7,726,151	1.34
Deferred messages	1,361,257	1,544,818	1,616,956	2,315,168	1,312,825	1,261,100	4,291,038	5,121,086	1.19
Letter messages (DLT and NLT)	1,036,808	2,026,225	874,491	2,166,006	670,559	1,094,596	2,581,858	5,286,827	2.05
Greeting messages (GTG and XLT)	109,502	67,043	76,062	67,399	70,814	35,084	256,378	169,526	.66
Miscellaneous messages					189,764	431,346	189,764	431,346	2.27
Government messages (United States and foreign)	26,529	76,514	75,643	239,717	64,923	225,508	167,095	541,739	3.24
Press messages	138,187	443,070	295,288	668,526	465,723	652,304	899,198	1,763,900	1.96
Meteorological messages			1,094	330	2,247	2,116	3,341	2,446	.73
Miscellaneous					5,712	72,135	5,712	72,135	12.63
Total foreign	4,749,187	6,826,530	5,871,312	10,268,477	4,941,014	[2] 6,502,884	15,561,513	[2] 23,597,891	1.52

[1] "Domestic—Telegraph" includes international messages (primarily Canadian and Mexican) transmitted in accordance with carriers' rules governing domestic traffic.
[2] Excludes $76,503 representing adjustments in connection with foreign exchange.

TABLE IX.—*Revenue messages transmitted, showing number of messages and amount of revenues, by classes, as reported by wire-telegraph and radiotelegraph carriers*—Continued

Class of messages	Land wire telegraph		Ocean cable		Radiotelegraph		Total		
	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Number of messages	Amount of revenue	Average per message
Mobile—Including marine:									
Commercial messages:									
Full-rate messages					258, 257	$317, 834	258, 257	$317, 834	$1. 23
CDE messages					81, 700	60, 181	81, 700	60, 181	. 74
Letter messages					4, 238	6, 695	4, 238	6, 695	1. 58
Greeting and gift messages (GTG and XLT)					6, 216	5, 364	6, 216	5, 364	. 86
Miscellaneous messages					26, 400	38, 163	26, 400	38, 163	1. 45
Government messages:									
United States					44, 066	30, 294	44, 066	30, 294	. 69
Foreign					6	21	6	21	3. 50
Press messages					4, 513	6, 134	4, 513	6, 134	1. 36
Meteorological messages					31, 996	19, 543	31, 996	19, 543	. 61
Total mobile					[3] 873, 350	[4] 954, 483	[3] 873, 350	[4] 954, 483	1. 09
Grand total	206, 496, 792	116, 785, 249	6, 123, 749	10, 573, 572	9, 810, 936	9, 452, 990	222, 431, 477	136, 811, 811	. 62

[3] Includes 283, 123 full-rate, 81,379 CDE, 3,308 letter, 18,772 greeting and gift, and 29,376 miscellaneous messages which were excluded from the number of such messages shown above for the reason that the revenues derived therefrom were not classified.

[4] Includes $470,254 applicable to the messages specified in footnote 3 and not reported separately for each class.

Selected statistics of telephone and telegraph carriers and controlling companies, 1937.—A summary of the returns shown in the annual reports of all telephone, wire-telegraph, and radiotelegraph carriers for the year 1937 is shown in table X. Similar data concerning holding companies that have large interests in carriers engaged in wire or radio communications are given in table XI. The consolidated returns in table X indicate that the investment in plant and equipment of telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission during 1937 amounted to $5,222,115,201, and the operating revenues were $1,285,834,052 of which $579,834,393 or 45 percent represents the amount of salaries and wages paid during the year.

TABLE X.—*Summary of selected data from annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Federal Communications Commission*

[Year ended Dec. 31, 1937]

Item	Telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Number of carriers	93	16	20	129
Investment in plant and equipment	$4,685,231,383	$504,251,121	$32,632,697	$5,222,115,201
Capital stock	4,278,656,721	164,126,356	8,784,457	4,451,567,534
Funded debt	942,699,880	111,161,000	3,579,918	1,057,440,798
Depreciation reserve	1,263,953,223	144,957,979	17,382,981	1,426,294,183
Total surplus	390,378,032	69,108,014	1,008,315	460,494,361
Operating revenues	1,139,534,334	135,566,814	10,732,904	1,285,834,052
Operating expenses	775,608,217	117,419,240	9,096,051	902,123,508
Operating taxes:				
Other than U. S. Government	100,633,312	5,733,052	248,465	106,614,829
U. S. Government	41,674,668	1,217,363	427,650	43,319,681
Total operating taxes	142,307,980	6,950,415	676,115	149,934,510
Net operating income	221,618,297	10,733,681	727,019	233,078,997
Dividends declared	351,167,382	3,096,465	1,399,792	355,663,639
Miles of wire	85,606,179	2,428,750	----------	88,034,929
Number of employees (Dec. 31)	295,774	69,680	3,140	368,594
Total compensation for year	$489,420,830	$85,228,074	$5,185,489	$579,834,393

TABLE XI.—*Summary of selected data from annual reports of holding companies having large interests in the communications industry*

[Year ended Dec. 31, 1937]

Item	Amount
Number of companies	24
Investments in securities:	
Affiliated companies:	
Communication carriers	[1] $385,186,895
Other companies	[2] 208,128,162
Nonaffiliated companies:	
Communication carriers	[3] 2,201,526
Other companies	[4] 60,917,412
Investment advances to affiliated companies	146,456,468
Capital stock	381,426,500
Funded debt	195,093,865
Advances from affiliated companies	36,651,532
Total surplus	80,844,913
Dividend and interest income	22,029,006
Interest charges	12,281,632
Net income	8,223,762
Dividends declared	7,950,360

[1] Includes foreign investments amounting to $163,252,009.
[2] Includes foreign investments amounting to $22,968,758.
[3] Includes foreign investments amounting to $1,175,646.
[4] Includes foreign investments amounting to $8,533,269.

Averages and ratios of selected data relative to telephone and telegraph carriers.—In table XII some averages and ratios of selected data relative to all telephone and wire-telegraph carriers for the year 1937 are shown. As indicated in this table, the average investment in telephone plant per company telephone was $281.05 at the close of the year; the average amount of local revenue per telephone for the year was $45.24; and the average amount of toll revenue per telephone was $20.24. The amount of compensation chargeable to operating expenses was approximately 53.53 percent of all the gross operating expenses of telephone carriers during the year, and approximately 65.34 percent of the gross operating expenses of all wire-telegraph carriers. The operating ratio of telephone carriers was 68.06 percent and the operating ratio of wire-telegraph carriers was 86.61 percent.

TABLE XII.—*Averages and ratios of selected data of telephone and wire-telegraph carriers* [1]

[Year ended Dec. 31, 1937]

Item		Amount or percent
TELEPHONE CARRIERS		
Investment in telephone plant:		
Per mile of wire		$54.73
Per company telephone		$281.05
Ratio of operating revenues to investment in telephone plant	percent	24.32
Ratio of depreciation reserve to investment in telephone plant	percent	26.98
Total local service revenues per telephone [2]		$45.24
Total toll service revenues per telephone [2]		$20.24
Operating revenues per telephone [2]		$68.85
Operating expenses per telephone [2]		$46.86
Ratio of operating expenses to operating revenues	percent	68.06
Depreciation and amortization expenses:		
Ratio to investment in telephone plant	percent	3.66
Percent of operating revenues	percent	15.06
Percent of operating expenses	percent	22.13
Operating taxes:		
Ratio to investment in telephone plant	percent	3.04
Ratio to operating revenues	percent	12.49
Net operating income:		
Ratio to investment in telephone plant	percent	4.73
Ratio to operating revenues	percent	19.45
Wire mileage:		
Percent in cable	percent	94.91
Percent of aerial wire	percent	5.09
Calls originated per telephone per month: [3]		
Local		147.32
Toll		4.49
Employees at close of year, percent of total:		
Male	percent	38.92
Female	percent	61.08
Average compensation per employee per annum		[4] $1,654.71
Compensation chargeable to operating expenses:		
Percent of operating revenues	percent	36.43
Percent of operating expenses	percent	53.53
WIRE-TELEGRAPH CARRIERS [5]		
(Land line and ocean cable)		
Investment in plant and equipment:		
Per mile of wire		$207.62
Ratio of operating revenues to investment in plant and equipment	percent	26.88
Ratio of reserve for accrued depreciation to investment in plant and equipment	percent	28.75
Ratio of operating expenses to operating revenues	percent	86.61
Depreciation and extraordinary depreciation:		
Ratio to investment in plant and equipment	percent	1.66
Percent of operating revenues	percent	6.19
Percent of operating expenses	percent	7.14
Operating taxes:		
Ratio to investment in plant and equipment	percent	1.38
Ratio to operating revenues	percent	5.13
Operating income:		
Ratio to investment in plant and equipment	percent	2.13
Ratio to operating revenues	percent	7.92
Wire mileage:		
Percent in cable	percent	23.38
Percent of aerial wire	percent	76.62
Average compensation per employee per annum		[4] $1,223.14
Compensation chargeable to operating expenses:		
Percent of operating revenues	percent	56.59
Percent of operating expenses	percent	65.34

[1] For basic data underlying the computations in this table, see tables II and VI.
[2] Data computed on average number of company and service telephones.
[3] Represents total compensation for the year divided by the number of employees as of the close of the year.
[4] Excludes radiotelegraph carriers.

Analysis of operating statistics of communication carriers.—An analysis of the operating revenues, operating expenses, and net operating income of all telephone, wire-telegraph, and radiotelegraph carriers for the year 1937 is shown in chart 3. The figures shown in this chart were compiled principally from the annual reports but include returns from 43 telephone carriers that are subject only to the provisions of sections 201–5 of the act and filed monthly reports but did not file annual reports.

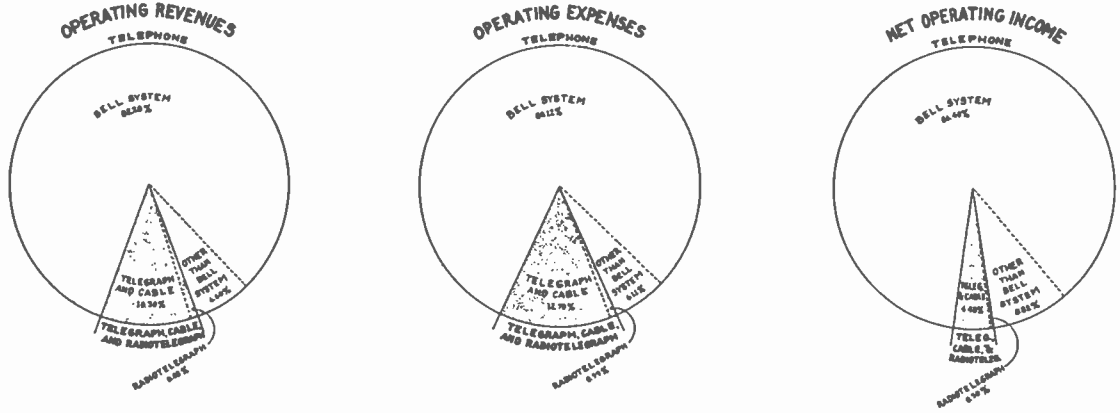
The operating revenues of the 138 telephone carriers filing annual or monthly reports, or both, with the Commission for the year 1937 were $1,165,697,353, as shown in chart 3. The operating revenues of the 16 wire-telegraph and 20 radiotelegraph carriers were $135,078,270 and $10,694,354, respectively. The total operating revenues for all the aforementioned carriers amounted to $1,311,469,977.

Under the uniform system of accounts prescribed for telephone carriers, "uncollectible operating revenues" are deducted from the gross operating revenues before the latter amount is transferred to the income statement; whereas, under the uniform system of accounts prescribed for telegraph carriers, the "uncollectible operating revenues" are not deducted from the gross operating revenues before the latter amount is transferred to the income satement, but are subsequently deducted from "net telegraph and cable operating revenues." Accordingly, the operating revenues of wire-telegraph and radiotelegraph carriers have been adjusted in chart 3 to exclude "uncollectible operating revenues," which amounted to $527,094 during 1937.

AUGUST, 1938

CHART 3

OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME FOR THE YEAR 1937
OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION



	OPERATING REVENUES	OPERATING EXPENSES	NET OPERATING INCOME
BELL SYSTEM CARRIERS	$1,079,891,596	$ 734,936,499	$ 607,089,443
OTHER THAN BELL SYSTEM CARRIERS	84,699,867	76,145,826	21,140,657
ALL TELEPHONE CARRIERS	1,163,697,363	792,101,725	328,230,100
WIRE-TELEGRAPH CARRIERS	135,078,270	117,619,269	10,733,681
RADIOTELEGRAPH CARRIERS	10,694,344	9,095,051	727,019
ALL TELEGRAPH CARRIERS	145,772,614	126,813,891	11,460,700
ALL REPORTING CARRIERS	1,311,469,977	918,697,016	339,690,800

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION

Distribution of operating revenues.—The distribution of the operating revenues on a percentage basis showing the major groups of operating expense accounts, operating taxes, other deductions, and the net operating income of class A telephone carriers and of all wire-telegraph and radiotelegraph carriers reporting during 1937 is shown in table XIII. The distribution of each dollar of operating revenues on the same basis is indicated in chart 4. As shown in these statistical representations, telephone carriers paid 12.5 percent of their operating revenues for taxes whereas wire-telegraph carriers paid 5.2 percent during the year.

TABLE XIII.—*Distribution of operating revenues showing operating expenses, operating taxes, and other deductions, and net operating income of class A telephone, wire-telegraph, and radiotelegraph carriers*

[Year ended Dec. 31, 1937]

Item	Amount	Percent of operating revenues
TELEPHONE CARRIERS		
Operating revenues	$1,138,132,784	100.0
Operating expenses:		
Maintenance	213,995,575	18.8
Depreciation and amortization	171,252,516	15.1
Traffic	167,906,406	14.8
Commercial	88,207,102	7.7
General office salaries and expenses	62,823,145	5.5
Relief and pensions	19,664,058	1.7
All other	50,600,625	4.5
Total operating expenses	774,549,427	68.1
Operating taxes:		
Other than U. S. Government	100,538,934	8.8
U. S. Government	41,628,472	3.7
Total operating taxes	142,167,406	12.5
Other deductions before net operating income	[1] *160*	[2]
Net operating income	221,416,111	19.4
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [3]		
Operating revenues	146,299,718	100.0
Operating expenses:		
Depreciation	9,934,150	6.8
All other maintenance	17,961,627	12.3
Conducting operations	90,845,596	62.1
Relief department and pensions	3,231,152	2.2
All other general	4,542,766	3.1
Total operating expenses	126,515,291	86.5
Operating taxes:		
Other than U. S. Government	5,981,517	4.1
U. S. Government	1,645,013	1.1
Total operating taxes	7,626,530	5.2
Other deductions before operating income	697,197	.5
Operating income	11,460,700	7.8

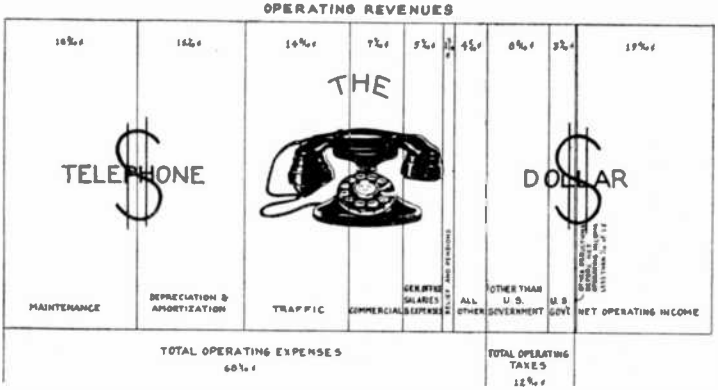
[1] Deficit or other reverse item.
[2] Less than 1/10 of 1 percent.
[3] Wire-telegraph carriers comprise land lines and ocean cables.

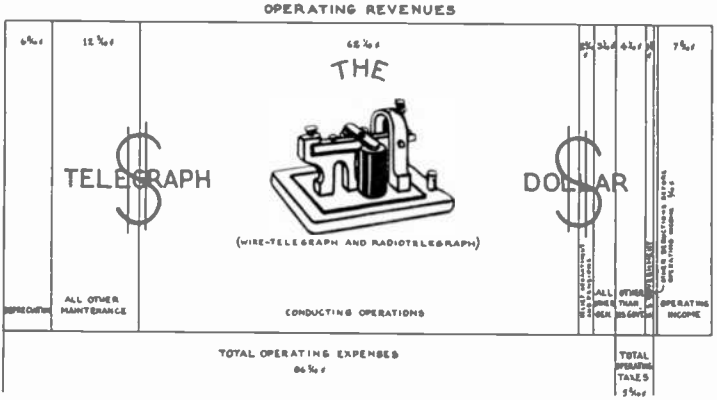
NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

AUGUST, 1938 CHART 4

DISTRIBUTION OF EACH DOLLAR OF OPERATING REVENUES SHOWING OPERATING EXPENSES, OPERATING TAXES, AND NET OPERATING INCOME

SOURCE
ANNUAL REPORTS OF TELEPHONE, WIRE-TELEGRAPH, AND RADIOTELEGRAPH CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION
1937





PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Operating tax accruals.—The operating tax accruals reported by classes A and B telephone carriers during 1937 are shown in table XIV. The amount of tax accruals applicable to State governments and subdivisions thereof was $100,632,312 while the portion applicable to the Federal Government amounted to $41,674,668 or 29.29 percent of the total. These figures exclude all excise taxes collected by telephone carriers from persons using telephone service.

TABLE XIV.—*Operating tax accruals, by State and the Federal Government, of telephone carriers reporting on an annual basis to the Commission*

[Year ended Dec. 31, 1937]

State	Class A carriers	Class B carriers	Total
Total, United States	[1] $142,166,406	$140,574	[1] $142,306,980
Alabama	617,623		617,623
Arizona	404,236		404,236
Arkansas	407,099	6,938	414,037
California	8,302,347	12,732	8,315,079
Colorado	1,018,380		1,018,380
Connecticut	835,528		835,528
Delaware	82,677	75	82,752
Florida	641,209		641,200
Georgia	798,976		798,976
Idaho	308,123		308,123
Illinois	10,246,971		10,246,971
Indiana	2,390,077	7,325	2,397,402
Iowa	1,124,724	3,996	1,128,720
Kansas	1,025,716	9,239	1,034,955
Kentucky	898,832		898,832
Louisiana	1,187,344		1,187,344
Maine	398,216	3,352	401,568
Maryland	1,552,366		1,552,366
Massachusetts	5,542,954	5,980	5,548,934
Michigan	3,308,063		3,308,063
Minnesota	1,548,043	2,703	1,550,746
Mississippi	619,036		619,036
Missouri	2,162,959	30	2,162,989
Montana	347,717		347,717
Nebraska	823,615		823,615
Nevada	176,440		176,440
New Hampshire	414,397		414,397
New Jersey	4,764,106	91	4,764,197
New Mexico	143,864		143,864
New York	23,764,844	8,055	23,772,899
North Carolina	1,015,296		1,015,296
North Dakota	240,416		240,416
Ohio	5,063,571	6,082	5,069,653
Oklahoma	1,376,237	31	1,376,268
Oregon	1,043,678		1,043,078
Pennsylvania	3,997,426		3,997,426
Rhode Island	276,156		276,156
South Carolina	496,709		496,709
South Dakota	279,443		279,443
Tennessee	902,696		902,696
Texas	2,983,331	19,347	3,002,678
Utah	358,577		358,577
Vermont	176,038	3,013	179,051
Virginia	785,430	5,389	790,819
Washington	1,968,528		1,968,528
West Virginia	638,546		638,546
Wisconsin	2,319,620		2,319,620
Wyoming	144,273		144,273
District of Columbia	616,090		616,090
U. S. Government	41,628,472	46,196	41,674,668

[1] Excludes $1,000 Canadian taxes.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues in excess of $100,000; Class B telephone carriers are those carriers having average annual operating revenues exceeding $50,000 but not more than $100,000.

Analysis of operating tax accruals and excise taxes.—The operating tax accruals and the excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers during 1937, are shown in Table XV, including an analysis of the amounts applicable to the Federal Government. Operating tax accruals amounting to $149,934,510 were reported during the year by the aforementioned carriers and, in addition, approximately $26,561,709 in excise taxes were collected from persons using communication service to be paid to the Federal Government or State governments.

TABLE XV.—*Operating tax accruals and excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers which filed annual reports with the Commission*

[Year ended Dec. 31, 1937]

Kind of tax	Telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Operating taxes:				
Other than U. S. Government	$100,633,312	$5,733,052	$248,465	$106,614,829
U. S. Government:				
Income	32,595,734	215,501	295,852	33,107,087
Capital Stock	3,329,461	109,419	19,790	3,458,670
Social Security	5,659,870	892,459	111,678	6,664,007
Messages and facilities	15,655	2		15,657
Miscellaneous	6,955	3		6,958
Unassigned	66,993	[1] 21	330	67,302
Total	41,674,668	1,217,363	427,650	43,319,681
Total operating taxes	[2] 142,307,980	6,950,415	676,115	[2] 149,934,510
Excise taxes collected from persons using communication service:				
Other than U. S. Government	3,110,465	65,638	7,713	3,183,816
U. S. Government	17,431,087	5,820,681	126,125	23,377,893
Total excise taxes collected	20,541,552	5,886,319	133,838	26,561,709
Total taxes accounted for during the year:				
Other than U. S. Government	103,743,777	5,798,690	256,178	109,798,645
U. S. Government	59,105,755	7,038,044	553,775	66,697,574
Grand total	[2] 162,849,532	12,836,734	809,953	[2] 176,496,219

[1] Deficit or other reverse item.
[2] Includes $1,000 Canadian taxes.

Advertising expenses.—The distribution of the advertising expenses of class A telephone carriers and of wire-telegraph and radiotelegraph carriers reporting during 1937 is shown in table XVI. As therein shown, class A telephone carriers spent $6,237,106 for advertising of which $4,076,749 (equivalent to 65.36 percent) was used for advertising in newspapers and periodicals. Advertising expenses reported by wire-telegraph and radiotelegraph carriers amounted to $794,826 during the year.

TABLE XVI.—*Distribution of advertising expenses of class A telephone carriers, wire-telegraph, and radiotelegraph carriers for the year 1937*

Item	Amount	
TELEPHONE CARRIERS		
Salaries and wages		$893,381
Publicity and advertisements:		
Newspaper and periodical advertising:		
Advertising space, newspapers, regular	$2,255,592	
Special newspaper advertising space and all other periodicals	1,381,166	
Preparation cost	352,665	
Unassigned expenses	87,326	
Total newspapers and periodicals advertising		4,076,749
Booklets, pamphlets, and bill inserts		390,124
Window display, exhibits, posters, and placards		232,819
Motion pictures		59,905
Other publicity and advertisements:		
General press service and special news stories	25,637	
Lectures, demonstrations, radio, central office visits, etc.	276,378	
Miscellaneous	93,229	
Unassigned expenses	15,147	
Total other publicity and advertisements		410,391
Total publicity and advertisements		5,169,988
Other expenses		173,737
Grand total—class A telephone carriers		6,237,106
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [1]		
Newspapers		28,284
Periodicals		51,664
Radio advertising		120,239
Contributions and donations charged to advertising		797
Advertising department salaries and expenses		200,248
All other advertising expenses		393,594
Grand total—Wire-telegraph and radiotelegraph carriers		794,826

[1] Wire-telegraph carriers comprise land lines and ocean cables.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Telegraph frank service.—The amount of frank service reported by wire-telegraph and radiotelegraph carriers during 1937 is shown in table XVII. No frank service was granted by carriers exclusively engaged in ocean cable operations during the year.

TABLE XVII.—*Amount of frank service granted by telegraph carriers during 1937*

Name of company	Number of franks outstanding	Number of messages transmitted	Revenue if charged
Globe Wireless, Ltd	18	11	$17
Mackay Radio & Telegraph Co. (California and Delaware corporations)	941	2,076	4,121
Mutual Telephone Co. (Wireless Department—Hawaii)	43	129	259
Postal Telegraph Cable Co. (land-line system)	611	5,478	4,712
Radiomarine Corporation of America	899	3,694	8,186
Tropical Radio Telegraph Co	123	582	1,710
Western Union Telegraph Co	6,018	90,517	62,847
Total	8,653	102,487	81,852

Telephone employees and their compensation.—The number of employees of class A telephone carriers, classified according to the type of service rendered, is shown in table XVIII together with the normal rates of weekly compensation. The returns indicate that approximately one-half of the male employees received weekly compensation amounting to $36 to $59.99 per week. There were 180,223 female employees at the close of the year, of which 57,853, or 32.10 percent, were reported in the $18 to $23.99 per week class, 58,963, or 32.72 percent, were in the $24 to $35.99 per week class, and 30,134, or 16.72 percent, were in the $15 to $17.99 per week class.

TABLE XVIII.—*Number of employees of class A telephone carriers classified with respect to character of service rendered and according to rate of compensation per week, at December 31, 1937*

Class of employees	Number of employees at close of year			Number of employees classified according to rate of compensation per week at close of year															
				Less than $9		$9 to $11.99		$12 to $14.99		$15 to $17.99		$18 to $23.99		$24 to $35.99		$36 to $59.99		$60 and over	
	Male	Female	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
General officers and assistants	705	16	721	24	-------	9	-------	6	-------	4	-------	6	-------	19	1	48	5	589	10
Operating officials and assistants	7,959	485	8,444	------	-------	------	-------	------	-------	------	-------	9	2	135	138	1,990	313	5,825	32
Attorneys and right-of-way agents	562	2	564	1	-------	2	-------	------	-------	1	-------	------	2	20	-------	251	-------	287	-------
Engineers	4,992	15	5,007	------	-------	------	-------	------	-------	------	-------	7	-------	80	-------	1,540	12	3,365	3
Draftsmen, surveyors, and student engineers	3,176	112	3,288	1	-------	3	-------	38	3	94	3	390	10	636	33	1,551	52	463	11
Accountants	1,344	18	1,362	1	-------	1	-------	------	-------	------	1	6	1	50	8	385	7	901	1
Clerical employees	11,291	44,172	55,463	55	126	16	179	214	1,577	548	4,726	783	12,081	1,875	22,171	6,669	3,245	1,131	67
Local managers	2,274	175	2,449	1	-------	------	8	4	41	2	34	40	67	167	24	1,339	1	721	-------
Commercial agents	4,138	82	4,220	11	22	3	16	53	15	94	8	76	6	1,044	12	2,494	1	363	2
Experienced switchboard operators	172	111,691	111,863	36	2,651	28	3,199	22	8,887	16	18,843	36	41,658	15	34,360	17	1,979	2	114
Operators in training	7	16,102	16,109	3	1,148	------	1,684	1	5,483	3	5,520	------	2,263	-------	1	------	-------	------	-------
Service inspectors	112	1,900	2,012	------	1	------	2	------	2	------	5	------	164	2	1,346	28	377	82	3
Supervising foremen	1,323	2	1,325	------	-------	------	-------	------	-------	------	-------	2	-------	35	1	304	1	982	-------
Central office installation and maintenance men	21,511	43	21,554	1	-------	1	1	13	4	104	4	736	7	1,497	24	15,678	3	3,481	-------
Line and station construction, installation, and maintenance men	35,914	-------	35,914	72	-------	66	-------	128	-------	640	-------	3,598	-------	4,622	-------	23,706	-------	3,082	-------
Cable and conduit construction and maintenance men	8,080	-------	8,080	------	-------	------	-------	15	-------	208	-------	1,409	-------	1,666	-------	4,070	-------	712	-------
All other employees	11,305	5,408	16,713	548	677	224	407	438	639	550	990	1,351	1,592	4,254	844	3,776	253	164	6
Total employees	114,865	180,223	295,088	754	4,625	353	5,496	932	16,654	2,264	30,134	8,449	57,853	16,117	58,963	63,846	6,249	22,150	249
RECAPITULATION																			
Bell System carriers:																			
Full-time employees	106,405	161,057	267,462	7	8	77	2,413	726	13,493	1,930	27,202	7,399	54,309	14,000	57,385	60,870	6,010	21,396	237
Part-time employees	980	7,619	8,599	554	3,422	144	1,584	93	1,210	62	789	32	529	23	55	45	29	27	1

Other than Bell System carriers:																						
Full-time employees	7,376	11,062	18,458	126	919	123	1,418	99	1,896	265	2,103	1,013	3,000	2,092	1,523	2,929	210	727	11			
Part-time employees	104	465	569	65	276	9	81	14	53	7	40	5	15	2		2						
Total class A carriers:																						
Full-time employees	113,781	172,139	285,920	135	927	200	3,831	825	15,391	2,195	29,306	8,412	57,309	16,092	58,906	63,799	6,220	22,123	248			
Part-time employees	1,064	8,064	9,168	619	3,698	153	1,665	107	1,263	69	829	37	544	25	55	47	29	27	1			

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Telegraph employees and their compensation.—All employees of wire-telegraph and radiotelegraph carriers classified according to the type of service rendered are shown in table XIX, including the aggregate monthly rates of compensation. Wire-telegraph carriers reported a reduction of 3,719 employees in service during the period from June 30 to December 31, 1937, whereas the returns from radiotelegraph carriers show a reduction of 4 employees during this period.

TABLE XIX.—*Number of employees of wire-telegraph and radiotelegraph carriers classified with respect to character of service rendered, together with the aggregate monthly rate of compensation by classes of employees*

[Year ended Dec. 31, 1937]

Class of employees	Wire-telegraph carriers [1]			Radiotelegraph carriers			Total		
	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year
	June	December		June	December		June	December	
General officers and staff	161	160	$106,307	112	109	$24,131	273	269	$130,438
General office clerks	1,181	1,197	230,245	114	115	15,692	1,295	1,312	245,937
Other officers and staff	527	519	165,302	49	48	14,206	576	567	179,508
Other officers' clerks	2,062	1,849	290,742	16	15	1,516	2,078	1,864	292,258
Managers	4,775	4,568	622,650	119	120	31,810	4,894	4,688	654,460
Solicitors	581	554	89,311	61	61	10,531	642	615	99,842
Chief operators	1,749	1,760	331,365	105	105	10,477	1,854	1,865	341,842
Operators	18,294	17,136	1,917,958	802	758	117,067	19,096	17,894	2,035,025
Office clerks	11,008	10,017	978,167	389	419	39,254	11,397	10,436	1,017,421
Other office employees	1,588	1,498	144,246	254	249	29,572	1,842	1,747	173,818
Messengers	23,791	23,655	950,381	357	357	18,333	24,148	24,012	968,714
Testing and regulating force	1,760	1,742	336,238	217	204	31,703	1,977	1,946	367,941
Equipment and power men	920	864	128,988	83	122	18,468	1,003	986	147,456
Section linemen and foremen of construction and maintenance	2,181	2,003	328,842	19	20	3,093	2,200	2,023	331,935
Linemen, laborers, teamsters, etc.	1,644	1,055	119,931	98	75	9,491	1,742	1,130	129,422
Others	1,177	1,103	113,373	349	363	53,654	1,526	1,466	167,027
Total	73,399	69,680	6,854,046	3,144	3,140	428,998	76,543	72,820	7,283,044

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Relief and pension data.—In table XX, a summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers, for the year 1937, is given. The returns indicate that 64,650 benefit cases were handled at a cost of $8,596,188, that 10,568 persons were receiving pensions at the close of the year, and that the amount paid for pensions was $7,517,674. The charges to operating expenses for relief and pensions amounted to $22,895,210. A portion of this amount, together with interest on the funds, was added to the benefit and pension reserves and to pension funds held by trustees during the year.

TABLE XX.—*Summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers*

[Year ended Dec. 31, 1937]

Item	Class A telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Benefits:				
Number of cases handled during year	56,519	8,115	16	64,650
Amount paid during year	$7,850,466	$742,709	$3,013	$8,596,188
Pensions:				
Number of cases being paid at end of year	7,718	2,845	5	10,568
Amount paid during year	$5,489,412	$2,022,243	$6,019	$7,517,674
Benefit and pension reserve at end of year	$1,301,309	$10,480,734	$148,285	$11,930,328
Pension funds held by outside trustees	$183,613,349	----------	$608,973	$184,222,322
Relief and pension charges to operating expenses [1]	$19,664,058	$3,218,002	$13,150	$22,895,210
Total number of employees	295,088	69,680	3,140	367,908
Total compensation for the year	$488,797,654	$85,226,074	$5,185,489	$579,211,217
Total operating revenues	$1,138,132,794	$135,566,814	$10,732,904	$1,284,432,502

[1] Consists of charges to account 672, "Relief and pensions," for telephone carriers, and charges to account 649, "Relief department and pensions," for telegraph, cable, and radiotelegraph carriers.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Accident statistics.—The number of employees and persons other than employees killed or injured in accidents, reported by class A telephone carriers and by wire-telegraph and radiotelegraph carriers during 1937, are shown in tables XXI and XXII, respectively.

TABLE XXI.—*Persons killed or injured in accidents occurring in connection with the activities of class A telephone carriers*

[Year ended Dec. 31, 1937]

Class of employees	Employees and other persons killed or injured during year					
	Number of persons killed			Number of persons injured		
	Male	Female	Total	Male	Female	Total
General officers and assistants	------	------	------	------	------	------
Operating officials and assistants	------	------	------	9	1	10
Attorneys and right-of-way agents	------	------	------	2	------	2
Engineers	------	------	------	7	------	7
Draftsmen, surveyors, and student engineers	------	------	------	13	------	13
Accountants	------	------	------	------	------	------
Clerical employees	------	------	------	20	106	126
Local managers	------	------	------	15	1	16
Commercial agents	------	------	------	60	2	62
Experienced switchboard operators	------	------	------	------	509	509
Operators in training	------	------	------	------	49	49
Service inspectors	------	------	------	3	9	12
Supervising foremen	------	------	------	8	------	8
Central office installation and maintenance men	------	------	------	53	------	53
Line and station construction, installation, and maintenance men	10	------	10	541	------	541
Cable and conduit construction and maintenance men	2	------	2	117	------	117
All other employees	------	------	------	95	109	204
Total for employees	12	------	12	943	786	1,729
Persons other than employees	75	10	85	1,677	1,075	2,752
Grand total—Employees and other persons	87	10	97	2,620	1,861	4,481

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

TABLE XXII.—*Employees killed or injured in accidents occurring in connection with the operations of wire-telegraph and radiotelegraph carriers* [1]

[Year ended Dec. 31, 1937]

Description of injury	Employees killed or injured			
	In plant work	In operation	Otherwise	Total
Killed:				
Male	4		7	11
Female				
Total	4		7	11
Injured:				
Male	325	379	3,358	4,062
Female		283	86	369
Total	325	662	3,444	4,431

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Receiverships and trusteeships—Financial data relative to communication carriers and controlling companies in the hands of receivers or trustees are shown in table XXIII. No telegraph carrier reporting to the Commission was in receivership or trusteeship during the year and only one telephone carrier was in receivership as of December 31, 1937. The intercorporate relations of the companies shown in table XXIII which follows are indicated in table XXXVII.

TABLE XXIII.—*Summary showing statistics of reporting communication carriers and holding companies in the hands of receivers or trustees*

[Year ended Dec. 31, 1937]

Name of company	Receivers or trustees		Date of appointment	Investment in telephone plant	Capital stock	Funded debt	Matured funded debt
	Name	Title					
TELEPHONE CARRIERS							
CLASS A							
Kansas Telephone Co., The	M. B. Gourley and M. F. Cosgrove	Receivers	Feb. 27, 1932	$889,034	[1] $5,000	$620,500	
HOLDING COMPANIES [*]							
Ann Arbor Railroad Co., The	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	do	Dec. 4, 1931 [2]		7,250,000	9,164,341	$200
Chicago, Milwaukee, St. Paul and Pacific Railroad Co.	Henry A. Scandrett, Walter J. Cummings, and George I. Haight.	Trustees	Jan. 1, 1936		[3] 224,434,854	466,497,991	14,606,862
Indiana Central Telephone Co.	Christopher L. Ward, Jr.	Trustee	June 25, 1935 [4]		[5] 1,000,000		1,700,000
Postal Telegraph and Cable Corporation.	Alfred E. Smith, George S. Gibbs, and Raymond C. Kramer.	Trustees	Dec. 24, 1935 [6]		[7] 55,970,750	50,670,210	
United Telephone and Electric Co.	William C. A. Henry	Trustee	([8])		[9] 11,952,350		
Wabash Railway Co.	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers	Dec. 1, 1931 [10]		138,120,767	129,868,726	200
Total, holding companies					438,728,721	656,201,268	16,307,262
Grand total				889,034	438,733,721	656,821,768	16,307,262

[*] Comprises companies controlling communication carriers.
[1] Represents book liability for 1,000 shares of common stock without par value.
[2] Norman B. Pitcairn appointed receiver Oct. 20, 1933, to succeed Walter S. Franklin, resigned.
[3] Includes $105,127,554 book liability for 1,174,060 shares of common stock without par value.
[4] Christopher L. Ward, Jr., and Wm. J. Wardall were appointed receivers, May 1, 1933. Christopher L. Ward, Jr., was appointed temporary trustee June 25, 1935, which appointment was made permanent July 22, 1935.
[5] Represents book liability for 100 shares of common stock without par value.
[6] Date of temporary appointment of Alfred E. Smith and George S. Gibbs made permanent Jan. 27, 1936. Raymond C. Kramer was appointed temporary trustee Sept. 8, 1937, which appointment was made permanent Oct. 5, 1937. The resignation of Alfred E. Smith as trustee was accepted as of midnight Dec. 31, 1937.
[7] Includes $25,441,250 book liability for 1,017,500 shares of common stock without par value.
[8] Data not reported.
[9] Includes $3,009,350 book liability for 36,178 shares of common stock without par value.
[10] Norman B. Pitcairn appointed receiver Oct. 19, 1933, to succeed Walter S. Franklin, resigned.

Railway telegraph and telephone data.—The revenues from the telegraph and telephone operations of class I steam railways and the mileage are shown in table XXIV. The information was obtained from annual reports for the year 1937 filed with the Interstate Commerce Commission. The communication facilities are principally used in connection with the operation of railways, and the revenues shown in the following table represent the amounts received incidentally for telegraph and telephone services performed for the public.

TABLE XXIV.—*Telegraph and telephone revenues received and wire mileage operated by class I steam railways*

[Compiled from annual reports filed with the Interstate Commerce Commission for the year ended Dec. 31 1937]

Name of railway	Operating revenues (account 138)			Mileage operated		
	Telegraph	Telephone	Total	Pole line	Telegraph wire	Telephone wire
Atchison, Topeka & Santa Fe Ry. Co.	$353,936	----------	$353,936	13,312	42,580	37,300
Baltimore & Ohio R. R. Co.	60,180	----------	60,180	5,753	16,600	18,720
Chicago, Burlington & Quincy R. R. Co.	150,275	----------	150,275	8,718	26,318	17,689
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	29,888	----------	29,888	10,199	20,742	22,251
Duluth, Missabe & Northern Ry. Co.[1]	1,324	$41,137	42,461	[2] 561	[2] 1,206	[2] 5,447
Duluth, Missabe & Iron Range Ry. Co.[3]	1,608	43,532	45,140	561	1,206	5,512
Great Northern Ry. Co.	117,795	----------	117,795	7,835	28,045	21,590
Louisville & Nashville R. R. Co.	51,166	----------	51,166	4,558	2,664	18,869
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	56,373	----------	56,373	4,100	15,802	817
New York, New Haven & Hartford R. R. Co.	32,971	----------	32,971	2,032	605	26,759
Northern Pacific Ry. Co.	87,602	----------	87,602	5,876	12,846	17,950
Pennsylvania R. R. Co.	128,481	----------	128,481	8,989	8,273	139,654
Southern Pacific Co.	434,936	30,005	464,941	8,399	23,717	19,298
Texas & New Orleans R. R. Co.	38,016	1,414	39,430	4,328	7,853	10,645
Union Pacific R. R. Co.	289,980	----------	289,980	9,321	24,748	23,543
Other class I steam railways [4]	219,028	18,063	237,091	126,905	285,220	359,888
Total, United States	2,053,559	134,151	2,187,710	220,886	517,219	740,485
Copper River and Northwestern Ry. Co. (Alaska)	----------	2,416	2,416	194	----------	241
Oahu Ry. and Land Co. (Hawaii)	----------	----------	----------	186	----------	186
Grand total	2,053,559	136,567	2,190,126	221,266	517,219	740,912

[1] Report for 6 months ended June 30, 1937.
[2] Excluded from totals.
[3] Report for 6 months ended Dec. 31, 1937.
[4] Represents returns from 66 class I steam railways in the United States, each having gross annual telegraph and telephone revenues less than $25,000, and 57 class I steam railways which did not report any telegraph or telephone revenues.

The following statement shows the number of employees and their compensation reported by class I steam railways during 1937 who were engaged in telegraph or telephone service. This information was obtained from the Interstate Commerce Commission.

Class of employees	Average number of employees middle of month	Total compensation
Station agents (telegraphers and telephoners)	14,623	$26,893,815
Chief telegraphers and telephoners or wire chiefs	805	2,069,684
Clerk-telegraphers and clerk-telephoners	8,339	15,929,050
Telegraphers, telephoners, and towermen	14,248	27,893,620
Total	38,015	72,786,169

(B) Statistics Relating to Telephone and Telegraph Carriers From Monthly Reports

Telephone carriers reporting monthly.—The names of the large telephone carriers reporting to the Commission on a monthly basis and the geographical regions in which they are located are shown in table XXV. The carriers included in the Bell System are marked with an asterisk.

Table XXV.—*List of 91 large telephone carriers reporting on a monthly basis to the Commission showing geographical regions to which the carriers have been assigned for statistical purposes*

Name of carrier	Geographical region
American Telephone Co	South Central.
*American Telephone & Telegraph Co	Middle Atlantic.
†Ashland Home Telephone Co	Southeastern.
†Associated Telephone Co., Ltd	Pacific.
*Bell Telephone Co. of Nevada	Mountain.
*Bell Telephone Co. of Pennsylvania	Middle Atlantic.
Bluefield Telephone Co	Chesapeake.
†California Water & Telephone Co	Pacific.
Carolina Telephone & Telegraph Co	Southeastern.
*Chesapeake & Potomac Telephone Co	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	Do.
Cincinnati & Suburban Bell Telephone Co	Great Lakes.
†Citizens Independent Telephone Co	Do.
†Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
†Commonwealth Telephone Co. (Wisconsin)	Great Lakes.
*Dakota Central Telephone Co	North Central.
†DeKalb-Ogle Telepnone Co	Great Lakes.
*Diamond State Telephone Co	Middle Atlantic.
†Elyria Telephone Co	Great Lakes.
†Gulf States Telephone Co	South Central.
Home Telephone & Telegraph Co	Great Lakes.
*Illinois Bell Telephone Co	Do.
†Illinois Central Telephone Co	Do.
†Illinois Commercial Telephone Co	Do.
†Illinois Consolidated Telephone Co	Do.
†Illinois Telephone Co	Do.
Indiana Associated Telephone Corporation	Do.
*Indiana Bell Telephone Co	Do.
†Indiana Telephone Corporation	Do.
Inter-Mountain Telephone Co	Southeastern.
Interstate Telephone Co	Pacific.
†Intra State Telephone Co	Great Lakes.
†Iowa State Telephone Co	North Central.
†Jamestown Telephone Corporation	Middle Atlantic.
Keystone Telephone Co. of Philadelphia	Do.
†Kittanning Telephone Co	Do.
†La Crosse Telephone Corporation	Great Lakes.
†Lexington Telephone Co	Southeastern.
†Lincoln Telephone & Telegraph Co	North Central.
†Lorain Telephone Co	Great Lakes.
†Mansfield Telephone Co	Do.
Michigan Associated Telephone Co	Do.
*Michigan Bell Telephone Co	Do.
†Missouri Telephone Co	South Central.
*Mountain States Telephone & Telegraph Co	Mountain.
Nebraska Continental Telephone Co	North Central.
*New England Telephone & Telegraph Co	New England.
*New Jersey Bell Telephone Co	Middle Atlantic.
*New York Telephone Co	Do.
†Northern Ohio Telephone Co	Great Lakes.
*Northwestern Bell Telephone Co	North Central

* Represents carriers included in the Bell System.

† Represents carriers, subject only to the provisions of sections 201–205 of the Communications Act of 1934, which file reports for statistical purposes.

TABLE XXV.—*List of 91 large telephone carriers reporting on a monthly basis to the Commission showing geographical regions to which the carriers have been assigned for statistical purposes*—Continued

Name of carrier	Geographical region
Ohio Associated Telephone Co	Great Lakes.
*Ohio Bell Telephone Co	Do.
†Ohio Standard Telephone Co	Do.
†Orange County Telephone Co	Middle Atlantic.
*Pacific Telephone & Telegraph Co	Pacific.
†Peninsular Telephone Co	Southeastern.
Pennsylvania Telephone Corporation	Middle Atlantic.
†Peoples Telephone Corporation	Do.
†Portsmouth Home Telephone Co	Great Lakes.
Rochester Telephone Corporation	Middle Atlantic.
San Angelo Telephone Co	South Central.
†Santa Barbara Telephone Co	Pacific.
Southeast Missouri Telephone Co	South Central.
*Southern Bell Telephone & Telegraph Co	Southeastern.
*Southern California Telephone Co	Pacific.
†Southern Continental Telephone Co	Southeastern.
Southern New England Telephone Co	New England.
†Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co	Do.
*Southwestern Bell Telephone Co	Do.
†Southwestern States Telephone Co	Do.
†Star Telephone Co	Great Lakes.
†Texas Long Distance Telephone Co	South Central.
†Texas Telephone Co	Do.
†Tri-County Telephone Co	Great Lakes.
*Tri-State Telephone & Telegraph Co	North Central.
Two States Telephone Co	South Central.
†Union Telephone Co	Great Lakes.
*United Telephone Co. (Kansas)	South Central.
United Telephone Co. (Missouri)	Do.
United Telephone Companies, Inc	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlantic.
†Upstate Telephone Corporation of New York	Do.
†Wabash Telephone Co	Great Lakes.
†Warren Telephone Co	Do.
West Coast Telephone Co	Pacific
†Western Light & Telephone Co	South Central.
*Wisconsin Telephone Co	Great Lakes.

* Represents carriers included in the Bell System.

† Represents carriers, subject only to the provisions of sections 201–205 of the Communications Act of 1934, which file reports for statistical purposes.

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more;

Summary of monthly reports of telephone carriers.—Statistical data compiled from the monthly reports of large telephone carriers for the month of December and cumulative figures for 12 months ended with December 1937, in comparison with similar data for the corresponding period in 1936 are shown in table XXVI. The reduction in net operating income, compared with 1936, was 27.73 percent. The operating revenues for the year 1937 were 5.75 percent larger than the revenues for the preceding year, whereas the net operating income decreased 4.96 percent during this period.

TABLE XXVI.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*

MONTH OF DECEMBER

Item	1937	1936	Increase or decrease	
			Amount	Ratio, Percent
Number of company telephones in service at end of month	17,195,471	16,221,582	973,889	6.00
Operating revenues:				
Subscribers' station revenues	$60,659,036	$58,366,266	$2,292,770	3.93
Public telephone revenues	4,079,780	4,062,648	17,132	0.42
Miscellaneous local service revenues	1,011,523	1,010,064	1,459	0.14
Message tolls	25,497,144	26,439,617	[1] 941,473	[1] 3.56
Miscellaneous toll service revenues	2,859,063	2,802,486	56,577	2.02
Revenues from general services and licenses	1,252,104	1,189,853	62,251	5.23
Sundry miscellaneous revenues	4,073,868	3,572,918	500,950	14.02
Uncollectible operating revenues—Dr.	386,704	307,072	79,632	25.93
Operating revenues	99,045,814	97,136,780	1,909,034	1.97
Operating expenses:				
Depreciation and amortization expenses	14,529,910	12,722,175	1,807,735	14.21
All other maintenance	20,270,938	18,710,072	1,560,866	8.34
Traffic expenses	15,183,248	13,463,714	1,719,534	12.77
Commercial expenses	7,915,472	7,603,438	312,034	4.10
General office salaries and expenses	5,794,616	5,439,039	355,577	6.54
General services and licenses	1,225,756	1,170,157	55,599	4.75
All other operating expenses	5,197,031	5,157,784	39,247	0.76
Operating expenses	70,116,971	64,266,379	5,850,592	9.10
Income items:				
Net operating revenues	28,928,843	32,870,401	[1] 3,941,558	[1] 11.99
Rent from lease of operating property	732	401	331	82.54
Rent for lease of operating property	140	4,090	[1] 3,950	[1] 96.58
Net operating income before tax deduction	28,929,435	32,866,712	[1] 3,937,277	[1] 11.98
Operating taxes	11,659,123	8,970,845	2,688,278	29.97
Net operating income	17,270,312	23,895,867	[1] 6,625,555	[1] 27.73
Ratio of expenses to revenues—percent	70.79	66.16	4.63	
Changes in capital items:				
Increase during month in "Telephone plant"	$5,875,223	$146,229		
Increase during month in "Capital stock"		[1] $6,231,102		
Increase during month in "Funded debt"	[1] $11,131,084	[1] $51,917,690		

[1] Deficit or other reverse item.

TABLE XXVI.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*—Continued

TWELVE MONTHS ENDED WITH DECEMBER

Item	1937 [2]	1936 [2]	Increase or decrease	
			Amount	Ratio, percent
Operating revenues:				
Subscribers' station revenues	$705,100,447	$665,678,474	$39,421,973	5.92
Public telephone revenues	46,138,452	44,309,567	1,828,885	4.13
Miscellaneous local service revenues	12,314,407	11,691,543	622,864	5.33
Message tolls	304,154,612	289,338,968	14,815,644	5.12
Miscellaneous toll service revenues	34,905,695	32,995,405	1,910,290	5.79
Revenues from general services and licenses	14,516,137	13,595,448	920,689	6.77
Sundry miscellaneous revenues	45,801,937	41,588,398	4,213,539	10.13
Uncollectible operating revenues—Dr	4,225,672	3,484,066	741,606	21.29
Operating revenues	1,158,706,015	1,095,713,737	62,992,278	5.75
Operating expenses:				
Depreciation and amortization expenses	174,892,864	173,879,511	1,013,343	0.58
All other maintenance	217,428,889	194,775,908	22,652,981	11.63
Traffic expenses	170,406,709	150,243,098	20,163,611	13.42
Commercial expenses	89,562,997	83,383,927	6,179,070	7.41
General office salaries and expenses	64,157,986	59,690,197	4,467,789	7.48
General services and licenses	14,215,743	13,329,838	885,905	6.65
All other operating expenses	56,651,934	58,379,394	[1] *1,727,460*	[1] *2.96*
Operating expenses	787,317,112	733,681,873	53,635,239	7.31
Income items:				
Net operating revenues	371,388,903	362,031,864	9,357,039	2.58
Rent from lease of operating property	6,434	6,042	392	6.49
Rent for lease of operating property	1,703	49,312	[2] *47,609*	[1] *96.55*
Net operating income before tax deduction	371,393,634	361,988,594	9,405,040	2.60
Operating taxes	144,579,252	123,337,882	21,241,370	17.22
Net operating income	226,814,382	238,650,712	[1] *11,836,330*	[1] *4.96*
Ratio of expenses to revenues—percent	67.95	66.96	0.99	
Changes in capital items:				
Increase during month in "Telephone plant"	$143,940,786	$78,955,306		
Increase during month in "Capital stock"	*$29,522,364*	$29,597,705		
Increase during month in "Funded debt"	*$30,672,745*	[1] *$59,248,510*		

[1] Deficit or other reverse item.
[2] Returns in this column reflect depreciation adjustments on property in Nebraska.

NOTE A.—The revised Uniform System of Accounts became effective January 1, 1937, but the changes had only a minor effect on the operating returns. The figures for "Telephone plant" include increases in "Telephone plant in service," "Telephone plant under construction," "Property held for future telephone use," and "Telephone plant acquisition adjustment."

NOTE B.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

Proportion of the telephone industry covered by monthly reports.—Statistical data are shown in the following statement applicable to the year 1932 concerning the large telephone carriers reporting to the Commission on a monthly basis for the year 1937 and are compared with similar data for all telephone systems and lines in the United States shown in the "Census of Electrical Industries—Telephones and Telegraphs: 1932." The operating revenues of the 91 telephone carriers reporting to the Commission were $1,030,729,335 for the year 1932 which constituted approximately 97 percent of the revenues of all telephone carriers in the United States.

Item	Total operating revenues for year 1932	Number of telephones Dec. 31, 1932
Census of electrical industries:		
44,828 systems and lines	$1,061,530,140	17,424,406
91 carriers reporting in 1937 to the Commission	$1,030,729,335	[1] 15,077,812
Percent of census total	97.10	86.53

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

Statistics of telephone carriers, by months, from January 1933 to June 1938, inclusive.—The operating revenues, operating expenses, and the net operating income of large telephone carriers which reported on a monthly basis from January 1933 to June 1938, inclusive, are shown in table XXVII and the trends during this period are reflected in chart 5. Among the changes during this period, it will be noted that the operating revenues from June 1933 to June 1938 increased from $80,428,967 to $96,305,464, operating expenses from $55,999,132 to $65,696,223, and net operating income from $16,144,719 to $17,752,080.

Refunds amounting to approximately $16,000,000 to Chicago coinbox subscribers, covering an 11-year period, were deducted during June 1934 by the Illinois Bell Telephone Co., but have been restored in chart 5 in order to preserve the consistency of the trend. The revisions in the Uniform System of Accounts for Telephone Carriers which became effective January 1, 1937, had only a minor effect on the operating returns.

TABLE XXVII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1938, inclusive*

Month	Operating revenues	Operating expenses	Net operating income
1933			
January	$79,449,395	$58,023,014	$13,963,345
February	75,790,288	55,371,291	13,044,592
March	78,662,241	57,198,070	14,204,427
April	77,783,389	55,467,873	14,837,882
May	80,522,404	57,107,246	15,937,320
June	80,428,967	55,999,132	16,144,719
July	79,144,340	55,301,474	15,874,309
August	79,077,956	55,517,814	16,313,527
September	78,338,834	55,091,537	15,757,741
October	80,115,279	56,026,901	16,499,848
November	78,970,252	56,584,655	14,950,379
December	80,409,359	58,788,744	15,376,226
Total	948,692,704	676,477,751	182,904,285
1934			
January	81,350,361	56,660,588	16,663,945
February	78,320,835	54,644,868	15,742,005
March	82,401,739	57,621,102	16,570,554
April	81,574,187	56,284,375	17,354,422
May	83,128,231	58,425,666	16,160,140
June	[1]66,384,381	[1]41,203,652	[1]17,411,909
July	80,315,541	58,638,170	13,743,752
August	81,005,655	58,463,602	14,609,328
September	79,805,693	56,822,773	15,143,451
October	83,377,342	59,169,699	16,691,177
November	81,341,489	58,138,980	15,645,035
December	[1]82,171,067	[1]60,004,837	[1]15,327,906
Total	[1]961,176,521	[1]676,078,312	[1]191,063,624
1935			
January	83,230,504	58,919,333	15,877,224
February	[1]79,608,659	[1]56,498,039	[1]14,754,980
March	82,982,488	58,398,745	16,297,776
April	83,938,786	58,612,389	16,751,327
May	85,211,685	60,170,503	16,580,350
June	83,589,582	58,566,170	16,568,547
July	83,889,282	60,820,407	14,907,080
August	84,201,767	59,382,059	16,563,590
September	84,526,140	58,531,657	17,531,376
October	88,193,336	60,530,810	19,014,030
November	[1]87,209,620	[1]60,894,797	[1]17,935,997
December	[1]88,044,772	[1]61,877,215	[1]18,042,773
Total	[1]1,014,626,621	[1]713,202,124	[1]200,825,050

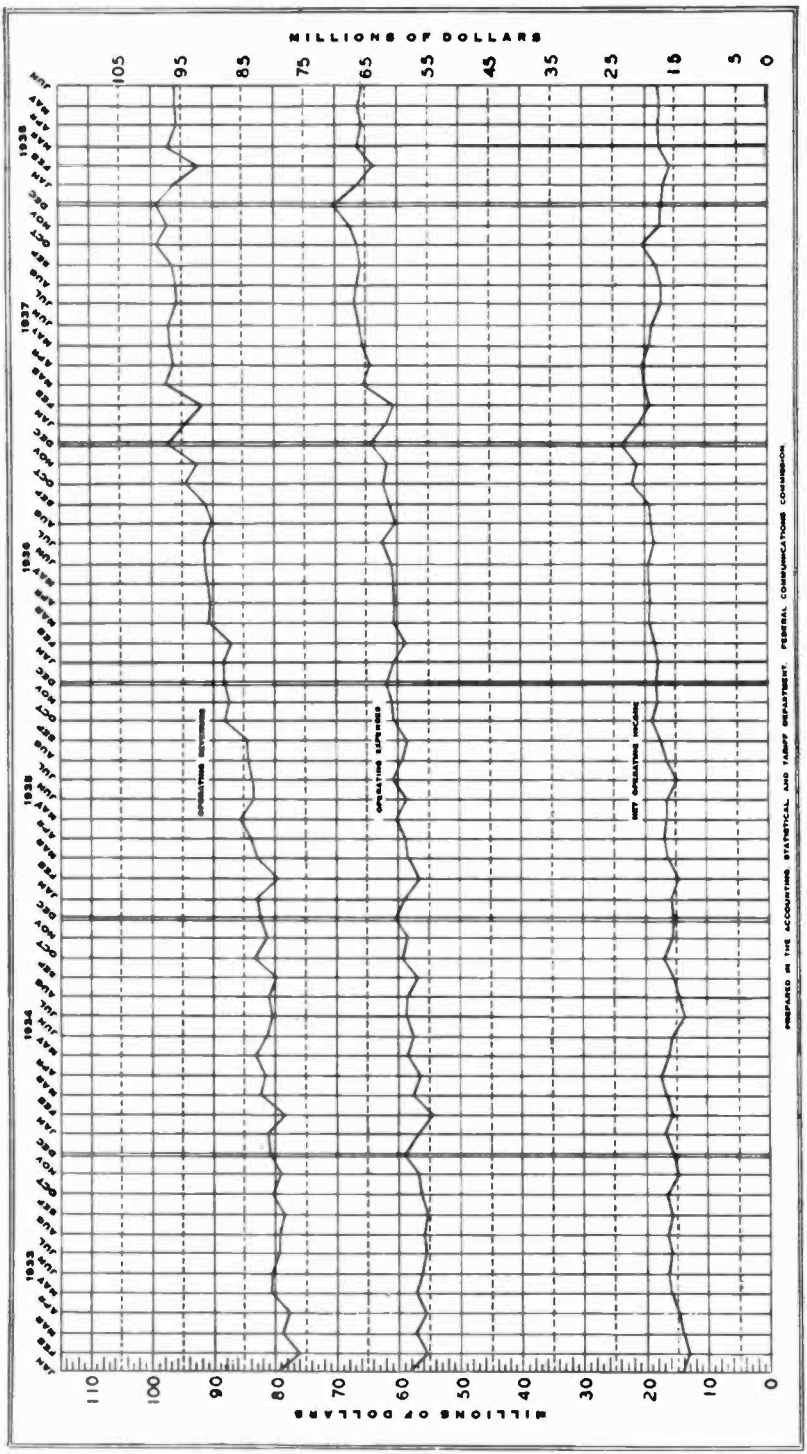
[1] These returns reflect adjustments covering estimated refunds.

TABLE XXVII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1938, inclusive*—Continued

Month	Operating revenues	Operating expenses	Net operating income
1936			
January	88,361,976	60,455,792	17,752,436
February	86,953,032	58,603,461	18,220,342
March	90,514,624	60,572,358	19,621,878
April	90,361,484	60,540,298	19,264,378
May	90,835,259	60,599,618	19,659,214
June	91,334,991	[1] 60,791,556	[1] 19,741,809
July	91,621,342	62,441,016	18,437,274
August	90,065,959	60,261,329	18,992,778
September	91,164,857	61,215,138	19,423,669
October	94,474,691	62,266,508	22,227,249
November	92,888,832	61,668,420	21,413,818
December	97,136,780	64,266,379	23,895,867
Total	1,095,713,737	[1] 733,681,873	[1] 238,650,712
1937			
January	94,779,883	[1] 61,761,759	[1] 20,913,482
February	91,765,272	60,601,384	19,219,424
March	97,552,766	65,180,085	20,176,734
April	96,657,583	64,273,685	20,262,358
May	96,931,883	65,350,866	19,298,848
June	97,205,606	66,084,114	19,077,687
July	95,894,942	67,003,600	17,166,329
August	95,904,902	66,682,231	17,164,032
September	96,614,793	66,040,651	18,183,595
October	99,156,085	66,513,657	20,524,179
November	97,196,486	67,708,159	17,557,402
December	99,045,814	[1] 70,116,971	[1] 17,270,312
Total	1,158,706,015	[1] 787,317,112	[1] 226,814,882
1938			
January	96,257,455	66,589,710	16,824,922
February	92,297,164	63,906,167	15,634,441
March	97,138,307	66,613,821	17,556,969
April	95,911,787	65,379,122	17,651,367
May	96,289,146	66,323,069	17,426,179
June	96,305,464	65,696,223	17,752,080
Total	574,199,323	394,508,112	102,845,958

[1] These returns reflect depreciation adjustments on property in Nebraska.

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.


TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS
CHART 6
MILLIONS OF DOLLARS
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION

Monthly total and daily average message tolls.—The message tolls and the average amount per day reported by large telephone carriers from January 1933 to June 1938, inclusive, are shown in Table XXVIII. The revenues received from "Toll private-line services" and "Other toll service" are not included in this summary. The returns show that the daily average toll message revenues increased from $660,245 in June 1933 to $819,231 in June 1938. The monthly message tolls increased from $19,807,346 in June 1933 to $24,576,923 in June 1938. The trend of the average amount of message tolls per day during the period from January 1933 to June 1938 is shown in chart 6.

TABLE XXVIII.—*Summary showing monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1938, inclusive*

Month	1933		1934		1935	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$16,994,165	$548,199	$19,629,721	$633,217	$20,116,509	$648,920
February	15,488,724	553,169	18,311,989	654,000	18,258,711	652,097
March	18,133,417	584,949	20,480,088	660,648	20,378,715	657,378
April	17,423,065	580,769	19,805,806	660,194	20,916,570	697,219
May	19,478,575	628,341	20,767,992	669,935	21,594,346	696,592
June	19,807,346	660,245	20,305,817	676,861	20,925,023	697,501
July	20,135,960	649,547	20,139,894	649,674	21,882,664	705,892
August	20,261,511	653,597	20,964,268	676,265	22,558,102	727,681
September	19,174,859	639,162	19,541,690	651,390	21,782,681	726,089
October	19,185,590	618,890	20,597,693	664,442	23,051,814	743,607
November	18,393,599	613,120	19,333,804	644,460	21,591,993	719,733
December	19,789,889	638,384	20,251,714	653,281	22,714,300	732,719
Total	224,266,700	614,429	240,130,416	657,892	255,771,428	700,744

Month	1936		1937		1938	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$22,190,303	$715,816	$24,519,237	$790,943	$23,533,358	$759,141
February	21,570,225	743,801	22,754,772	812,670	21,588,677	771,024
March	23,765,567	766,631	26,250,877	846,802	24,649,376	795,141
April	23,613,804	787,127	25,371,260	845,709	23,849,134	794,971
May	23,796,271	767,622	25,397,947	819,289	24,132,468	778,467
June	24,443,178	814,773	25,836,669	861,222	24,576,923	819,231
July	25,506,391	822,787	26,076,333	841,172	----------	----------
August	24,797,028	799,904	26,401,979	851,677	----------	----------
September	24,196,949	806,565	25,887,107	862,904	----------	----------
October	25,080,140	809,037	25,860,549	834,211	----------	----------
November	23,939,495	797,983	24,300,738	810,025	----------	----------
December	26,439,617	852,891	25,497,144	822,489	----------	----------
Total	289,338,968	790,544	304,154,612	833,300	----------	----------

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

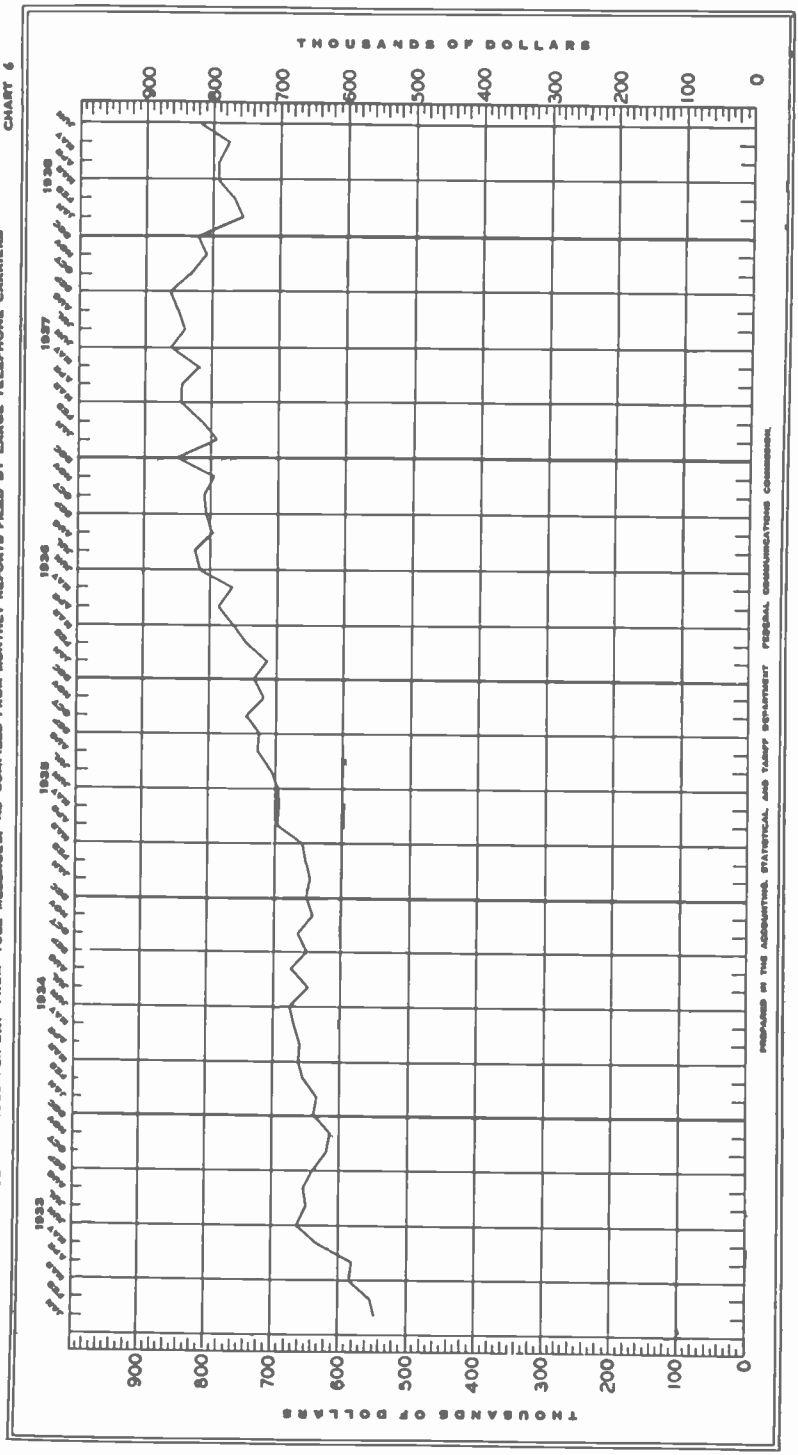


CHART 6
AVERAGE REVENUES PER DAY FROM TOLL MESSAGES, AS COMPILED FROM MONTHLY REPORTS FILED BY LARGE TELEPHONE CARRIERS
THOUSANDS OF DOLLARS
900
800
700
600
500
400
300
200
100
0
1933
1934
1935
1936
1937
1938
PREPARED IN THE ADMINISTRIVE, STATISTICAL, AND TARIFF DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION.

Number of telephones in service.—In table XXIX, the number of telephones, of large telephone carriers, in service from January 1933 to June 1938, inclusive, is shown, and the trend during this period is reflected in chart 7. It may be noted that the number of telephones in service increased from 14,400,533 in June 1933 to 17,343,739 in June 1938, or 16.97 percent.

TABLE XXIX.—*Number of telephones in service in the United States as reported by large telephone carriers, by months, from January 1933 to June 1938 inclusive*[1]

Month	1933	1934	1935	1936	1937	1938
January	14,940,458	14,400,043	14,744,353	15,295,692	16,315,289	17,229,895
February	14,820,220	14,439,183	14,782,483	15,368,397	16,415,216	17,261,509
March	14,693,079	14,496,906	14,837,216	15,455,192	16,532,224	17,301,824
April	14,596,401	14,563,647	14,893,258	15,541,044	16,655,031	17,336,387
May	14,506,025	14,600,007	14,946,396	15,627,577	16,762,873	17,365,532
June	14,400,533	14,583,393	14,936,756	15,650,630	16,800,336	17,343,739
July	14,314,697	14,547,163	14,914,281	15,699,574	16,829,994	----------
August	14,286,795	14,557,047	14,943,768	15,773,584	16,891,361	----------
September	14,345,350	14,626,161	15,048,005	15,914,147	17,002,295	----------
October	14,360,902	14,662,525	15,117,838	16,033,442	17,084,607	----------
November	14,365,801	14,682,005	15,174,997	16,114,792	17,141,638	----------
December	14,376,947	14,703,888	15,231,070	16,221,582	17,195,471	----------

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

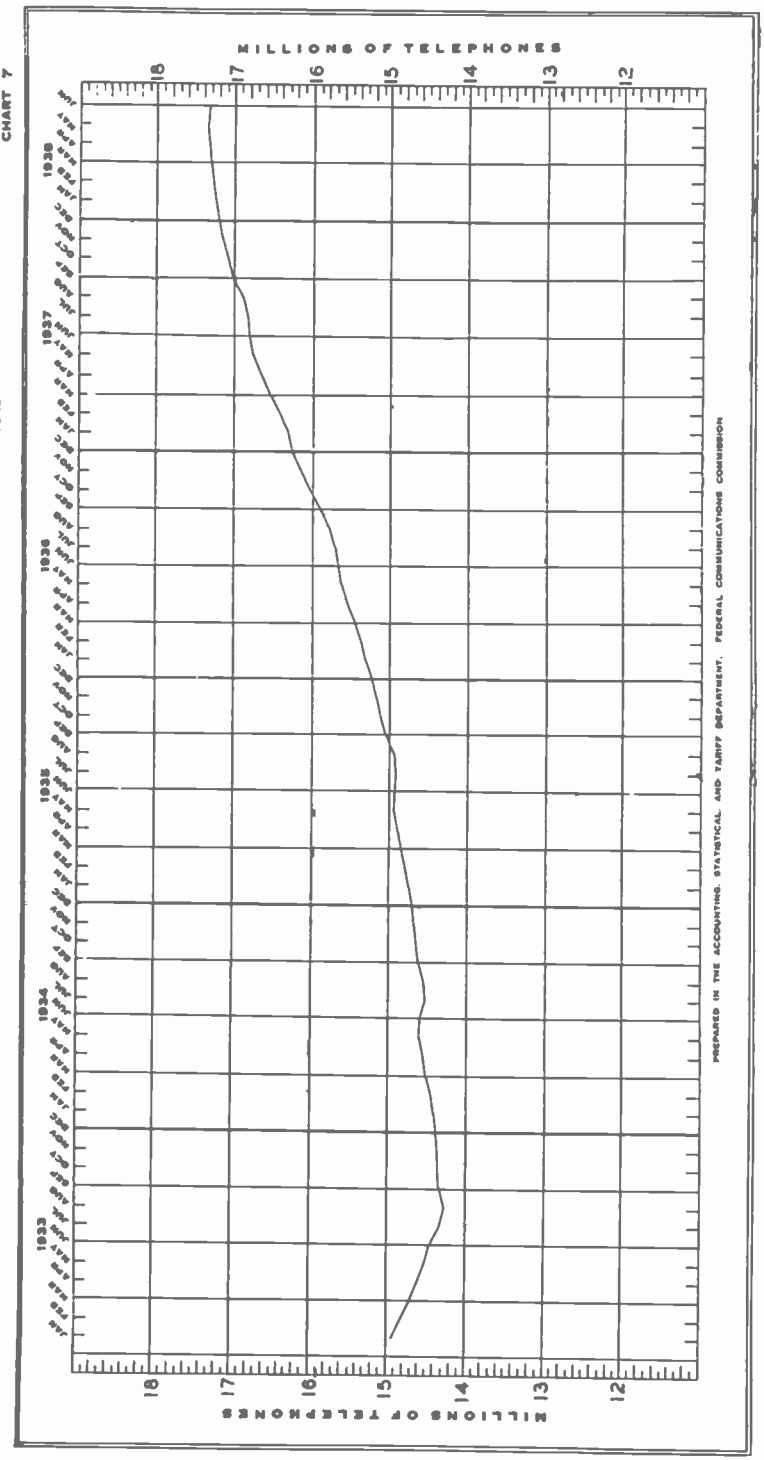


CHART 7
NUMBER OF TELEPHONES IN SERVICE AS REPORTED BY LARGE TELEPHONE CARRIERS
MILLIONS OF TELEPHONES
18
17
16
15
14
13
12
1933
1934
1935
1936
1937
1938
MILLIONS OF TELEPHONES
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION

Averages per telephone per day.—The average amounts of operating revenues and operating expenses per telephone per day of all large telephone carriers by geographical regions are shown in table XXX. The data applicable to the Bell System and for carriers not affiliated with the Bell System reporting to the Commission on a monthly basis are also reflected in this table. The returns from the American Telephone & Telegraph Co. were excluded from the averages for the geographical regions as the operations of the long-lines department of this carrier cover the entire country, but the data were included in the separate total for the United States. In computing these averages, the gross operating revenues and expenses were used. The averages are computed on the basis of 325 days to the year as used by the Bureau of the Census in similar computations.

It may be noted that the average gross operating revenues per telephone per day for the United States were $0.2215 in the case of Bell System carriers and $0.2122 in the case of all large telephone carriers reporting to the Commission. These amounts of operating revenues compare with average gross operating expenses per telephone of $0.1511 in the case of Bell System carriers and $0.1442 for all large telephone carriers.

TABLE XXX.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*

[Year ended Dec. 31, 1937]

ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$92,549,616	$66,299,572	1,539,228	$0.1850	$0.1325
Middle Atlantic region [1]	338,107,446	230,806,479	4,657,221	.2234	.1525
Great Lakes region	227,170,701	148,308,837	3,862,723	.1810	.1181
Eastern district [1]	657,827,763	445,414,888	10,059,172	.2012	.1362
Chesapeake region	42,322,021	28,949,402	769,765	.1692	.1157
Southeastern region	68,371,894	44,935,547	1,179,022	.1784	.1173
Southern district	110,693,915	73,884,949	1,948,787	.1748	.1167
North Central region	44,594,503	31,357,994	883,361	.1553	.1092
South Central region	94,116,583	60,819,272	1,553,304	.1864	.1205
Mountain region	25,250,769	17,255,325	471,517	.1648	.1126
Pacific region	118,882,951	79,632,815	1,886,053	.1939	.1299
Western district	282,844,806	189,065,406	4,794,235	.1815	.1213
United States [1]	1,051,366,484	708,365,243	16,802,194	.1925	.1297
United States [2]	1,158,706,015	787,317,112	16,802,194	.2122	.1442

BELL SYSTEM CARRIERS

New England region	$74,613,278	$53,848,715	1,207,563	$0.1901	$0.1372
Middle Atlantic region [1]	325,502,887	222,437,141	4,379,035	.2287	.1563
Great Lakes region	200,425,036	131,590,688	3,204,831	.1924	.1263
Eastern district [1]	600,541,201	407,876,544	8,791,429	.2102	.1428
Chesapeake region	41,860,760	28,637,368	760,854	.1693	.1158
Southeastern region	62,391,225	41,461,166	1,045,911	.1835	.1220
Southern district	104,251,985	70,098,534	1,806,765	.1775	.1194
North Central region	41,063,083	28,902,722	788,883	.1602	.1127
South Central region	87,878,511	56,866,540	1,405,524	.1924	.1245

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are not confined to one geographical region.
[2] Includes figures for American Telephone & Telephone Co.

TABLE XXX.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*—Con.

BELL SYSTEM CARRIERS—Continued

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
Mountain region	$25,250,769	$17,255,325	$471,517	$0.1648	$0.1126
Pacific region	117,909,137	75,417,225	1,715,051	.2008	.1353
Western district	266,101,500	178,441,812	4,390,975	.1869	.1253
United States [1]	976,894,686	656,416,890	14,979,169	.1994	.1348
United States [2]	1,078,234,217	735,368,759	14,979,169	.2215	.1511

OTHER THAN BELL SYSTEM CARRIERS

New England region	$17,936,338	$12,450,857	331,665	$0.1664	$0.1155
Middle Atlantic region	12,604,559	8,369,338	278,186	.1394	.0926
Great Lakes region	26,745,665	16,718,149	657,892	.1251	.0782
Eastern district	57,286,562	37,538,344	1,267,743	.1390	.0911
Chesapeake region	461,261	312,034	8,911	.1593	.1077
Southeastern region	5,980,669	3,474,381	133,111	.1382	.0803
Southern district	6,441,930	3,786,415	142,022	.1396	.0820
North Central region	3,531,420	2,455,272	94,478	.1150	.0800
South Central region	6,238,072	3,952,732	147,780	.1299	.0823
Mountain region					
Pacific region	6,973,814	4,215,590	171,002	.1255	.0759
Western district	16,743,306	10,623,594	413,260	.1247	.0791
United States	80,471,798	51,948,353	1,823,025	.1358	.0877

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are not confined to one geographical region.
[2] Includes figures for American Telephone & Telegraph Co.

NOTE.—"Large telephone carriers" comprise a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more.

Summary of monthly reports of telegraph carriers.—Operating data compiled from the monthly reports of large wire-telegraph and radiotelegraph carriers for the month of December 1937, and annual figures for the 12 months ended with December 1937 are shown in table XXXI. The gross operating revenues during 1937 of the 18 wire-telegraph and radiotelegraph carriers reporting on a monthly basis were $145,762,516, whereas the gross operating revenues of the three land-wire telegraph carriers during the year were $123,893,127 or 85 percent of the total.

TABLE XXXI.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*

FOR THE MONTH OF DECEMBER 1937

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co	$5,259	$3,284	$1,412	$1,537
Postal Telegraph-Cable Co. (land-line system)	[1] 1,987,217	2,009,652	[2] *111,622*	[2] *559,864*
Western Union Telegraph Co	[3] 8,747,650	7,534,338	828,669	410,281
Total, land-line telegraph carriers	10,740,126	9,547,274	718,459	51,954
All America Cables, Inc	458,000	306,844	102,852	46,079
Commercial Cable Co. (New York & Limited)	348,407	231,976	109,956	30,991
Commercial Pacific Cable Co	115,535	80,539	28,975	52,537
French Telegraph Cable Co	33,104	27,927	4,792	4,490
Mexican Telegraph Co	40,887	23,955	15,981	13,064
Total, ocean cable carriers	995,933	671,241	262,556	147,161
Globe Wireless Ltd	41,526	37,419	1,751	1,905
Mackay Radio & Telegraph Co. (California)	132,245	75,821	51,103	36,257
Mackay Radio & Telegraph Co. (Delaware)	94,347	31,670	61,649	29,425
Mutual Telephone Co. (wireless department, Hawaii)	5,063	5,580	[2] *448*	[2] *448*
Press Wireless, Inc	41,610	43,039	[2] *2,079*	[2] *2,079*
R. C. A. Communications, Inc	457,893	383,812	20,497	87,035
Radiomarine Corporation of America	107,538	98,887	3,756	3,932
Southern Radio Corporation	3,182	4,842	[2] *1,651*	[2] *28,676*
Tropical Radio Telegraph Co	64,888	57,798	[2] *2,680*	2,424
U. S.-Liberia Radio Corporation	7,139	5,177	1,743	1,743
Total, radio telegraph carriers	955,431	744,045	133,641	131,518
Grand total	12,691,490	10,962,560	1,114,656	330,633

FOR 12 MONTHS ENDED WITH DECEMBER 1937

Northern Telegraph Co	$62,998	$43,736	$15,203	$17,109
Postal Telegraph-Cable Co. (land-line system)	[1] 23,347,246	22,928,025	[2] *588,217*	[2] *3,509,945*
Western Union Telegraph Co	[3] 100,482,883	85,630,795	9,082,019	3,325,769
Total, land-line telegraph carriers	123,893,127	108,602,556	8,509,005	[2] *167,067*
All America Cables, Inc	5,019,224	3,621,084	929,337	981,241
Commercial Cable Co. (New York & Limited)	4,394,865	3,302,467	975,567	2,107
Commercial Pacific Cable Co	915,942	810,340	67,083	221,242
French Telegraph Cable Co	412,017	321,201	85,073	81,448
Mexican Telegraph Co	438,692	275,445	141,456	106,083
Total, ocean cable carriers	11,180,740	8,330,537	2,198,516	1,392,121
Globe Wireless Ltd	449,981	423,795	15,516	15,650
Mackay Radio & Telegraph Co. (California)	1,241,162	977,124	226,110	45,576
Mackay Radio & Telegraph Co. (Delaware)	1,093,484	981,105	101,474	[2] *267,866*
Mutual Telephone Co. (wireless department, Hawaii)	61,943	46,906	8,506	8,506
Press Wireless, Inc	480,126	455,941	16,965	16,965
R. C. A. Communications, Inc	5,225,144	4,293,982	427,987	1,060,749
Radiomarine Corporation of America	1,332,048	932,171	311,437	317,117
Southern Radio Corporation	36,922	66,043	[2] *29,260*	[2] *56,051*
Tropical Radio Telegraph Co	692,208	627,722	49,002	100,898
U. S.-Liberia Radio Corporation	75,631	62,833	11,249	11,249
Total, radio telegraph carriers	10,688,649	8,867,622	1,138,986	1,252,793
Grand total	145,762,516	125,800,715	11,846,507	2,477,847

[1] Includes revenues from telephone operations amounting to $59,938 for December 1937, and $697,403 for the year 1937, respectively.
[2] Deficit or other reverse item.
[3] Includes "Revenues from transmission-cable" amounting to $588,883 for December 1937, and $6,826,519 for the year 1937, respectively.

NOTE.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

Telegraph operations of large telephone carriers.—The revenues applicable to telegraph operations of 26 large telephone carriers for the month of December 1937 and annual figures for the 12 months ended with December 1937 in comparison with similar data for the corresponding period in 1936 are shown in table XXXII. This summary reflects only items that are readily available from the carriers' accounts. It includes returns from 24 Bell System carriers and from the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.

The volume of the telegraph business reported by the 26 telephone carriers increased from $24,283,926 in 1936 to $26,080,068 in 1937. The principal portion of the latter amount was derived from private-line teletypewriter and teletypewriter exchange service and $6,939,163 were derived from private-line Morse service.

TABLE XXXII.—*Summary of monthly reports of telephone carriers relative to available data concerning telegraph operations* [1]

Item	December 1937		December 1936	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]
OPERATING REVENUES				
Subscribers' station revenues	$56,967,896	$18,161	$54,862,001	$14,729
Public telephone revenues	4,025,806		4,005,628	
Miscellaneous local service revenues	948,149	226,874	947,753	230,745
Message tolls	24,398,740	558,757	25,369,072	557,783
Miscellaneous toll service revenues	2,840,689	1,288,652	2,784,983	1,379,855
Revenues from general services and licenses	1,251,640		1,189,143	
Sundry miscellaneous revenues	3,892,469	425	3,403,168	4,664
Uncollectible operating revenues—Dr	369,323	1,409	286,804	1,084
Total	93,956,066	2,091,460	92,274,944	2,186,693

Item	1937 cumulative figures		1936 cumulative figures	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]
OPERATING REVENUES				
Subscribers' station revenues	$662,141,424	$204,051	$625,108,955	$146,457
Public telephone revenues	45,522,456		43,732,688	
Miscellaneous local service revenues	11,565,416	2,739,499	10,959,093	2,541,028
Message tolls	290,770,047	6,788,515	276,817,267	5,694,311
Miscellaneous toll service revenues	34,645,813	16,355,941	32,757,831	15,911,347
Revenues from general services and licenses	14,508,580		13,582,542	
Sundry miscellaneous revenues	43,793,875	5,694	39,708,012	4,698
Uncollectible operating revenues—Dr	3,960,185	13,632	3,203,381	13,915
Total	1,098,987,426	26,080,068	1,039,463,007	24,283,926

[1] Comprises 24 Bell System carriers and the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.

[2] Reflects only items which are readily available from carriers' accounts.

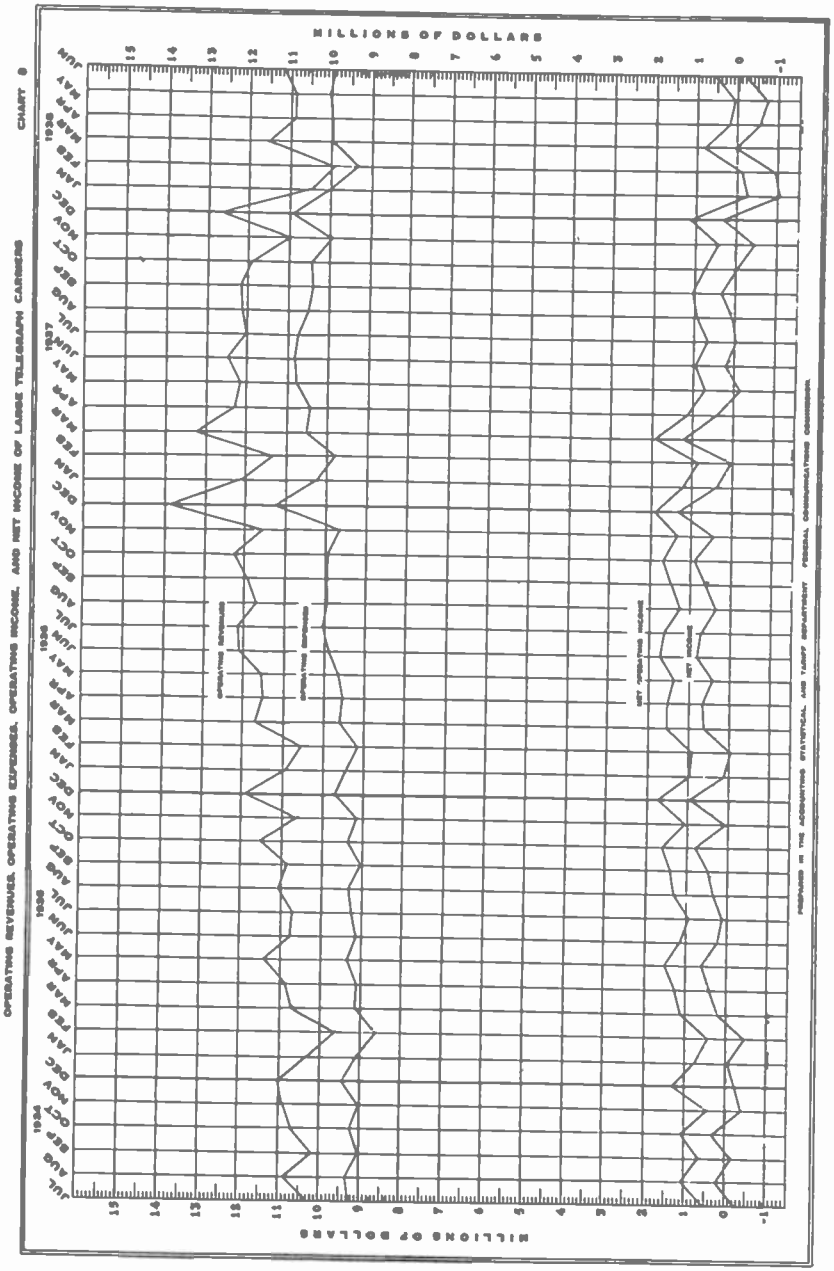
Statistics of telegraph carriers by months from July 1934 to June 1938, inclusive.—The operating revenues, operating expenses, operating income, and net income of large wire-telegraph and radiotelegraph carriers that reported to the Commission on a monthly basis from July 1934 to June 1938, inclusive, are shown in table XXXIII, and the trends during this period are indicated in chart 8. It may be noted that operating revenues and operating income received in June 1938 compare favorably with similar items in July 1934, but that operating results generally are less favorable in 1938 than in 1935, 1936, and 1937.

TABLE XXXIII.—*Monthly operating statistics showing revenues, expenses, operating income, and net income as reported by large telegraph carriers from July 1934 to June 1938, inclusive*

Month	Operating revenues	Operating expenses	Operating income	Net income
1934				
July	$10,288,243	$9,275,142	$527,309	[1] *$252,781*
August	10,886,673	9,326,337	1,074,209	244,478
September	10,178,062	9,028,709	668,071	[1] *169,840*
October	10,725,812	9,225,020	1,075,143	318,698
November	9,933,054	9,019,603	438,859	[1] *396,241*
December	11,004,971	9,458,110	1,330,026	[1] *807,065*
Total	63,016,815	55,332,921	5,113,617	[1] *442,751*
1935				
January	10,362,033	9,126,390	778,067	[1] *60,911*
February	9,611,350	8,686,579	470,181	[1] *483,886*
March	10,729,707	9,153,476	1,115,485	206,972
April	10,878,367	9,130,371	1,280,193	433,001
May	11,411,863	9,376,111	1,537,331	637,004
June	10,798,585	9,160,096	1,179,070	248,659
July	10,710,993	9,286,674	969,419	129,721
August	11,086,297	9,314,022	1,314,097	391,400
September	10,897,978	9,027,064	1,418,137	523,848
October	11,533,959	9,392,086	1,682,661	828,207
November	10,666,676	9,179,022	1,039,152	85,278
December	11,925,571	9,720,053	1,734,304	996,780
Total	130,613,379	110,551,944	14,518,097	3,956,073
1936				
January	10,911,897	9,420,527	981,459	131,091
February	10,585,074	9,159,483	919,278	[1] *24,895*
March	11,726,246	9,651,658	1,562,679	622,838
April	11,542,789	9,534,459	1,503,698	691,179
May	11,574,330	9,681,113	1,385,138	442,004
June	12,128,173	9,901,625	1,720,742	834,273
July	12,193,309	10,089,727	1,614,552	726,813
August	11,708,672	9,961,601	1,255,078	395,406
September	11,956,495	9,974,132	1,494,735	630,833
October	12,290,679	9,965,431	1,698,630	905,059
November	11,505,224	9,669,800	1,332,094	475,974
December	13,900,521	11,290,617	1,887,073	1,304,729
Total	142,023,409	118,300,173	17,355,156	7,135,304
1937				
January	12,138,754	10,228,400	1,217,302	406,918
February	11,367,430	9,818,929	876,114	40,986
March	13,254,213	10,560,681	1,958,710	1,244,868
April	12,314,263	10,463,515	1,154,295	422,440
May	12,198,274	10,801,348	710,961	[1] *137,641*
June	12,513,990	10,879,212	944,209	202,796
July	12,044,436	10,767,989	640,244	[1] *58,734*
August	12,139,603	10,507,788	947,968	92,755
September	12,189,750	10,418,334	1,077,425	342,584
October	11,912,047	10,435,171	788,888	[1] *11,189*
November	10,998,266	9,956,788	415,735	[1] *418,569*
December	12,691,490	10,962,560	1,114,656	330,633
Total	145,762,516	125,800,715	11,846,507	2,477,847
1938				
January	10,501,929	10,022,569	[1] *242,168*	[1] *1,065,223*
February	9,928,237	9,335,169	[1] *102,395*	[1] *965,020*
March	11,535,585	9,983,658	813,411	69,082
April	10,904,847	9,970,432	209,806	[1] *561,254*
May	10,888,993	10,076,615	83,585	[1] *755,003*
June	11,185,190	9,908,655	549,981	[1] *186,267*
Total	64,944,781	59,297,098	1,312,220	[1] *3,463,686*

[1] Deficit or other reverse item.

NOTE.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.



Index numbers of monthly operating revenues of telegraph carriers.—In the following tables, XXXIV and XXXV, the index numbers of the monthly operating revenues of large wire-telegraph and all radiotelegraph carriers, respectively, are shown. The comparative data for wire-telegraph carriers are based on the monthly returns for 1929. The figures for June 1938 indicate that the operating revenues decreased to 64.49 percent of the 1929 returns, but increased from 61.38 percent in June 1932.

The index numbers relating to radiotelegraph carriers are based on the returns for 1934 inasmuch as data pertaining to radiotelegraph carriers for the years 1929 to 1933 are incomplete. The figures shows substantial increases in the operating revenues of radiotelegraph carriers, amounting to 24.25 percent in June 1938 over June 1934.

TABLE XXXIV.—*Index numbers of monthly operating revenues of large wire-telegraph carriers from January 1930 to June 1938, inclusive*

[1929=100]

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
January	100	95.47	80.77	63.84	51.22	61.99	61.01	64.13	71.39	61.30
February	100	96.61	81.96	67.34	52.96	63.09	61.65	67.46	72.34	62.77
March	100	92.62	79.84	65.23	58.17	63.13	60.13	65.66	73.80	63.73
April	100	96.31	81.79	60.97	54.22	60.97	63.35	67.29	71.06	62.78
May	100	92.71	76.69	57.73	60.27	62.17	63.75	64.65	67.76	60.42
June	100	94.90	80.94	61.38	65.04	64.23	62.88	70.62	72.23	64.49
July	100	87.80	75.05	51.37	61.78	57.85	60.40	68.76	66.97	----
August	100	84.10	69.32	55.36	58.58	59.68	60.90	64.18	65.60	----
September	100	88.29	73.30	58.27	59.62	57.89	62.02	68.02	68.41	----
October	100	82.11	67.27	50.85	54.09	56.33	60.46	64.38	61.90	----
November	100	82.63	69.59	55.84	60.79	60.83	65.29	70.20	66.72	----
December	100	87.89	72.56	56.36	61.54	62.65	67.98	79.03	71.50	----
For year	100	90.00	75.64	58.56	58.22	60.84	62.46	67.82	69.05	----

NOTE.—"Large wire-telegraph carriers" comprises 3 land-line telegraph carriers and 5 ocean-cable carriers, each having annual operating revenues of approximately $50,000 or more.

TABLE XXXV.—*Index numbers of monthly operating revenues of large radiotelegraph carriers from January 1935 to June 1938, inclusive*

[1934=100]

Month	1934	1935	1936	1937	1938
	Percent	*Percent*	*Percent*	*Percent*	*Percent*
January	100	111.54	120.35	132.50	126.39
February	100	102.07	122.77	134.32	127.18
March	100	105.72	116.89	142.48	136.43
April	100	113.78	118.84	145.90	133.05
May	100	110.10	111.97	127.66	115.68
June	100	104.32	117.05	137.04	124.25
July	100	99.54	113.53	135.33	----
August	100	98.64	107.58	134.38	----
September	100	106.74	117.84	143.37	----
October	100	110.37	118.95	127.92	----
November	100	108.67	122.49	126.05	----
December	100	106.58	128.79	132.46	----
For year	100	106.42	118.06	134.86	----

NOTE.—"Large radiotelegraph carriers" comprises 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

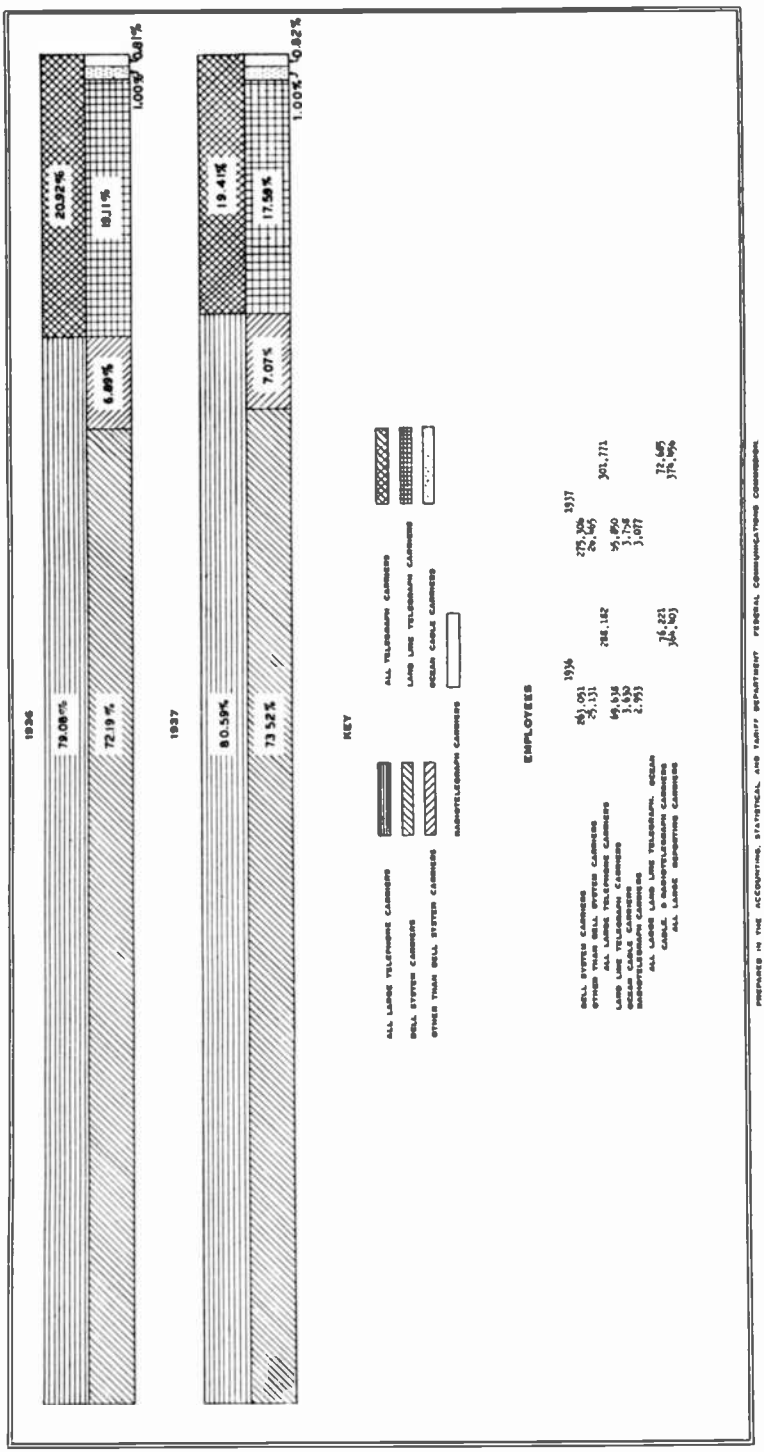
Employees in service and their compensation.—The labor statistics shown in table XXXVI relate to the large telephone, wire-telegraph, and radiotelegraph carriers which report to the Commission on a monthly basis, but the returns were compiled from the annual reports and correspondence. The compensation of employees, by months, and the number of employees at the end of the years 1936 and 1937 are shown separately in this table for each group of carriers reporting to the Commission. The amounts applicable to the Bell System exclude the returns from the Cincinnati & Suburban Bell Telephone Co. and the Southern New England Telephone Co. The number of telephone employees and their compensation increased from 288,182 and $440,102,015, respectively, in 1936 to 301,771 and $496,694,574, respectively, in 1937. The number of wire-telegraph and radiotelegraph employees decreased from 76,221 in 1936 to 72,685 in 1937, whereas their compensation increased from $82,890,426 to $90,254,217 during the same period.

Comparative data pertaining to the number of employees of large telephone, wire-telegraph, and radiotelegraph carriers for 1936 and 1937 are shown in chart 9, and similar data relative to the annual compensation of employees in service are shown in chart 10.

TABLE XXXVI.—*Compensation of employees, by months, and number of employees in service at the end of the year, as reported by large telephone and telegraph carriers for the years 1936 and 1937*

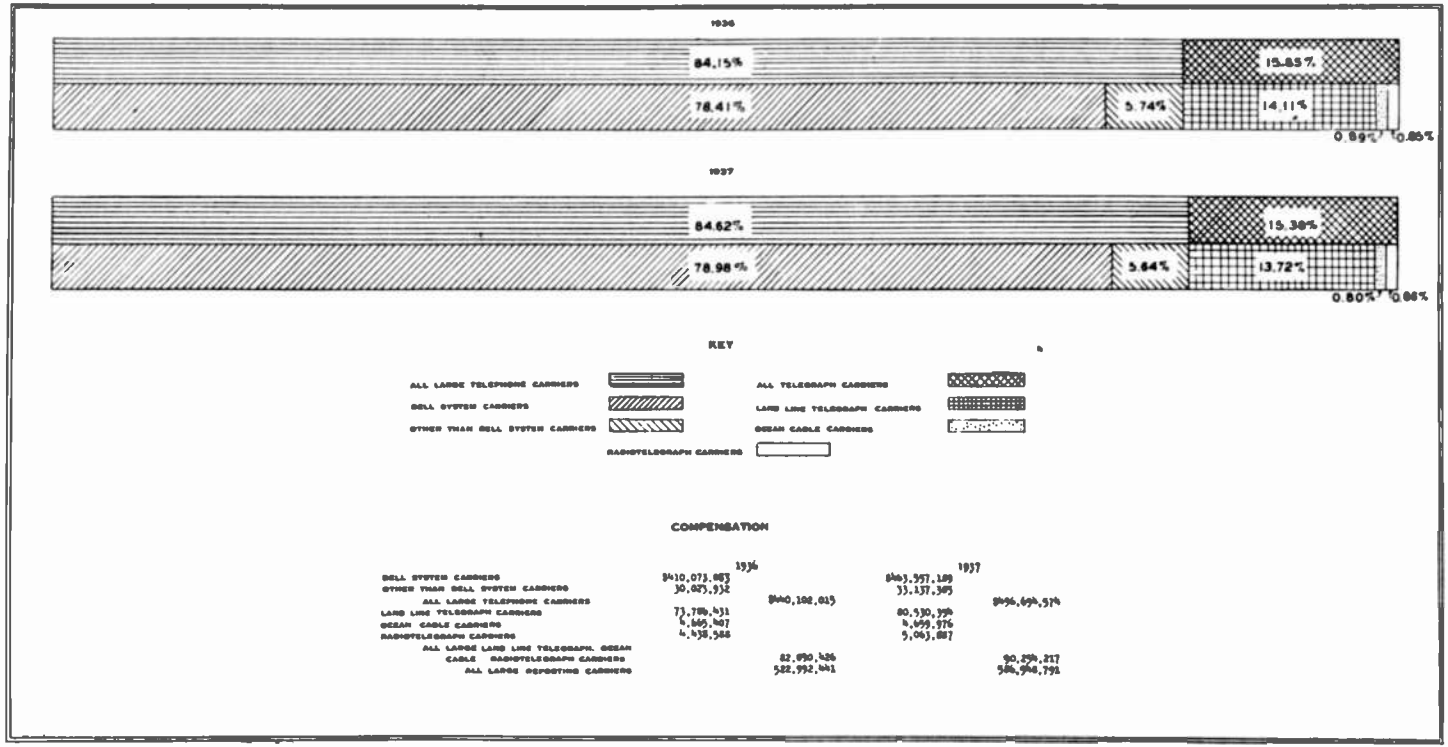
Month	Telephone carriers			Telegraph carriers				Grand total
	Bell system	Other than Bell system	Total	Land-line telegraph	Ocean cable	Radiotelegraph	Total	
1936								
January	$33, 332, 968	$2, 413, 572	$35, 746. 540	$5, 787, 500	$389, 094	$357, 961	$6, 534, 555	$42, 281, 095
February	31, 495, 518	2, 277, 864	33, 773, 382	5, 534, 771	392, 856	351, 051	6, 278, 678	40, 052, 060
March	33, 326, 406	2. 500, 176	35, 826, 582	5, 952, 906	381, 881	353, 343	6, 688, 130	42, 514, 712
April	33, 153, 022	2, 485, 324	35, 638, 346	5, 912. 554	385, 525	361. 447	6, 689, 526	42, 327, 872
May	33, 691, 575	2, 461, 905	36, 153, 480	6, 047, 327	385, 936	367, 794	6, 801, 057	42, 954, 537
June	33, 713, 922	2, 481, 053	36, 197, 975	6, 190, 331	383, 379	372, 106	6, 945, 816	43, 143, 791
July	35, 344, 894	2, 590, 754	37, 935, 648	6, 293, 499	387, 426	386, 205	7, 067, 130	45, 002, 778
August	33, 986, 181	2, 504, 560	36, 490, 741	6, 238, 709	385, 310	379, 143	7, 003, 162	43, 493, 903
September	35, 055, 625	2. 544, 364	37, 599, 989	6, 251, 972	379, 386	374, 598	7, 005, 956	44, 605, 945
October	35, 506, 615	2, 568, 390	38, 075, 005	6, 382, 984	395, 733	378, 301	7. 157, 018	45, 232, 023
November	34, 722, 627	2, 535, 358	37, 257, 985	6, 040, 083	389. 577	372, 222	6, 801, 882	44, 059, 867
December	36, 748, 730	2, 657, 612	39, 406, 342	7, 123, 795	409, 304	384, 417	7, 917, 516	47, 323, 858
Total	410, 078, 083	30, 023, 932	440, 102, 015	73, 786, 431	4, 665, 407	4, 438, 588	82, 890, 426	522, 992, 441
Number of employees in service Dec. 31, 1936	263, 051	25, 131	288, 182	69, 638	3, 630	2. 953	76, 221	364, 403
1937								
January	$35, 853, 512	$2, 635, 913	$38, 489, 425	$6, 512, 297	$383, 432	$385, 661	$7, 281, 390	$45, 770, 815
February	34, 389, 272	2, 539, 065	36, 928, 337	6, 163, 950	383, 098	384, 142	6, 931, 190	43, 859, 527
March	37, 881, 721	2, 724, 094	40, 605, 815	6, 823, 033	382, 264	394, 862	7, 600, 159	48, 205, 974
April	37, 641, 880	2, 681, 022	40, 322, 902	6, 683, 975	387, 100	399, 444	7, 470, 519	47, 793, 421
May	38, 294, 031	2, 678, 914	40, 972. 945	6, 922, 887	391, 195	405, 674	7, 719, 756	48, 692, 701
June	38, 815, 382	2, 756, 037	41, 571, 419	6, 933, 890	381, 412	412, 405	7, 727, 707	49, 299, 126
July	40, 049, 502	2, 852, 987	42, 902, 489	6, 904, 610	389, 938	432, 235	7, 816, 783	50, 719, 272
August	40, 013, 677	2, 835, 819	42, 849, 496	6, 749, 981	393, 812	429, 166	7, 562, 959	50, 412, 455
September	40, 093, 102	2, 826, 006	42, 919, 108	6, 674, 554	384, 875	422, 473	7, 481, 902	50, 401, 010
October	39, 448, 909	2, 803, 393	42, 252, 302	6, 623, 365	393, 026	427, 044	7, 443, 435	49, 695, 737
November	39, 987, 440	2, 817, 561	42, 805, 001	6, 428, 831	400, 405	429, 214	7, 258, 450	50, 063, 451
December	41, 088, 761	2, 986, 574	44, 075, 335	7, 018, 981	399, 419	541, 567	7, 959, 967	52, 035, 302
Total	463, 557, 189	33, 137, 385	496, 694, 574	80, 530, 354	4, 659, 976	5, 063, 887	90, 254, 217	586, 948, 791
Number of employees in service Dec. 31, 1937	275, 306	26, 465	301, 771	65, 850	3, 758	3, 077	72, 685	374, 456

NOTE.—"Large telephone carriers" comprises a group of 91 carriers, each having annual operating revenues of approximately $250,000 or more. "Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 10 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.


NUMBER OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS AS OF DECEMBER 31, 1936 AND DECEMBER 31, 1937
CHART 9
1936
79.08%
20.92%
72.19%
18.11%
6.89%
1.00%
0.81%
1937
80.59%
19.41%
73.52%
17.59%
7.07%
1.00%
0.82%
KEY
ALL LARGE TELEPHONE CARRIERS
BELL SYSTEM CARRIERS
OTHER THAN BELL SYSTEM CARRIERS
ALL TELEGRAPH CARRIERS
LAND LINE TELEGRAPH CARRIERS
OCEAN CABLE CARRIERS
RADIOTELEGRAPH CARRIERS
EMPLOYEES
1936
1937
BELL SYSTEM CARRIERS 261,051 275,306
OTHER THAN BELL SYSTEM CARRIERS 25,131 26,465
ALL LARGE TELEPHONE CARRIERS 286,182 301,771
LAND LINE TELEGRAPH CARRIERS 49,636 51,850
OCEAN CABLE CARRIERS 1,653 1,744
RADIOTELEGRAPH CARRIERS 2,993 3,077
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE & RADIOTELEGRAPH CARRIERS 76,221 72,465
ALL LARGE REPORTING CARRIERS 362,403 378,996
PREPARED IN THE ACCOUNTING, STATISTICAL AND TARIFF DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION

TOTAL ANNUAL COMPENSATION OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS FOR THE YEARS 1936 AND 1937

CHART 10



COMPENSATION

	1936		1937	
BELL SYSTEM CARRIERS	$410,073,083		$403,557,189	
OTHER THAN BELL SYSTEM CARRIERS	30,025,932		33,137,305	
ALL LARGE TELEPHONE CARRIERS		$440,102,015		$436,694,494
LAND LINE TELEGRAPH CARRIERS	73,786,431		80,530,998	
OCEAN CABLE CARRIERS	4,665,407		4,699,976	
RADIOTELEGRAPH CARRIERS	4,438,586		5,063,887	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE & RADIOTELEGRAPH CARRIERS		82,890,424		90,294,217
ALL LARGE REPORTING CARRIERS		522,992,441		526,988,711

PREPARED IN THE ACCOUNTING STATISTICAL AND TARIFF DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION

(C) Data Concerning Intercorporate Relations

Intercorporate relations of communication carriers and controlling companies.—The intercorporate relations of all telephone, wire-telegraph, and radiotelegraph carriers and controlling companies filing reports with the Commission for the year 1937 are given in table XXXVII. The independent or top companies are arranged in alphabetical order and are shown flush with the margin. Each subsidiary is indented beneath the controlling company to indicate the intercorporate relation existing on December 31, 1937. The names of all companies listed alphabetically are shown in the index following this table for reference purposes. The number in the first column of this table opposite the name of each company corresponds with the number following the name of the same company in the index.

The form of annual report filed by the various companies is indicated by the symbol shown in the third column of table XXXVII. The following is a key to the symbols used:

M–A—Class A telephone carriers having average annual operating revenues exceeding $100,000, which file annual reports on form M.

M–B—Class B telephone carriers having average annual operating revenues exceeding $50,000 but not more than $100,000, which file annual reports on form M.

O—Wire-telegraph and radiotelegraph carriers, which file annual reports on form O.

H—Holding companies having large interests in communication carriers, which file annual reports on form H.

Cir—Holding companies having nominal interests in communication carriers, which file annual reports on the statistical circular form No. 1.

The operating revenues of all telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1937 and system totals are shown in the fourth column.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*

No.	Name of company	Form of annual report filed	Operating revenues
1	American Newspapers, Inc.	Cir.	
2	Hearst Radio, Inc.	O	$13,196
3	American Telephone & Telegraph Co.	M–A	107,339,531
4	Bell Telephone Co. of Pennsylvania	M–A	68,805,549
5	Chesapeake & Potomac Telephone Co.	M–A	11,137,467
6	Chesapeake & Potomac Telephone Co. of Baltimore City	M–A	14,835,276
7	Chesapeake & Potomac Telephone Co. of Virginia	M–A	9,535,029
8	Chesapeake & Potomac Telephone Co. of West Virginia	M–A	6,352,988
9	Diamond State Telephone Co.	M–A	2,256,366
10	Illinois Bell Telephone Co.	M–A	87,489,839
11	Crown Point Telephone Co.	M–B	59,257
12	Indiana Bell Telephone Co.	M–A	12,942,064
13	Lebanon Telephone Co.[1]	M–B	25,791
14	Michigan Bell Telephone Co.	M–A	40,557,974
15	Mountain States Telephone & Telegraph Co.	M–A	24,144,363
16	New England Telephone & Telegraph Co.	M–A	74,613,278
17	Eastern Telephone & Telegraph Co. (Maine)	M–A	127,378
18	Moosehead Telephone & Telegraph Co.	M–B	93,456
19	Westerly Automatic Telephone Co.	M–A	146,032
20	Western New England Telephone Co.	M–B	92,810
21	White River Valley Telephone Co.	M–B	53,271
22	New Jersey Bell Telephone Co.	M–A	48,144,509
23	New York Telephone Co.	M–A	206,296,463
24	Northwestern Bell Telephone Co.	M–A	33,594,356
25	Dakota Central Telephone Co.	M–A	1,275,641
26	Tri-State Telephone & Telegraph Co.	M–A	6,193,086
27	Nicollet County Telephone & Telegraph Co.	M–B	57,545
28	Ohio Bell Telephone Co.	M–A	41,920,140
29	Pacific Telephone & Telegraph Co.	M–A	67,005,268
30	Bell Telephone Co. of Nevada	M–A	1,106,406
31	Southern California Telephone Co.	M–A	44,903,869
32	Southern Bell Telephone & Telegraph Co.	M–A	62,391,224
33	Christian-Todd Telephone Co.	M–A	201,539
34	Southwestern Bell Telephone Co.	M–A	86,099,456
35	United Telephone Co. (Kansas)	M–A	1,779,055
36	Wisconsin Telephone Co.	M–A	17,515,019
	System total		1,079,091,295

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual report filed	Operating revenues
37	American Utilities Service Corporation	Cir.	
38	Bluefield Telephone Co	M-A	$461, 262
39	Ashtabula Telephone Co.[3]	M-A	178, 250
40	Bangor & Aroostook R. R. Co	Cir.	
41	Northern Telegraph Co	O	26, 998
42	Byllesby Corporation	Cir.[3]	
43	Byllesby, H. M., & Co	Cir.[3]	
44	Standard Power & Light Corporation [4]	Cir.[3]	
45	Standard Gas & Electric Co	Cir.[3]	
46	Northern States Power Co. (Delaware)	Cir.[3]	
47	Northern States Power Co. (Minnesota) [3]	M-A	110, 141
48	Canadian National Ry. Co	Cir.[3]	
49	Canadian Northern Ry. Co	Cir.	
50	Canadian National Telegraph Co	Cir.[3]	
51	Great North Western Telegraph Co. of Canada [5]	O	(6)
52	Minnesota & Manitoba R. R.[7]	O	7, 064
53	Canadian Pacific Ry. Co. (lines in United States)	O	6, 009
54	Carolina Telephone & Telegraph Co	M-A	1, 526, 014
55	Champaign Telephone Co	M-B	78, 516
56	Chenango & Unadilla Telephone Corporation	M-A	236, 431
57	Chesapeake & Ohio Ry. Co	Cir.[3]	
58	Pere Marquette Ry. Co	Cir.	
59	Central Land Co	Cir.[3]	
60	Pere Marquette Radio Corporation	O	9, 518
61	Chicago, Milwaukee, St. Paul & Pacific R. R. Co. (in trusteeship).	Cir.	
62	Continental Telegraph Co.	O	13, 685
63	Cincinnati & Suburban Bell Telephone Co	M-A	10. 084, 008
64	Citizens Utilities Co	Cir.	
65	Public Utilities California Corporation	M-A	162. 009
66	City of Seattle, Harbor Department	O	5, 351
67	Colorado Fuel & Iron Corporation	Cir.[3]	
68	Colorado & Wyoming Telegraph Co	O	16, 991
69	Columbia Utilities Co.[8]		
70	Interstate Telephone & Telegraph Co. (Oregon)[8]	O	(6)
71	Colusa County Telephone Co	M-B	56, 676
72	Commercial Pacific Cable Co.[10]	O	915, 942
73	Del Rio & Winter Garden Telephone Co	M-A	263, 880
74	Dollar, Robert, Co	Cir.	
75	Globe Wireless, Ltd	O	449, 981
76	First-Chicago Corporation	Cir.	
77	North-Western Indiana Telephone Co.[11]	M-A	153, 440
78	Firestone Plantations Co	Cir.	
79	United States-Liberia Radio Corporation	O	75, 624
80	French Telegraph Cable Co.[12]	O	855, 026
81	General Telephone Corporation	H	
82	Indiana Associated Telephone Corporation	M-A	1, 315, 313
83	Indiana Central Telephone Co. (in trusteeship)	H	
84	Interstate Telephone Co	M-A	846, 496
85	Michigan Associated Telephone Co	M-A	1, 252, 823
86	Southwestern Associated Telephone Co	M-A	1, 181. 187
87	Ohio Associated Telephone Co	M-A	726, 892
88	Pennsylvania Telephone Corporation	M-A	2, 321, 037
89	United Telephone Co. (Delaware)	H	
90	Tri-State Associated Telephone Corporation	M-B	99, 647
	System total		7, 743, 395
91	General & Telephone Investments, Inc	H	
92	Gary, Theodore, & Co	H	
93	Telephone Bond & Share Co	H	
94	Continental Telephone Co	H	
95	Nebraska Continental Telephone Corporation	M-A	320. 568
96	Home Telephone & Telegraph Co. (Indiana)	M-A	1, 357, 172
97	Imperial Securities Co	H	
98	Telephone Securities, Inc	H	
99	Keystone Telephone Co. of Philadelphia	M-A	1, 898, 638
100	Eastern Telephone & Telegraph Co. (New Jersey).	M-A	162. 118
	System total		3, 738, 496
101	Greenville Telephone Co	M-B	101, 422
102	Gulf Radio Service (George Collins Warner, Jr.)	O	(13)
103	Home Telephone & Telegraph Co. of Virginia	M-B	107, 457
104	Huron Portland Cement Co	Cir.[3]	
105	Huron Transportation Co	Cir.	
106	Michigan Wireless Telegraph Co.[14]	O	6, 512

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual report filed	Operating revenues
107	Inter-Mountain Telephone Co	M-A	$665,514
108	International Telephone & Telegraph Corporation	H	
109	All America Cables, Inc	O	5,019,224
110	Postal Telegraph & Cable Corporation (in trusteeship)	H	
111	Mackay Cos	H	
112	Commercial Cable Co	O	4,394,865
113	Mackay Radio & Telegraph Co. (California)	O	1,241,162
114	Postal Telegraph-Cable Co. (land-line system)	O	23,347,246
	Interstate Telephone & Telegraph Co. (Oregon).[15]	O	(6)
115	Radio Communication Co., Inc.[16]		
116	Mackay Radio & Telegraph Co. (Delaware)	O	1,093,484
	System total		35,095,981
117	Investments & Utilities Corporation	H	
118	Loveland & Co., Ltd	H	
119	West Coast Utilities Corporation	H	
120	West Coast Telephone Co	M-A	1,400,929
121	Investors Telephone Co	H	
122	Platte Valley Telephone Corporation	M-A	223,295
123	Kansas State Telephone Co	M-B	50,139
124	Kittanning Telephone Co.[3]	M-A	255,350
125	Lee Telephone Co	M-A	137,054
126	Lincoln Telephone & Telegraph Co. (Delaware)[17]	M-A	2,738,750
127	Mayor and City Council of Baltimore, Md	O	4,576
128	Michigan Alkali Co	Cir.[3]	
129	Wyandotte Transportation Co	Cir	
	Michigan Wireless Telegraph Co.[14]	O	
130	Mid-West States Utilities Co.[18]		
131	Kansas Telephone Co. (in receivership) [3]	M-A	145,950
132	Nevada-California Electric Corporation	Cir	
133	Interstate Telegraph Co	M-A	162,966
134	Norfolk & Carolina Telephone & Telegraph Co	M-A	147,770
135	North-West Telephone Co	M-A	186,625
136	Olympic Radio Co	O	2,100
137	Oregon-Washington Telephone Co	M-A	204,488
138	Oxnard Home Telephone Co	M-B	69,303
139	Ozark Central Telephone Co	M-A	162,959
140	Palestine Telephone Co	M-B	74,697
141	Phillips Petroleum Co	Cir	
142	Western Radio Telegraph Co	O	32,664
143	Press Wireless, Inc	O	477,757
144	Radio Corporation of America	H	
145	R. C. A. Communications, Inc	O	5,225,144
146	Radiomarine Corporation of America	O	1,332,048
	System total		6,557,192
147	Rochester Telephone Corporation	M-A	5,001,399
148	San Angelo Telephone Co	M-A	515,644
149	Santa Barbara Telephone Co	M-A	642,771
150	Santa Paula Home Telephone Co	M-B	54,847
151	Socony-Vacuum Oil Co., Inc	Cir	
152	Magnolia Petroleum Co	Cir	
153	Magnolia Radio Corporation	O	4,596
154	South Porto Rico Sugar Co. (New Jersey)	Cir	
155	South Porto Rico Sugar Co. (of Puerto Rico)	O	6,850
156	Southeast Missouri Telephone Co	M-A	755,985
157	Southern New England Telephone Co	M-A	17,936,339
158	Southwest Telephone Co. (Kansas)	M-A	182,398
159	Standard Oil Co. (New Jersey)	Cir	
160	Southern Radio Corporation	O	36,921
161	Telephone & Utility Investment Corporation	Cir.[3]	
162	Eastern Kansas Telephone Co.[3]	M-B	75,187
163	Tidewater Wireless Telegraph Co	O	5,155
164	Two States Telephone Co	M-A	314,322
165	United Fruit Co	Cir	
166	Tropical Radio Telegraph Co	O	692,207
167	United States Rubber Co	Cir.[3]	
168	Meyer Rubber Co	Cir	
169	Central Idaho Telegraph & Telephone Co.[19]	O	1,021
170	United States Steel Corporation [3]		
171	Michigan Limestone & Chemical Co	Cir	
172	Central Radio Telegraph Co	O	10,487
173	United Telephone Co. (Texas)	M-B	92,132

See footnotes at end of table.

TABLE XXXVII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1937*—Continued

No.	Name of company	Form of annual relief field	Operating revenues
174	United Telephone & Electric Co. (in trusteeship) [20]	H	
175	New Jersey Telephone Co	M-A	$154,880
176	United Telephone Co. of Pennsylvania	M-A	858,157
177	United Telephone & Telegraph Co	H	
178	American Telephone Co	M-A	159,244
179	United Telephone Co. (Missouri)	M-A	367,005
180	United Telephone & Telegraph Corporation	H	
181	Interstate Telephone & Telegraph Co. (Indiana)	H	
182	Ohio Telephone Service Co	M-A	225,781
183	United Telephone Companies, Inc	M-A	704,360
184	United Telephone Investment Corporation	H	
185	Union Telephone Co. (Indiana)	M-A	169,573
	System total		2,939,000
186	Utilities Holding Corporation	H	
187	Middle States Utilities Co. (Delaware)	H	
188	Middle States Utilities Co. of Iowa	M-B	84,136
189	Middle States Utilities Co. of Missouri	M-A	146,431
	System total		230,567
190	Victor-American Fuel Co	Cir	
191	Mountain Telegraph Co	O	5,167
192	Wabash Ry. Co. (in receivership)	Cir	
193	Ann Arbor R. R. Co. (in receivership)	Cir	
194	Wabash Radio Corporation	O	12,147
195	Western Arkansas Telephone Co	M-B	75,262
196	Western Union Telegraph Co	O	100,482,884
	Great North Western Telegraph Co. of Canada [21]	O	(*)
197	Mexican Telegraph Co	O	438,692
	System total		100,921,576

[1] Merged with Indiana Bell Telephone Co., June 30, 1937.
[2] Subject only to secs. 201-205 of the act.
[3] Report for 1937 not received.
[4] Controlled jointly by H. M. Byllesby & Co. and the United States Electric Power Corporation through ownership of majority of voting capital stock.
[5] Leased by the Western Union Telegraph Co. (No. 196).
[6] None reported, lessor company.
[7] Telegraph facilities leased to and operated by the Canadian Northern Ry. Co.
[8] Files no report. Inserted to show intercorporate relation of subsidiary carrier.
[9] Leased by the Postal Telegraph-Cable Co. (land-line system) (No. 114).
[10] The Commercial Pacific Cable Co. is closely affiliated with the Mackay Cos.
[11] Purchased by the Indiana Associated Telephone Corporation Dec. 1, 1937, excepting 3 toll circuits.
[12] Operating revenues for New York City office, as shown on the December 1937 monthly report, are $412,017.
[13] Not included in tabulations, as returns were incomplete.
[14] Controlled jointly by the Huron Transportation Co. (No. 105) and the Wyandotte Transportation Co. (No. 129) through ownership of the entire capital stock, each company owning 50 percent.
[15] Operated under lease by Postal Telegraph-Cable Co. (land-line system). For control, see No. 70.
[16] Inactive company, files no report. Inserted to show intercorporate relation of subsidiary carrier.
[17] Formerly Lincoln Telephone Securities Co., which company, as of Jan. 1, 1937, acquired the assets and assumed the liabilities of the Lincoln Telephone & Telegraph Co. (Nebraska), dissolved that date; and changed its name to the Lincoln Telephone & Telegraph Co. (Delaware). Subject only to secs. 201-205 of the act.
[18] Files no report. Inserted to show intercorporate relation of subsidiary carrier. Subject only to secs. 201-205 of the act.
[19] Operated by the Union Pacific R. R.
[20] Jointly controlled by the United Trust Co. as trustee for Brown Memorial Foundation and C. L. Brown estate.
[21] Lines in the United States, in New England, nd northern New York State, leased by the Western Union Telegraph Co. For control, see No. 51.

Index Pertaining to Intercorporate Relations

[For use in connection with table XXXVII]

APPENDIX D

REPORT OF BROADCAST SECTION FOR FISCAL YEAR ENDING JUNE 30, 1938

Applications received:

Formal:	
Renewals	2,347
Others	1,916
Total	4,263
Informals	1,678

Authorizations issued:

Formal:	
Renewals	2,154
Others	2,252
Total	4,406
Informals	399

BROADCAST

Experimental stations for fiscal year ending June 30, 1938

Class of station	As of July 1, 1937	New	Deleted	As of July 1, 1938
High-frequency broadcast	40	12	4	48
Experimental broadcast	13	6	5	14
Television	18	2	1	19
International	12	1	0	13
Facsimile	5	4	3	6
Low-frequency relay	102	46	5	143
High-frequency relay	228	60	22	266
Noncommercial educational	0	1	0	1
	418	132	40	510 *Total*
Broadcast	700	47	5	[1] 743
Special broadcast	4	0	0	4

[1] This includes the separation of WFLA-WSUN granted August 18, 1937, and authorizing operation of 2 separate stations (WFLA and WSUN).

New stations authorized for fiscal year ending June 30, 1938

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KARM	George Harm, Fresno, Calif.	1310	100	Unlimited.
KBKR	Louis P. Thornton, Baker, Oreg.	1500	100 250-LS	Do.
KBND	The Bend Bulletin, Bend, Oreg.	1310	100 250-LS	Do.
KDNT	Harwell V. Shepard, Denton, Tex.	1420	100	Daytime.
KDTH	Telegraph Herald, Dubuque, Iowa (issues being determined by Court of Appeals).	1340	500	Do.
KELA	Central Broadcasting Corporation, between Centralia and Chehalis, Wash.	1440	500	Unlimited.
KFAM	The Times Publishing Co., St. Cloud, Minn.	1420	100 250-LS	Do.
KFAR	Midnight Sun Broadcasting Co., Fairbanks, Alaska.	610	1000	Do.
KGCI	Clarence A. Berger and Saul S. Freeman, Coeur D'Alene, Idaho.	1200	100	Daytime.

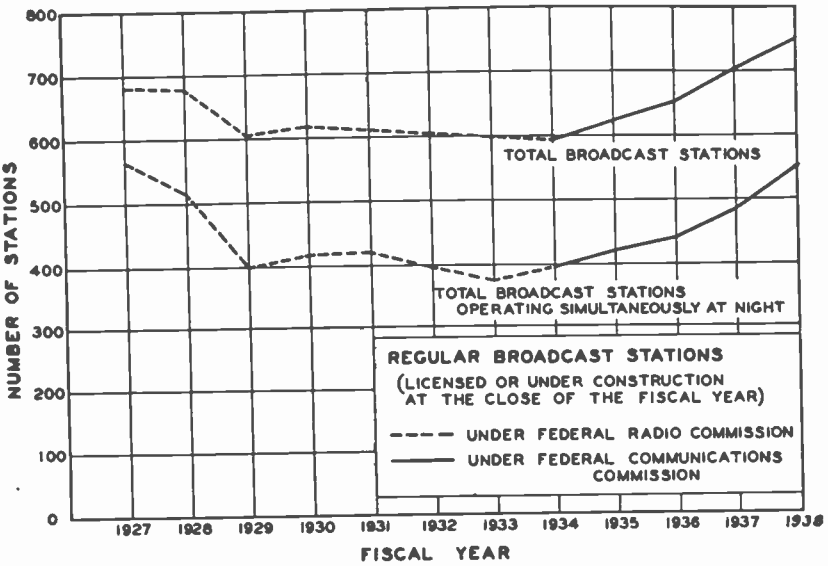
New stations authorized for fiscal year ending June 30, 1938—Continued

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KGLU	Gila Broadcasting Co., Safford, Ariz.	1420	100 250-LS	Unlimited.
KPAB	Mervel M. Valentine, Laredo, Tex.	1500	100 250-LS	Do.
KRBA	Red Lands Broadcasting Association (Ben T. Wilson, president) Lufkin, Tex.	1310	100	Daytime.
KRBM	Roberts MacNab Co. (Arthur L. Roberts, R. B. MacNab, A. J. Breitbach, general manager) Bozeman, Mont.	1420	100 250-LS	Unlimited.
KRIC	Beaumont Broadcasting Association (B. A. Steinhagen, president) Beaumont, Tex.	1420	100	Do.
KSAM	Sam Houston Broadcasting Association (H. G. Webster, president), Huntsville, Tex.	1500	100	Daytime.
			Kilowatt	
KTBC	State Capitol Broadcasting Association (R. B. Anderson, president), Austin, Tex.	1120	1	S. H. (Daytime WTAW).
			Watts	
KTFL	Harry Schwartz, Tulsa, Okla.	1310	250	Daytime.
KTRI	Sioux City Broadcasting Co., Sioux City, Iowa.	1420	100 250-LS	Unlimited.
KVAK	Carl Latenser, Atchison, Kans.	1420	100	Daytime.
KVNU	Cache Valley Broadcasting Co., Logan, Utah.	1200	100	Unlimited.
KVRS	Wyoming Broadcasting Co., Rock Springs, Wyo.	1370	100 250-LS	Do.
KWEW	W. E. Whitmore, Hobbs, N. Mex.	1500	100	Daytime.
KWFT	Wichita Broadcasting Co., Wichita Falls, Tex.	620	250 1000-LS	Unlimited.
KWJB	Sims Broadcasting Co. (Bartley T. Sims, manager), Globe, Ariz.	1210	100 250-LS	Do.
KWLK	Twin City Broadcasting Corporation, Longview, Wash.	780	250	Daytime.
KWOC	Don. M. Lidenton and A. L. McCarthy, Poplar Bluff, Mo.	1310	100	Do.
KYCA	Southwest Broadcasting Co., Prescott, Ariz. (granted Dec. 1, 1936; effective Jan. 12, 1937; effective date extended at intervals to Apr. 28, 1937, when application was remanded to hearing docket, never issued; granted June 22, 1938).	1500	100 250-LS	Unlimited.
KYSM	F. B. Clements and Co., a copartnership consisting of F. Braden Clements, Clara D. Clements, and C. C. Clements, doing business as Southern Minnesota Supply Co., Mankato, Minn.	1500	100 250-LS	Do.
WBRK	Harold Thomas, Pittsfield, Mass.	1310	100 250-LS	Do.
WCOU	Twin City Broadcasting Co., Inc., Lewiston, Maine.	1210	100	Do.
WCOV	John S. Allen and G. W. Covington, Jr., Montgomery, Ala.	1210	100	Daytime.
WDAN	Northwestern Publishing Co., Danville, Ill.	1500	250	Do.
WENY	Elmira Star-Gazette, Inc., Elmira, N. Y.	1200	250	Do.
WFMJ	Wm. F. Maag, Jr., Youngstown, Ohio.	1420	100	Do.
WGAU	J. K. Patrick, Earl B. Braswell, Tate Wright, C. A. Rowland, and A. Lynne Brannen, doing business as J. K. Patrick and Co., Athens, Ga.	1310	100 250-LS	Unlimited.
WGIL	Galesburg Broadcasting Co., Galesburg, Ill.	1500	250	Daytime.
WHAI	John W. Haigis, Greenfield, Mass.	1210	250	Do.
WHLS	Harmon Leroy Stevens and Herman Leroy Stevens, doing business as Port Huron Broadcasting Co., Port Huron, Mich.	1370	250	Do.
WJMC	Walter H. McGenty, Rice Lake, Wis.	1210	250	Do.
WKST	Keystone Broadcasting Co., New Castle, Pa.	1250	250	Do.
WLAW	Hildreth and Rogers Co., Lawrence, Mass.	680	1000	Do.
WOCB	Harriett M. Alleman and Helen W. MacLellan, doing business as Cape Cod Broadcasting Co., Barnstable Township, Mass.	1210	100 250-LS	Unlimited.
WPIC	Sharon Herald Publishing Co., Sharon, Pa.	780	250	Daytime.
WSAL	Frank M. Stearns, Salisbury, Md.	1200	250	Do.
WSAV	Arthur Lucas, Savannah, Ga.	1310	100	Unlimited.
WSLI	Standard Life Insurance Company of the South, Jackson, Miss.	1420	100 250-LS	Do.
WTOL	Community Broadcasting Co., Toledo, Ohio.	1200	100	Daytime.

Stations deleted for fiscal year ended June 30, 1938

Call letters	Grantee and location	Date of deletion
KGDY	Voice of South Dakota, Huron, S. Dak. (application for renewal of license denied; decision May 25, 1938; effective June 4, 1938).	June 24, 1938
WJBR	J. B. Roberts, Gastonia, N. C. (application for modified construction permit denied July 6, 1937; effective Sept. 28, 1937).	Oct. 28, 1937
WMBQ	Metropolitan Broadcasting Corporation, Brooklyn, N. Y. (application for renewal of license denied; decision May 25, 1938; effective June 4, 1938; facilities granted to Station WWRL).	June 24, 1938
WNRI	S. George Webb, Newport, R. I. (application for modified construction permit denied May 18, 1937; effective date to July 20, 1937; facilities granted to Station WTHT).	Aug. 19, 1937
WRAX	WRAX Broadcasting Company, Philadelphia, Pa. (time surrendered to Station WPEN May 11, 1938).	May 11, 1938

APPENDIX E


800
700
600
500
400
300
200
100
0
NUMBER OF STATIONS
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
FISCAL YEAR
TOTAL BROADCAST STATIONS
TOTAL BROADCAST STATIONS OPERATING SIMULTANEOUSLY AT NIGHT
REGULAR BROADCAST STATIONS
(LICENSED OR UNDER CONSTRUCTION AT THE CLOSE OF THE FISCAL YEAR)
UNDER FEDERAL RADIO COMMISSION
UNDER FEDERAL COMMUNICATIONS COMMISSION

APPENDIX F

Study of Service Rendered by United States Standard Broadcast Stations

In order to determine the service rendered by United States broadcast stations and to compare the service rendered by clear channel stations to that rendered by regional and local channel stations for both day and nighttime operation, it is essential that a detailed study be made of the service areas of the individual stations and the population and areas included therein. The following is the result of such study and included therein are the assumptions and basis used in making this study.

In determining the service areas of the individual stations, the actual measured service areas were used where available. Where measurements were not available it was necessary to make certain assumptions in regard to the efficiency of the antenna system and the conductivity of the surrounding area. The efficiency of the antenna system (where measurements were not available) was determined from a description of the antenna in the files of the Commission and standard curves of the efficiency of antenna systems of various types. Conductivities were determined from various sources of measurements, and where such were not available estimates were made on the basis of information available on the type of soil, terrain, and other conditions as compared to sections where the conductivities have been measured.

In this study no attempt has been made to show secondary service and all service contours are ground wave contours determined from the propagation curves of the Federal Communications Commission entitled "Curves Showing Distances to Ground Wave Field Intensity Contours versus Frequency, Ground Conductivity and Power", Federal Communications Commission Form 17415 and other propagation curves based on the Sommerfeld-Van der Pol-Niessen formulae.

In determining the service areas of individual stations, certain assumptions must be made with respect to the signal which will render satisfactory service. In the case of the day time studies, the boundary of satisfactory service was defined as the 0.5 mv/m ground wave contour regardless of the class of station under consideration. For the study of nighttime service conditions, this same contour was assumed to be the limit of satisfactory service from clear channel stations in the absence of cochannel interference resulting from duplicated operation. On the duplicated channels, the interference limitation was determined on the basis of the Commission's generally accepted standards and the second hour 10-percent curve from the allocation survey conducted in 1935. In determining the limitation to the interference free nighttime service of the regional stations, the limitation was assumed to be one-half the limitation resulting from 20 times the root-sum-square of the signals present on the channel at the location of the station under consideration, except when such value was below 1 millivolt, in which case the limitation was assumed to be 1 millivolt, or in certain isolated cases where the interference was from a single signal or predominantly so, that value was used without consideration of interference from other stations. The limit of the interference

free service from local stations at night was universally considered to be the 1 mv/m contour.

It is realized that during nighttime operation, particularly with respect to clear channel stations, that service in a portion of the area within the contours indicated may be materially deteriorated and in some cases entirely unsatisfactory due to the receiving location being within the rapid fading zone of the station. However, in view of the large number of variables which must be considered in determining these zones and the comparatively small area involved, no consideration was given thereto.

Below are tabulated the population residing in the night and day service areas of one or more stations of all classes; night and day service areas of one or more dominant clear channel stations; and night and day service areas of one or more other than dominant clear channel stations. It will be noted that these populations are given as total, urban, and rural populations. These figures were determined from the sums of the populations by counties within the service areas described above. Where the limiting service contour did not include full counties, the urban population (population in cities of 2,500 or greater) was subtracted from the total population and the rural population assumed to be uniformly distributed over the county and the percentage thereof taken equivalent to the percentage of the area included by the service contour, except in certain cases, particularly in the western States where it is known that the entire rural population is concentrated in one portion of the county, in which cases proper allowance was made therefor.

It is obvious that a portion of the urban population included herewith resides in areas where the signal (even though in excess of 0.5 mv/m) is insufficient to render satisfactory service as defined by generally accepted standards. However, this portion of the urban population which does not receive sufficient signal to render satisfactory service is small as compared with the total urban population. This is true to a greater extent with respect to the regional and local channel stations than with respect to the clear channel stations. In this regard, there is tabulated below the number and population by States of the cities of the various classifications lying within the service area of any station as above determined, but does not include the cities located in a metropolitan district as determined by the Bureau of Census, Department of Commerce, cities in which a station is located, or cities contiguous to another city where a station is located such that that city also receives primary service. It should be noted that in compiling this tabulation, stations sharing both day and nighttime hours were considered as unlimited time stations and stations sharing daytime hours only were considered as daytime stations, however, that limited time stations were considered as daytime stations.

There is also tabulated below the land areas within and outside the day and nighttime service areas of one or more standard broadcast stations of any class; the day and nighttime service areas of one or more dominant clear channel stations; and the day and nighttime service areas of one or more other than dominant clea rchannel stations.

All populations shown are based on the official 1930 census figures of the Bureau of Census, Department of Commerce.

108853—38——13

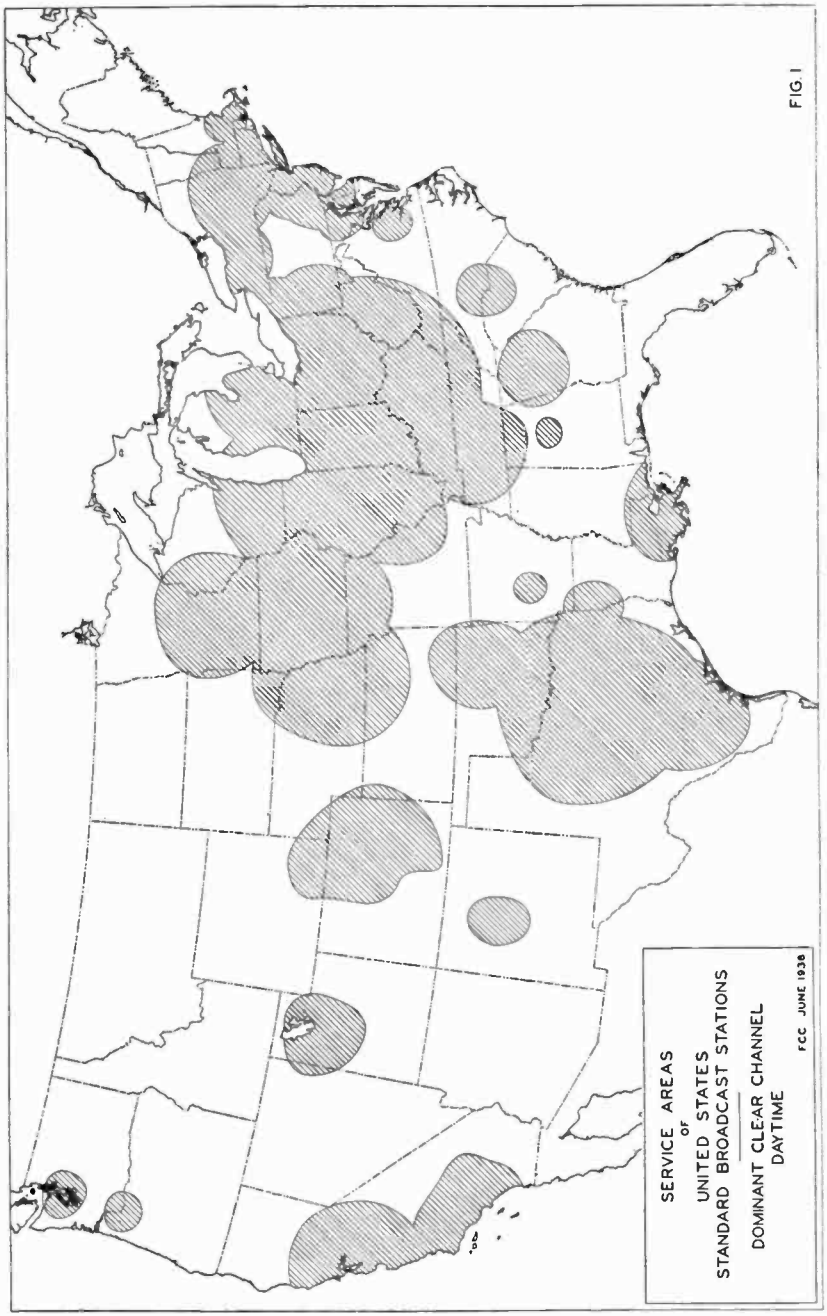


FIG. 1
SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
DOMINANT CLEAR CHANNEL
DAYTIME
FCC JUNE 1938

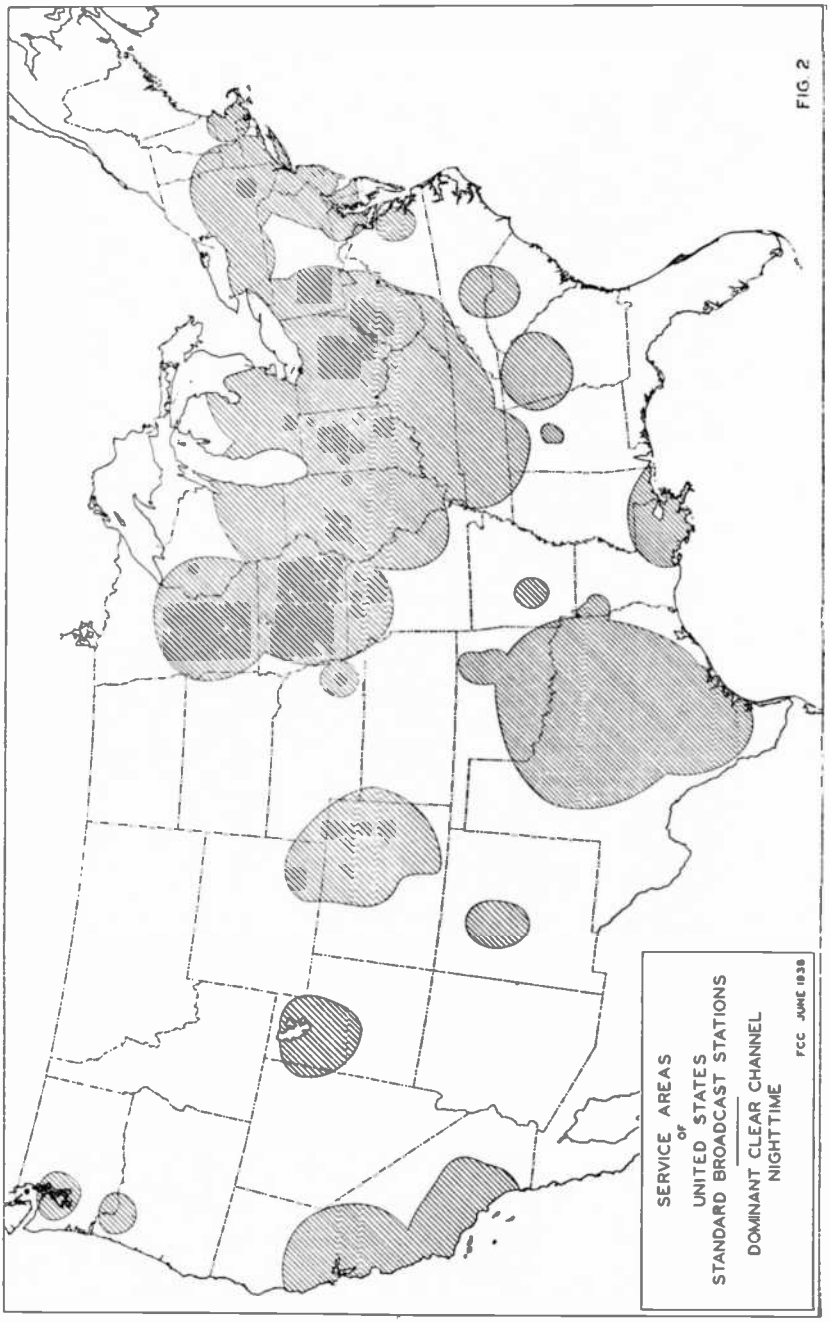

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
DOMINANT CLEAR CHANNEL
NIGHTTIME
FCC JUNE 1938

FIG. 2

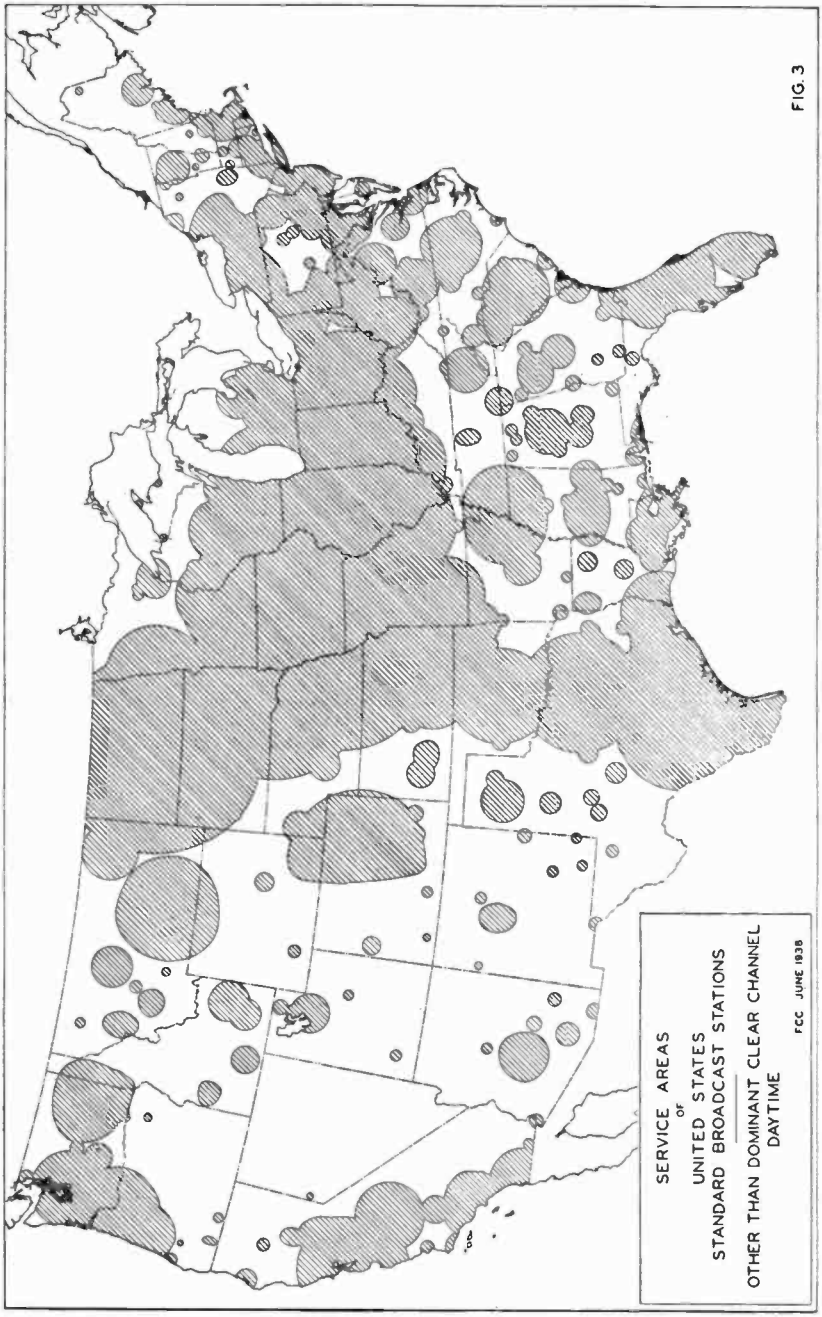

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
OTHER THAN DOMINANT CLEAR CHANNEL
DAYTIME
FCC JUNE 1938

FIG. 3

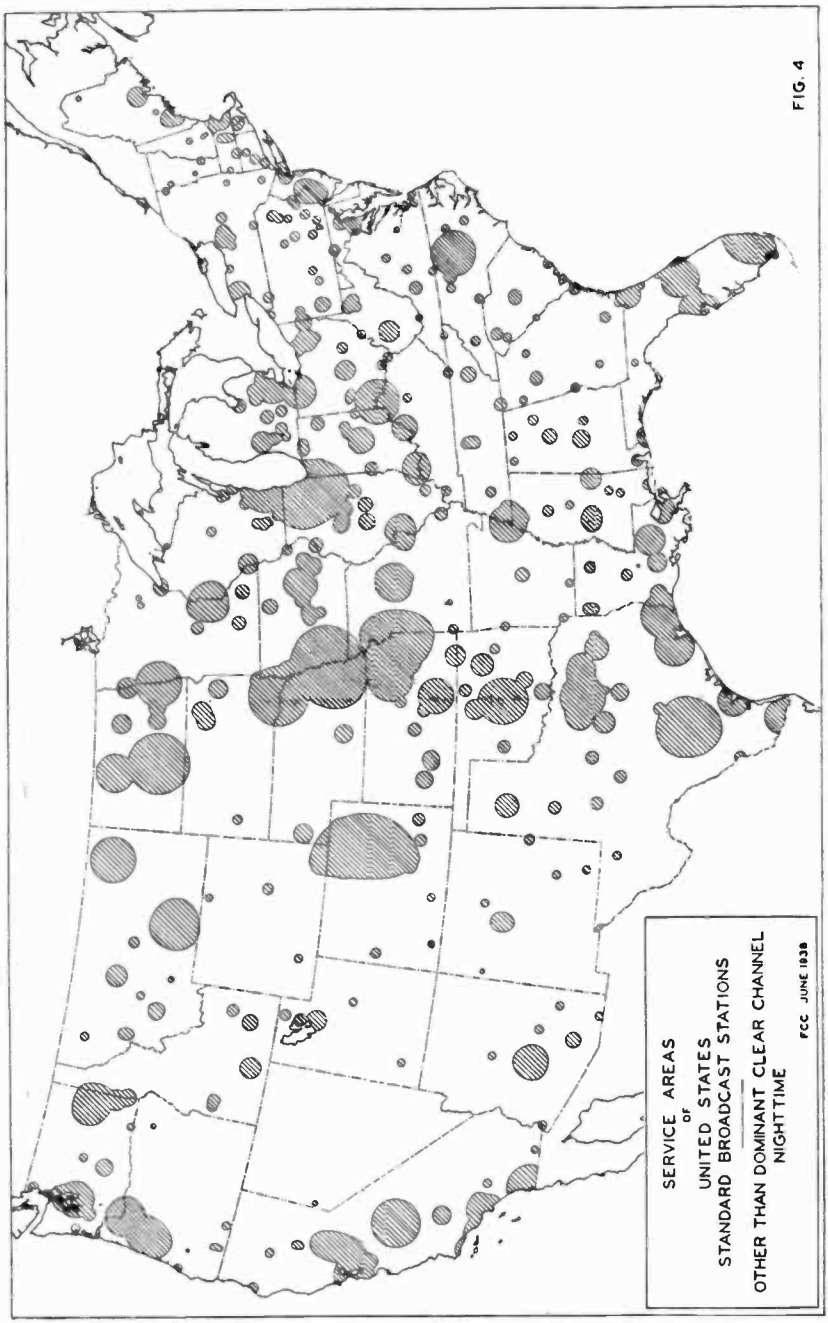

SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
OTHER THAN DOMINANT CLEAR CHANNEL
NIGHTTIME
FCC JUNE 1938

FIG. 4

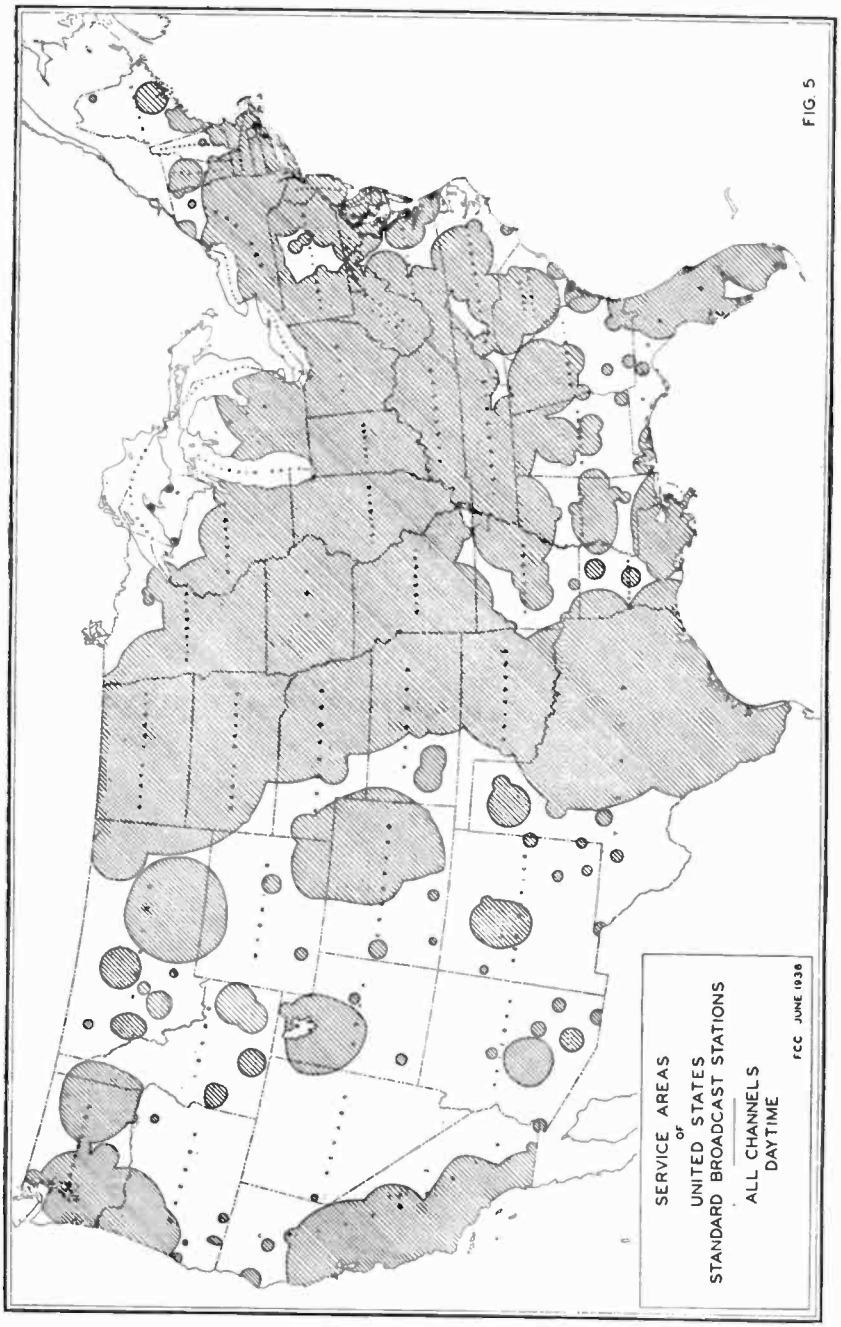


FIG. 5
SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
ALL CHANNELS
DAYTIME
FCC JUNE 1936

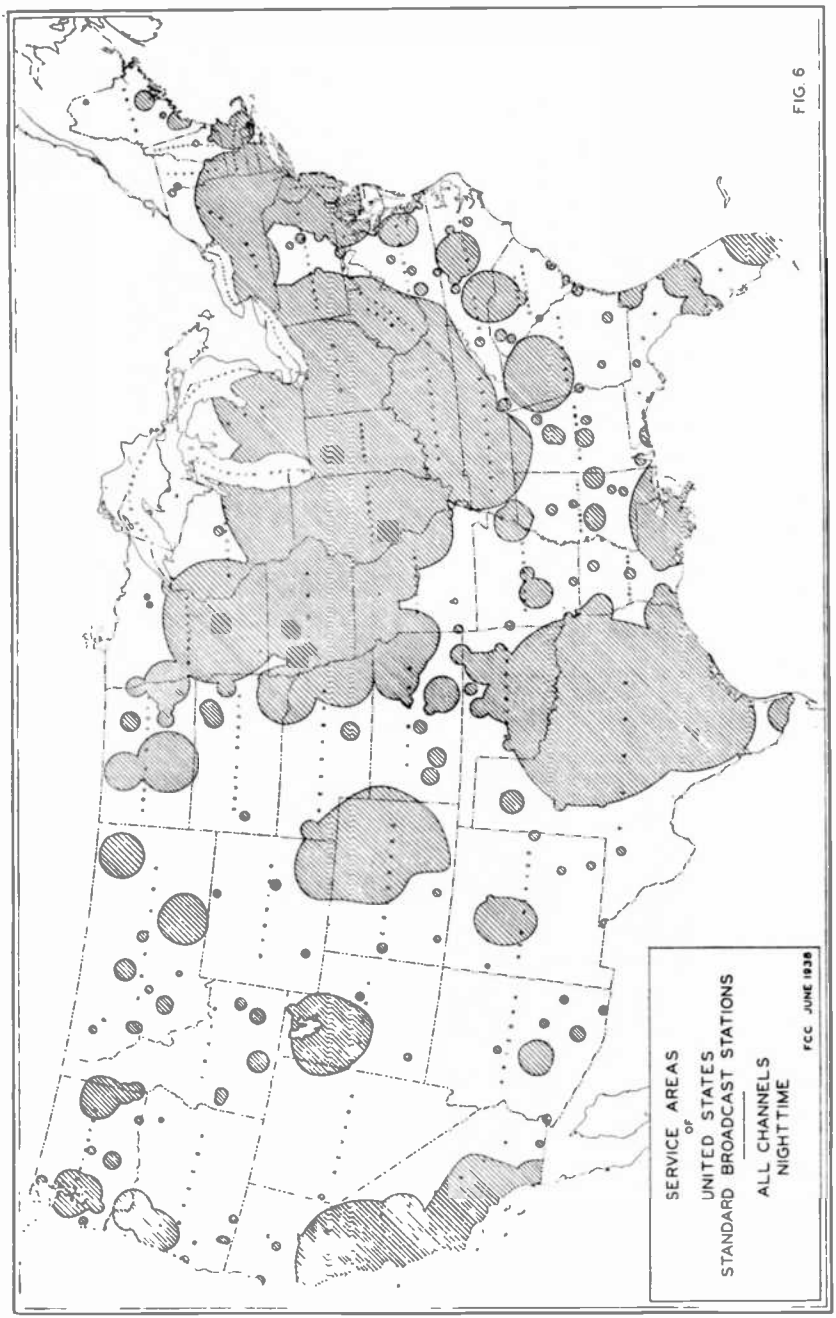


FIG. 6
SERVICE AREAS
OF
UNITED STATES
STANDARD BROADCAST STATIONS
ALL CHANNELS
NIGHT TIME
FCC JUNE 1938

TABLE I.—*Summary of daytime service rendered by United States broadcast stations*

[Dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	920,112	1,726,136	65.2	744,273	368,818	375,455	50.4	1,901,975	551,294	1,350,681	71.0
Arizona	435,573	0	435,573	100.0	149,856	0	149,856	100.0	285,717	0	285,717	100.0
Arkansas	1,854,482	153,200	1,701,282	91.7	382,878	32,178	350,700	91.6	1,471,604	121,022	1,350,582	91.8
California	5,677,251	4,977,659	699,592	12.3	4,160,596	3,828,002	332,594	8.0	1,516,655	1,149,657	366,998	24.2
Colorado	1,035,791	809,653	226,138	21.8	519,882	469,823	50,059	9.6	515,909	339,830	176,079	34.1
Connecticut	1,606,903	1,564,159	42,744	2.7	1,131,770	1,100,722	31,048	2.7	475,133	463,437	11,696	2.5
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	0	1,468,211	100.0	759,778	0	759,778	100.0	708,433	0	708,433	100.0
Georgia	2,908,506	1,423,325	1,485,181	51.1	895,492	531,249	364,243	40.7	2,013,014	892,076	1,120,938	55.7
Idaho	445,032	0	445,032	100.0	129,507	0	129,507	100.0	315,525	0	315,525	100.0
Illinois	7,630,654	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	878,795	1,002,204	53.3	729,834	308,033	421,801	57.8	1,151,165	570,762	580,403	50.5
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,371,190	730,403	34.8	833,532	690,281	143,251	17.2	1,268,061	680,909	587,152	46.3
Maine	797,423	0	797,423	100.0	321,506	0	321,506	100.0	475,917	0	475,917	100.0
Maryland	1,631,526	1,392,425	239,101	14.7	974,869	914,338	60,531	6.2	656,657	478,087	178,570	27.2
Massachusetts	4,249,614	4,214,508	35,106	.8	3,831,426	3,805,825	25,601	.7	418,188	408,683	9,505	2.3
Michigan	4,842,325	4,358,515	483,810	10.0	3,302,075	3,102,374	199,701	6.0	1,540,250	1,256,141	284,109	18.4
Minnesota	2,563,953	2,079,990	483,963	18.9	1,257,616	1,054,072	203,544	16.2	1,306,337	1,025,918	280,419	21.5
Mississippi	2,009,821	187,758	1,822,063	90.7	338,850	49,382	289,468	85.4	1,670,971	138,376	1,532,595	91.7
Missouri	3,629,367	2,043,510	1,585,857	43.7	1,859,119	1,167,876	691,243	37.2	1,770,248	875,634	894,614	50.5
Montana	537,606	0	537,606	100.0	181,036	0	181,036	100.0	356,570	0	356,570	100.0
Nebraska	1,377,963	1,149,477	228,486	16.6	486,107	442,125	43,982	9.0	891,856	707,352	184,504	20.7
Nevada	91,058	774	90,284	99.1	34,464	0	34,464	100.0	56,594	774	55,820	98.6
New Hampshire	465,293	81,958	383,335	82.4	273,079	50,388	222,691	81.5	192,214	31,570	160,644	83.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	59,578	363,739	85.9	106,816	26,570	80,246	75.1	316,501	33,008	283,493	89.6
New York	12,588,066	12,323,445	264,621	2.1	10,521,952	10,401,507	120,445	1.1	2,066,114	1,921,938	144,176	7.0
North Carolina	3,170,276	713,189	2,457,087	77.5	809,847	205,974	603,873	74.6	2,360,429	507,215	1,853,214	78.5
North Dakota	680,845	0	680,845	100.0	113,306	0	113,306	100.0	567,539	0	567,539	100.0
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	2,131,256	264,784	11.1	821,681	792,000	29,681	3.6	1,574,359	1,339,256	235,103	14.9
Oregon	953,786	453,381	500,405	52.5	489,746	317,456	172,290	35.2	464,040	135,925	328,115	70.7
Pennsylvania	9,631,350	8,378,179	1,253,171	13.0	6,533,511	5,982,741	550,770	8.4	3,097,839	2,395,438	702,401	22.7
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,738,765	361,942	1,376,823	79.2	371,080	60,080	311,000	83.8	1,367,685	301,862	1,065,823	77.9
South Dakota	692,849	180,134	512,715	74.0	130,907	42,284	88,623	67.7	561,942	137,850	424,092	75.5
Tennessee	2,616,556	1,944,582	671,974	25.7	896,538	501,470	395,068	44.1	1,720,018	1,443,112	276,906	16.1
Texas	5,824,715	4,639,139	1,185,576	20.4	2,389,348	1,806,425	582,923	24.4	3,435,367	2,832,714	602,653	17.5
Utah	507,847	388,344	119,503	23.5	266,264	242,812	23,452	8.8	241,583	145,532	96,051	39.8
Vermont	359,611	102,690	256,921	71.4	118,766	44,002	74,764	63.0	240,845	58,688	182,157	75.6
Virginia	2,421,851	896,786	1,525,065	63.0	785,537	297,397	488,140	62.1	1,636,314	599,389	1,036,925	63.4
Washington	1,563,396	789,485	773,911	49.5	884,539	583,230	301,309	34.1	678,857	206,255	472,602	69.6
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,491,931	447,075	15.2	1,553,843	1,412,381	141,462	9.1	1,385,163	1,079,550	305,613	22.1
Wyoming	225,565	48,535	177,030	78.5	70,097	25,970	44,127	63.0	155,468	22,565	132,903	85.5
Total	122,775,046	93,084,979	29,690,067	24.2	68,954,823	59,368,627	9,586,196	13.9	53,820,223	33,716,352	20,103,871	37.4

[1] See p. 180 for explanation of daytime service areas.

TABLE II.—*Summary of nighttime service rendered by United States broadcast stations*

[Dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	816,127	1,830,121	69.2	744,273	368,818	375,455	50.4	1,901,975	447,309	1,454,666	76.5
Arizona	435,573	0	435,573	100.0	149,856	0	149,856	100.0	285,717	0	285,717	100.0
Arkansas	1,854,482	128,202	1,726,280	93.1	332,878	32,178	350,700	91.6	1,471,604	96,024	1,375,580	93.5
California	5,677,251	4,977,659	699,592	12.3	4,160,596	3,828,002	332,594	8.0	1,516,655	1,149,657	366,998	24.2
Colorado	1,035,791	809,653	226,138	21.8	519,882	469,823	50,059	9.6	515,909	339,830	176,079	34.1
Connecticut	1,606,903	1,543,823	63,080	3.9	1,131,770	1,096,132	35,638	3.1	475,133	447,691	27,442	5.8
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	0	1,468,211	100.0	759,778	0	759,778	100.0	708,433	0	708,433	100.0
Georgia	2,908,506	1,423,325	1,485,181	51.1	895,492	531,249	364,243	40.7	2,013,014	892,076	1,120,938	55.7
Idaho	445,032	0	445,032	100.0	129,507	0	129,507	100.0	315,525	0	315,525	100.0
Illinois	7,630,654	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,282,170	188,769	7.6	979,292	889,463	89,829	9.2	1,491,647	1,392,707	98,940	6.6
Kansas	1,850,999	878,795	1,002,204	53.3	729,834	308,033	421,801	57.8	1,151,165	570,762	580,403	50.4
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,284,209	817,394	38.9	833,532	679,208	154,324	18.5	1,268,061	605,001	663,060	52.3
Maine	797,423	0	797,423	100.0	321,506	0	321,506	100.0	475,917	0	475,917	100.0
Maryland	1,631,526	1,392,425	239,101	14.7	974,869	914,338	60,531	6.2	656,657	478,087	178,570	27.2
Massachusetts	4,249,614	4,211,750	37,864	.9	3,831,426	3,805,825	25,601	.7	418,188	405,925	12,263	2.9
Michigan	4,842,325	4,358,515	483,810	10.0	3,302,075	3,102,374	199,701	6.0	1,540,250	1,256,141	284,109	18.4
Minnesota	2,563,953	2,070,919	493,034	19.2	1,257,616	1,051,428	206,188	16.4	1,306,337	1,019,491	286,846	22.0
Mississippi	2,009,821	187,758	1,822,063	90.7	338,850	49,382	289,468	85.4	1,670,971	138,376	1,532,595	91.7
Missouri	3,629,367	2,025,658	1,603,709	44.2	1,859,119	1,167,876	691,243	37.2	1,770,248	857,782	912,466	51.5
Montana	537,606	0	537,606	100.0	181,036	0	181,036	100.0	356,570	0	356,570	100.0
Nebraska	1,377,963	259,128	1,118,835	81.2	486,107	113,362	372,745	76.7	891,856	145,766	746,090	83.7
Nevada	91,058	774	90,284	99.2	34,464	0	34,464	100.0	56,594	774	55,820	98.6
New Hampshire	465,293	81,958	383,335	82.4	273,079	50,388	222,691	81.5	192,214	31,570	160,644	83.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	59,578	363,739	85.9	106,816	26,570	80,246	75.1	316,501	33,008	283,493	89.6
New York	12,588,066	12,323,445	264,621	2.1	10,521,952	10,401,507	120,445	1.1	2,066,114	1,921,938	144,176	7.0
North Carolina	3,170,276	648,540	2,521,736	79.5	809,847	205,976	603,871	74.6	2,360,429	442,564	1,917,865	81.2
North Dakota	680,845	0	680,845	100.0	113,306	0	113,306	100.0	567,539	0	567,539	100.0
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	1,681,379	714,661	29.8	821,681	652,813	168,868	20.6	1,574,359	1,028,566	545,793	34.7
Oregon	953,786	453,381	500,405	52.5	489,746	317,456	172,290	35.2	464,040	135,925	328,115	70.7
Pennsylvania	9,631,350	8,378,179	1,253,171	13.0	6,533,511	5,982,741	550,770	8.4	3,097,839	2,395,438	702,401	22.7
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,739,765	361,942	1,376,823	79.2	371,090	60,080	311,000	83.8	1,367,685	301,862	1,065,823	77.9
South Dakota	692,849	20,183	672,666	97.1	130,907	0	130,907	100.0	561,942	20,183	541,759	96.4
Tennessee	2,616,556	1,910,337	706,219	27.0	896,538	497,747	398,791	44.5	1,720,018	1,412,590	307,428	17.9
Texas	5,824,715	4,593,242	1,231,473	21.1	2,389,348	1,803,915	585,433	24.5	3,435,367	2,789,327	646,040	18.8
Utah	507,847	388,344	119,503	23.5	266,264	242,812	23,452	8.8	241,583	145,532	96,051	39.8
Vermont	359,611	102,690	256,921	71.4	118,766	44,002	74,764	63.0	240,845	58,688	182,157	75.6
Virginia	2,421,851	845,452	1,576,399	65.1	785,537	277,793	507,744	64.6	1,636,314	567,659	1,068,655	65.3
Washington	1,563,396	789,485	773,911	49.5	884,539	583,230	301,309	34.1	678,857	206,255	472,602	69.6
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,491,931	447,075	15.2	1,553,843	1,412,381	141,462	9.1	1,385,163	1,079,550	305,613	22.1
Wyoming	225,565	48,535	177,030	78.5	70,097	25,970	44,127	63.0	155,468	22,565	132,903	85.5
Total	122,775,046	90,933,927	31,841,119	25.9	68,954,823	58,724,422	10,230,401	14.8	53,820,223	32,209,505	21,610,718	40.2

[1] See p. 180 for explanation of nighttime service areas.

TABLE III.—*Summary of daytime service rendered by United States broadcast stations*

[Other than dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,471,850	1,174,398	44.4	744,273	673,396	70,877	9.5	1,901,975	798,454	1,103,521	58.0
Arizona	435,573	223,323	212,250	48.7	149,856	120,697	29,159	19.5	285,717	102,626	183,091	64.0
Arkansas	1,854,482	1,115,978	738,504	39.8	382,678	297,485	85,393	22.3	1,471,604	818,493	653,111	44.4
California	5,677,251	5,369,260	307,991	5.4	4,160,596	4,128,901	31,695	0.8	1,516,655	1,240,359	276,296	18.2
Colorado	1,035,791	793,699	242,092	23.4	519,882	483,005	36,877	7.1	515,909	310,694	205,215	39.8
Connecticut	1,606,903	1,539,126	67,777	4.2	1,131,770	1,107,749	24,021	2.1	475,133	431,377	43,756	9.2
Delaware	238,380	169,449	68,931	29.9	123,146	114,627	8,519	6.9	115,234	54,822	60,412	52.4
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	1,229,526	238,685	16.3	759,778	717,164	42,614	5.6	708,433	512,362	196,071	27.7
Georgia	2,908,506	1,559,297	1,349,209	46.4	895,492	734,985	160,507	17.9	2,013,014	824,312	1,188,702	59.0
Idaho	445,032	292,968	152,064	34.2	129,507	101,386	28,121	21.7	315,525	191,582	123,943	39.3
Illinois	7,630,654	7,630,654	0	0	5,635,727	5,635,727	0	0	1,994,927	1,994,927	0	0
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	1,715,099	165,900	8.8	729,834	712,764	17,070	2.3	1,151,165	1,002,335	148,830	12.9
Kentucky	2,614,589	1,601,052	1,013,537	38.8	799,026	683,133	115,893	14.5	1,815,563	917,919	897,644	49.4
Louisiana	2,101,593	1,569,937	531,656	25.3	833,532	790,021	43,511	5.2	1,268,061	779,916	488,145	38.5
Maine	797,423	463,833	333,590	41.8	321,506	272,940	48,566	15.1	475,917	190,893	285,024	59.9
Maryland	1,631,526	1,511,271	120,255	7.4	974,869	955,774	19,095	2.0	656,657	555,497	101,160	15.4
Massachusetts	4,249,614	4,100,796	148,818	3.5	3,831,426	3,767,747	63,679	1.7	418,188	333,049	85,139	20.6
Michigan	4,842,325	4,351,856	490,469	10.1	3,302,075	3,146,150	155,925	4.7	1,540,250	1,205,706	334,544	21.7
Minnesota	2,563,953	2,239,746	324,207	12.6	1,257,616	1,195,287	62,329	5.0	1,306,337	1,044,459	261,878	20.0
Mississippi	2,009,821	1,255,702	754,119	37.5	338,850	231,539	107,311	31.7	1,670,971	1,024,163	646,808	38.7
Missouri	3,629,367	3,546,675	82,692	2.3	1,859,119	1,850,048	9,071	0.5	1,770,248	1,696,627	73,621	4.2
Montana	537,606	402,515	135,091	25.1	181,036	171,861	9,175	5.1	356,570	230,654	125,916	35.3
Nebraska	1,377,963	1,216,871	161,092	11.7	486,107	453,842	32,265	6.6	891,856	763,029	128,827	14.4
Nevada	91,058	23,202	67,856	74.5	34,464	23,037	11,427	33.2	56,594	165	56,429	99.7
New Hampshire	465,293	251,752	213,541	45.9	273,079	191,173	81,906	30.0	192,214	60,579	131,635	68.5
New Jersey	4,041,334	3,875,813	165,521	4.1	3,339,244	3,227,134	112,110	3.4	702,090	648,679	53,411	7.6
New Mexico	423,317	103,377	319,940	75.6	106,816	66,646	40,170	37.6	316,501	36,731	279,770	88.4
New York	12,588,066	11,792,746	795,320	6.3	10,521,952	10,229,039	292,913	2.8	2,066,114	1,563,707	502,407	24.3
North Carolina	3,170,276	1,775,015	1,395,261	44.0	809,847	599,209	[2]10,638	26.0	2,360,429	1,175,806	1,184,623	50.2
North Dakota	680,845	680,845	0	0	113,306	113,306	0	0	567,539	567,539	0	0
Ohio	6,646,897	6,605,489	41,208	0.6	4,507,371	4,507,371	0	0	2,139,326	2,098,118	41,208	1.9

Oklahoma	2,396,040	2,084,607	311,433	13.0	821,681	786,008	35,673	4.3	1,574,359	1,298,599	275,760	17.5
Oregon	953,786	754,884	198,902	20.9	489,746	451,878	37,868	7.7	464,040	303,006	161,034	34.7
Pennsylvania	9,631,350	8,942,681	688,669	7.2	6,533,511	6,359,815	173,696	2.7	3,097,839	2,552,866	514,973	16.6
Rhode Island	687,497	687,497	0	0	635,429	635,429	0	0	52,068	52,068	0	0
South Carolina	1,738,765	1,431,898	306,867	17.6	371,080	332,244	38,836	10.5	1,367,685	1,099,654	268,031	19.6
South Dakota	692,849	670,578	22,271	3.2	130,907	127,999	2,908	2.2	561,942	542,579	19,363	3.4
Tennessee	2,616,556	1,665,272	951,284	36.4	896,538	742,500	154,038	17.2	1,720,018	922,772	797,246	46.4
Texas	5,824,715	4,960,632	864,083	14.8	2,389,348	2,232,832	156,516	6.6	3,435,367	2,727,800	707,567	20.6
Utah	507,847	356,477	151,370	29.8	266,264	250,811	15,453	5.8	241,583	105,666	135,917	56.3
Vermont	359,611	112,630	246,981	68.7	118,766	21,193	97,573	82.2	240,845	91,437	149,408	62.0
Virginia	2,421,851	1,756,070	665,781	27.5	785,537	749,137	36,400	4.6	1,636,314	1,006,933	629,381	38.5
Washington	1,563,398	1,472,218	91,178	5.8	884,539	878,496	6,043	0.7	678,857	593,722	85,135	12.5
West Virginia	1,729,205	1,682,395	46,810	2.7	491,504	491,504	0	0	1,237,701	1,190,891	46,810	3.8
Wisconsin	2,939,006	2,755,932	183,074	6.2	1,553,843	1,509,956	43,887	2.8	1,385,163	1,245,976	139,187	10.0
Wyoming	225,565	113,246	112,319	49.8	70,097	62,154	7,943	11.3	155,468	51,092	104,376	67.1
Total	122,775,046	106,122,050	16,652,996	13.6	68,954,823	66,197,152	2,757,671	4.0	53,820,223	39,924,898	13,895,325	25.9

[1] See p. 180 for explanation of daytime service areas.

TABLE IV.—*Summary of nighttime service rendered by United States broadcast stations*

[Other than dominant clear channel stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	775,094	1,871,154	70.7	744,273	546,845	197,428	26.5	1,901,975	228,249	1,673,730	88.0
Arizona	435,573	178,511	257,062	59.0	149,856	120,697	29,159	19.5	285,717	57,814	227,903	79.8
Arkansas	1,854,482	359,251	1,495,231	80.6	382,878	182,874	200,004	52.2	1,471,604	176,377	1,295,227	88.0
California	5,677,251	4,635,663	1,041,588	18.4	4,160,596	3,924,357	236,239	5.7	1,516,655	711,306	805,349	53.1
Colorado	1,035,791	675,906	359,885	34.7	519,882	477,982	41,900	8.1	515,909	197,924	317,985	61.6
Connecticut	1,606,903	735,404	871,499	54.2	1,131,770	591,097	540,673	47.8	475,133	144,307	330,826	69.6
Delaware	238,380	126,928	111,452	46.8	123,146	110,728	12,418	10.1	115,234	16,200	99,034	85.9
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	918,146	550,065	37.4	759,778	666,912	92,866	12.2	708,433	251,234	457,199	64.5
Georgia	2,908,506	725,828	2,182,678	75.0	895,492	548,373	347,119	38.8	2,013,014	177,455	1,835,559	91.2
Idaho	445,032	160,150	284,882	64.0	129,507	91,587	37,920	29.3	315,525	68,563	246,962	78.3
Illinois	7,630,654	6,135,489	1,495,165	19.6	5,635,727	5,134,590	501,137	8.9	1,994,927	1,000,899	994,028	49.8
Indiana	3,238,503	1,989,355	1,249,148	38.6	1,795,892	1,364,401	431,491	24.0	1,442,611	624,954	817,657	56.7
Iowa	2,470,939	1,231,224	1,239,715	50.2	979,292	649,576	329,716	33.7	1,491,647	581,648	909,999	61.0
Kansas	1,880,999	1,163,377	717,622	38.2	729,834	601,466	128,368	17.6	1,151,165	561,911	589,254	51.2
Kentucky	2,614,589	947,022	1,667,567	63.8	799,026	611,462	187,564	23.5	1,815,563	335,560	1,480,003	81.5
Louisiana	2,101,593	1,066,989	1,034,604	49.2	833,532	705,913	127,619	15.3	1,268,061	361,076	906,985	71.5
Maine	797,423	335,084	462,339	58.0	321,506	261,584	59,922	18.6	475,917	73,500	402,417	84.6
Maryland	1,631,526	1,045,554	585,972	35.9	974,869	852,778	122,091	12.5	656,657	192,776	463,881	70.6
Massachusetts	4,249,614	3,464,276	785,338	18.5	3,831,426	3,276,249	555,177	14.5	418,188	188,027	230,161	55.0
Michigan	4,842,325	3,447,301	1,395,024	28.8	3,302,075	2,862,082	439,993	13.3	1,540,250	585,219	955,031	62.0
Minnesota	2,563,953	1,318,688	1,245,265	48.6	1,257,616	1,029,796	227,820	18.1	1,306,337	288,892	1,017,455	77.9
Mississippi	2,009,821	397,470	1,612,351	80.2	338,850	156,562	182,288	53.8	1,670,971	240,908	1,430,063	85.6
Missouri	3,629,367	2,280,135	1,349,232	37.2	1,859,119	1,659,672	199,447	10.7	1,770,248	620,463	1,149,785	65.0
Montana	537,606	220,254	317,352	59.0	181,036	137,662	43,374	24.0	356,570	82,592	273,978	76.8
Nebraska	1,377,963	896,115	481,848	35.0	486,107	404,547	81,560	16.8	891,856	491,568	400,288	44.9
Nevada	91,058	23,243	67,815	74.5	34,464	23,037	11,427	33.2	56,594	206	56,388	99.6
New Hampshire	465,293	111,502	353,791	76.0	273,079	101,682	171,397	62.8	192,214	9,820	182,394	94.9
New Jersey	4,041,334	3,239,339	801,995	19.8	3,339,244	2,820,260	518,984	15.5	702,090	419,079	283,011	40.3
New Mexico	423,317	90,980	332,337	78.5	106,816	66,646	40,170	37.6	316,501	24,334	292,167	92.3
New York	12,588,066	9,712,922	2,875,144	22.8	10,521,952	9,212,845	1,309,107	12.4	2,066,114	500,077	1,566,037	75.8
North Carolina	3,170,276	966,910	2,203,366	69.5	809,847	354,713	455,134	56.2	2,360,429	612,197	1,748,232	74.1
North Dakota	680,845	335,166	345,679	50.8	113,306	100,039	13,267	11.7	567,539	235,127	332,412	58.6

Ohio	6,646,697	4,486,333	2,160,364	32.5	4,507,371	3,609,631	897,740	19.9	2,139,326	876,702	1,262,624	59.0
Oklahoma	2,396,040	1,085,550	1,310,490	54.7	821,681	593,276	228,405	27.8	1,574,359	492,274	1,082,085	68.7
Oregon	953,786	677,601	276,185	29.0	489,746	430,340	59,406	12.1	464,040	247,261	216,779	46.7
Pennsylvania	9,631,350	5,893,090	3,738,260	38.8	6,533,511	4,970,544	1,562,967	23.9	3,097,839	922,546	2,175,293	70.2
Rhode Island	687,497	605,876	81,621	11.9	635,429	589,143	46,286	7.3	52,068	16,733	35,335	67.9
South Carolina	1,738,765	317,284	1,421,481	81.8	371,080	165,184	205,896	55.5	1,367,685	152,100	1,215,585	88.9
South Dakota	692,849	281,444	411,405	59.4	130,907	90,309	40,598	31.0	561,942	191,135	370,807	66.0
Tennessee	2,616,556	981,882	1,634,674	62.4	896,538	683,769	212,769	23.7	1,720,018	298,113	1,421,905	82.7
Texas	5,824,715	3,069,471	2,755,244	47.4	2,389,348	1,816,772	572,576	24.0	3,435,367	1,252,699	2,182,668	63.5
Utah	507,847	304,741	203,106	40.0	266,264	216,196	50,068	18.8	241,583	88,545	153,038	63.3
Vermont	359,611	66,683	292,928	84.2	118,766	52,355	66,411	55.9	240,845	14,328	226,517	94.1
Virginia	2,421,851	819,872	1,601,979	66.1	785,537	604,083	181,454	23.1	1,636,314	215,789	1,420,525	86.8
Washington	1,563,396	1,139,172	424,224	27.1	884,539	800,954	83,585	9.4	678,857	338,218	340,639	50.2
West Virginia	1,729,205	487,535	1,241,670	71.8	491,504	191,448	300,056	61.0	1,237,701	296,087	941,614	76.1
Wisconsin	2,939,006	1,700,529	1,238,477	42.1	1,553,843	1,231,680	322,163	20.7	1,385,163	468,849	916,314	66.2
Wyoming	225,565	60,846	164,719	73.0	70,097	50,956	19,141	27.3	155,468	9,890	145,578	93.6
Total	122,775,046	72,174,054	50,600,992	41.2	68,954,823	56,232,523	12,722,300	18.5	53,820,223	15,941,531	37,878,692	70.4

[1] See p. 180 for explanation of daytime service areas.

TABLE V.—*Summary of daytime service rendered by United States broadcast stations*

[All classes of stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,684,725	961,523	36.3	744,273	688,821	55,452	7.5	1,901,975	995,904	906,071	47.6
Arizona	435,573	223,323	212,250	48.7	149,856	120,697	29,159	19.5	285,717	102,626	183,091	64.1
Arkansas	1,854,482	1,243,351	611,131	32.9	382,878	324,041	58,837	15.4	1,471,604	919,310	552,294	37.5
California	5,677,251	5,442,921	234,330	4.1	4,160,596	4,131,923	28,673	.7	1,516,655	1,310,998	205,657	13.6
Colorado	1,035,791	848,773	187,018	18.0	519,882	490,577	29,305	5.6	515,909	358,196	157,713	30.6
Connecticut	1,606,903	1,601,128	5,775	.4	1,131,770	1,131,770	0	0	475,133	469,358	5,775	1.2
Delaware	238,380	229,680	8,700	3.6	123,146	123,146	0	0	115,234	106,534	8,700	7.5
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	1,229,526	238,685	16.2	759,778	717,164	42,614	5.6	708,433	512,362	196,071	27.7
Georgia	2,908,506	1,984,315	924,191	31.8	895,492	799,232	96,260	10.7	2,013,014	1,185,083	827,931	41.2
Idaho	445,032	292,968	152,064	34.2	129,507	101,386	28,121	21.7	315,525	191,582	123,943	39.3
Illinois	7,630,654	7,630,654	0	0	5,635,727	5,635,727	0	0	1,994,927	1,994,927	0	0
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,470,939	0	0	979,292	979,292	0	0	1,491,647	1,491,647	0	0
Kansas	1,880,999	1,726,540	154,459	8.2	729,834	716,390	13,444	1.8	1,151,165	1,010,150	141,015	12.2
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,718,905	382,688	18.2	833,532	808,564	24,968	3.0	1,268,061	910,341	357,720	28.2
Maine	797,423	463,833	333,590	41.8	321,506	272,940	48,566	15.1	475,917	190,893	285,024	59.9
Maryland	1,631,526	1,570,693	60,833	3.7	974,869	959,866	15,003	1.5	656,657	610,827	45,830	7.0
Massachusetts	4,249,614	4,240,109	9,505	.2	3,831,426	3,831,426	0	0	418,188	408,683	9,505	2.3
Michigan	4,842,325	4,402,577	439,748	9.0	3,302,075	3,150,821	151,254	4.6	1,540,250	1,251,756	288,494	18.7
Minnesota	2,563,953	2,325,763	238,190	9.3	1,257,616	1,216,689	40,927	3.3	1,306,337	1,109,074	197,263	15.1
Mississippi	2,009,821	1,323,841	685,980	34.1	338,850	235,878	102,972	30.4	1,670,971	1,087,963	583,008	34.9
Missouri	3,629,367	3,554,475	74,892	2.1	1,859,119	1,850,048	9,071	.5	1,770,248	1,704,427	65,821	3.7
Montana	537,606	402,515	135,091	25.1	181,036	171,861	9,175	5.1	356,570	230,654	125,916	35.3
Nebraska	1,377,963	1,218,221	159,742	11.6	486,107	453,842	32,265	6.6	891,856	764,379	127,477	14.3
Nevada	91,058	24,202	66,856	73.4	34,464	23,037	11,427	33.2	56,594	1,165	55,429	97.9
New Hampshire	465,293	274,946	190,347	40.9	273,079	204,967	68,112	24.9	192,214	69,979	122,235	63.6
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	134,477	288,840	68.2	106,816	66,649	40,167	37.6	316,501	67,828	248,673	78.6
New York	12,588,066	12,509,630	78,436	.6	10,521,952	10,474,876	47,076	.4	2,066,114	2,034,754	31,360	1.5
North Carolina	3,170,276	2,234,801	935,475	29.5	809,847	718,387	91,460	11.3	2,360,429	1,516,414	844,015	35.8
North Dakota	680,845	680,845	0	0	113,306	113,306	0	0	567,539	567,539	0	0

Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0
Oklahoma	2,396,040	2,275,654	120,386	5.0	821,681	813,607	8,074	1.0	1,574,359	1,462,047	112,312	7.1
Oregon	953,786	754,884	198,902	20.9	489,746	451,878	37,868	7.7	464,040	303,006	161,034	34.7
Pennsylvania	9,631,350	9,193,711	437,639	4.5	6,533,511	6,425,886	107,625	1.6	3,097,839	2,767,825	330,014	10.7
Rhode Island	687,497	687,497	0	0	635,429	635,429	0	0	52,068	52,068	0	0
South Carolina	1,738,765	1,447,471	291,294	16.8	371,080	335,817	35,263	9.5	1,367,685	1,111,654	256,031	18.7
South Dakota	692,849	670,578	22,271	3.2	130,907	127,999	2,908	2.2	561,942	542,579	19,363	3.4
Tennessee	2,616,556	2,563,876	52,680	2.0	896,538	886,944	9,594	1.1	1,720,018	1,676,932	43,086	2.5
Texas	5,824,715	5,553,106	271,609	4.7	2,389,348	2,318,522	70,826	3.0	3,435,367	3,234,584	200,783	5.8
Utah	507,847	431,729	76,118	15.1	266,264	263,197	3,067	1.2	241,583	168,532	73,051	30.2
Vermont	359,611	299,020	60,591	16.8	118,766	113,672	5,094	4.3	240,845	185,348	55,497	23.0
Virginia	2,421,851	2,092,761	329,090	13.6	785,537	775,585	9,952	1.3	1,636,314	1,317,176	319,138	19.5
Washington	1,563,396	1,472,218	91,178	5.8	884,539	878,496	6,043	.7	678,857	593,722	85,135	12.5
West Virginia	1,729,205	1,726,005	3,200	.2	491,504	491,504	0	0	1,237,701	1,234,501	3,200	.3
Wisconsin	2,939,006	2,782,125	156,881	5.3	1,553,843	1,513,449	40,394	2.6	1,385,163	1,268,676	116,487	8.4
Wyoming	225,565	118,996	106,569	47.2	70,097	62,154	7,943	11.3	155,468	56,842	98,626	63.4
Total	122,775,046	112,786,299	9,988,747	8.1	68,954,823	67,535,864	1,418,959	2.1	53,820,223	45,250,435	8,569,788	15.9

[1] See p. 180 for explanation of daytime service areas.

TABLE VI.—*Summary of nighttime service rendered by United States broadcast stations*

[All Classes of Stations]

State	Total (urban and rural)				Urban				Rural			
	Total (urban and rural) population	Total population (urban and rural) within service areas [1]	Total population (urban and rural) outside service areas [1]	Percentage total population (urban and rural) outside service areas [1]	Total urban population	Urban population within service areas [1]	Urban population outside service areas [1]	Percentage urban population outside service areas [1]	Total rural population	Rural population within service areas [1]	Rural population outside service areas [1]	Percentage rural population outside service areas [1]
Alabama	2,646,248	1,146,008	1,500,240	56.7	744,273	577,863	166,410	22.4	1,901,975	568,145	1,333,830	70.1
Arizona	435,573	178,511	257,062	59.0	149,856	120,697	29,159	19.5	285,717	57,814	227,903	79.8
Arkansas	1,854,482	487,453	1,367,029	73.7	382,878	215,052	167,826	43.8	1,471,604	272,401	1,199,203	81.5
California	5,677,251	5,252,879	424,372	7.5	4,160,596	4,052,597	107,999	2.6	1,516,655	1,200,282	316,373	20.9
Colorado	1,035,791	835,417	200,374	19.3	519,882	490,577	29,305	5.6	515,909	344,840	171,069	33.2
Connecticut	1,606,903	1,543,823	63,080	3.9	1,131,770	1,096,132	35,638	3.1	475,133	447,691	27,442	5.8
Delaware	238,380	223,150	15,230	6.4	123,146	123,146	0	0	115,234	100,004	15,230	13.2
District of Columbia	486,869	486,869	0	0	486,869	486,869	0	0	0	0	0	0
Florida	1,468,211	918,146	550,065	37.5	759,778	666,912	92,866	12.2	708,433	251,234	457,199	64.5
Georgia	2,908,506	1,597,980	1,310,526	45.1	895,492	667,969	227,523	25.4	2,013,014	930,011	1,083,003	53.8
Idaho	445,032	160,150	284,882	64.0	129,507	91,587	37,920	29.3	315,525	68,563	246,962	78.3
Illinois	7,630,654	7,603,926	26,728	.4	5,635,727	5,619,647	16,080	.3	1,994,927	1,984,279	10,648	.5
Indiana	3,238,503	3,238,503	0	0	1,795,892	1,795,892	0	0	1,442,611	1,442,611	0	0
Iowa	2,470,939	2,445,129	25,810	1.0	979,292	979,292	0	0	1,491,647	1,465,837	25,810	1.7
Kansas	1,880,999	1,185,559	695,440	37.0	729,834	609,828	120,006	16.4	1,151,165	575,731	575,434	50.0
Kentucky	2,614,589	2,614,589	0	0	799,026	799,026	0	0	1,815,563	1,815,563	0	0
Louisiana	2,101,593	1,452,783	648,810	30.9	833,532	761,529	72,003	8.6	1,268,061	691,254	576,807	45.5
Maine	797,423	335,084	462,339	58.0	321,506	261,584	59,922	18.6	475,917	73,500	402,417	84.6
Maryland	1,631,526	1,441,596	189,930	11.6	974,869	945,199	29,670	3.0	656,657	496,397	160,260	24.4
Massachusetts	4,249,614	4,211,750	37,864	.9	3,831,426	3,805,825	25,601	.7	418,188	405,925	12,263	2.9
Michigan	4,842,325	4,400,777	441,548	9.1	3,302,075	3,140,413	161,662	4.9	1,540,250	1,260,364	279,886	18.2
Minnesota	2,563,953	2,283,653	280,300	10.9	1,257,616	1,195,629	61,987	4.9	1,306,337	1,088,024	218,313	16.7
Mississippi	2,009,821	551,332	1,458,489	72.6	338,850	178,547	160,303	47.9	1,670,971	372,785	1,298,186	77.7
Missouri	3,629,367	2,865,542	763,825	21.0	1,859,119	1,750,695	108,424	5.8	1,770,248	1,114,847	655,401	37.0
Montana	537,606	220,254	317,352	59.0	181,036	137,662	43,374	24.0	356,570	82,592	273,978	76.8
Nebraska	1,377,963	913,289	464,674	33.7	486,107	407,853	78,254	16.1	891,856	505,436	386,420	43.3
Nevada	91,058	24,017	67,041	73.6	34,464	23,037	11,427	33.2	56,594	980	55,614	98.3
New Hampshire	465,293	195,595	269,698	58.0	273,079	152,070	121,009	44.3	192,214	43,525	148,689	77.4
New Jersey	4,041,334	4,041,334	0	0	3,339,244	3,339,244	0	0	702,090	702,090	0	0
New Mexico	423,317	93,223	330,094	78.0	106,816	55,470	51,346	48.1	316,501	37,753	278,748	88.1
New York	12,588,066	12,341,294	246,772	2.0	10,521,952	10,414,856	107,096	1.0	2,066,114	1,926,438	139,676	6.8
North Carolina	3,170,276	1,527,491	1,642,785	51.8	809,847	499,421	310,426	38.3	2,360,429	1,028,070	1,332,359	56.4
North Dakota	680,845	335,166	345,679	50.8	113,306	100,039	13,267	11.7	567,539	235,127	332,412	58.6
Ohio	6,646,697	6,646,697	0	0	4,507,371	4,507,371	0	0	2,139,326	2,139,326	0	0

Oklahoma	2,396,040	1,918,236	477,804	19.9	821,681	759,530	62,151	7.6	1,574,359	1,158,706	415,653	26.4
Oregon	953,786	681,674	272,112	28.5	489,746	430,340	59,406	12.1	464,040	251,334	212,706	45.8
Pennsylvania	9,631,350	8,767,003	864,347	9.0	6,533,511	6,267,877	265,634	4.1	3,097,839	2,499,126	598,713	19.3
Rhode Island	687,497	600,956	86,541	12.6	635,429	583,708	51,721	8.1	52,068	17,248	34,820	66.9
South Carolina	1,738,765	594,274	1,144,491	65.8	371,080	170,768	200,312	54.0	1,367,685	423,506	944,179	69.0
South Dakota	692,849	300,184	392,665	56.7	130,907	90,309	40,598	31.0	561,942	209,875	352,067	62.7
Tennessee	2,616,556	2,051,495	565,061	21.6	896,538	617,545	278,993	31.1	1,720,018	1,433,950	286,068	16.6
Texas	5,824,715	5,290,507	534,208	9.2	2,389,348	2,269,220	120,128	5.0	3,435,367	3,021,287	414,080	12.1
Utah	507,847	425,129	82,718	16.3	266,264	263,197	3,067	1.2	241,583	161,932	79,651	33.0
Vermont	359,611	144,930	214,681	59.7	118,766	79,042	39,724	33.4	240,845	65,888	174,957	72.6
Virginia	2,421,851	1,405,441	1,016,410	42.0	785,537	670,892	114,645	14.6	1,636,314	734,549	901,765	55.1
Washington	1,563,396	1,182,551	380,845	24.4	884,539	804,533	80,006	9.0	678,857	378,018	300,839	44.3
West Virginia	1,729,205	1,648,412	80,793	4.7	491,504	476,647	14,857	3.0	1,237,701	1,171,765	65,936	5.3
Wisconsin	2,939,006	2,569,202	369,804	12.6	1,553,843	1,462,252	91,591	5.9	1,385,163	1,106,950	278,213	20.1
Wyoming	225,565	87,630	137,935	61.2	70,097	59,565	10,532	15.0	155,468	28,065	127,403	81.9
Total	122,775,046	101,466,593	21,308,453	17.4	68,954,823	65,074,955	3,879,868	5.6	53,820,223	36,391,638	17,428,585	32.4

[1] See p. 180 for explanation of nighttime service areas.

TABLE VII.—*Summary of daytime service rendered by United States broadcast stations, by land areas*

State	All stations				Dominant clear channel stations			Other than dominant clear channel stations		
	Total area in square miles, 1930	Area within service areas [1] (square) miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square) miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]
Alabama	51,279	26,083	25,196	49.1	10,829	40,450	78.9	20,527	30,752	60
Arizona	113,810	16,573	97,237	85.4	0	113,810	100	16,573	97,237	85.4
Arkansas	52,525	29,832	22,693	43.2	6,120	46,405	88.3	25,501	27,024	51.4
California	155,652	89,642	66,010	42.4	75,424	80,228	51.5	69,397	86,255	55.4
Colorado	103,658	55,273	48,385	46.7	52,637	51,021	49.2	45,292	58,366	56.3
Connecticut	4,820	4,773	47	1	·4,726	94	2	4,169	659	13.7
Delaware	1,965	1,870	95	4.8	1,588	377	19.2	647	1,318	67.1
District of Columbia	62	62	0	0	62	0	0	62	0	0
Florida	54,861	39,607	15,254	27.8	0	54,861	100	39,607	15,254	27.8
Georgia	58,725	31,732	26,993	46	22,505	36,220	61.7	21,563	37,162	63.3
Idaho	83,354	21,940	61,414	73.7	0	83,354	100	21,940	61,414	73.7
Illinois	56,043	56,043	0	0	55,855	188	0.3	56,043	0	0
Indiana	36,045	36,045	0	0	36,045	0	0	36,045	0	0
Iowa	55,586	55,586	0	0	55,586	0	0	55,586	0	0
Kansas	81,774	58,798	22,976	28.1	29,379	52,395	64.1	56,915	24,859	30.4
Kentucky	40,181	40,181	0	0	40,181	0	0	20,030	20,151	50.2
Louisiana	45,409	38,418	6,991	15.4	22,223	23,186	51.1	31,733	13,676	30.1
Maine	29,895	7,910	21,985	73.6	0	29,895	100	7,910	21,985	73.6
Maryland	9,941	8,623	1,318	13.3	6,591	3,350	33.7	7,493	2,448	24.6
Massachusetts	8,039	7,945	94	1.2	7,851	188	2.3	6,532	1,507	18.7
Michigan	57,480	31,962	25,518	44.4	41,620	15,860	27.6	28,101	29,379	51.1
Minnesota	80,858	61,273	19,585	24.2	46,986	33,872	41.9	55,623	25,235	31.2
Mississippi	46,362	30,603	15,759	34	5,179	41,183	88.8	27,684	18,678	40.3
Missouri	68,727	65,620	3,107	4.5	33,051	35,676	51.9	65,243	3,484	5.1
Montana	146,131	78,437	67,694	46.3	0	146,131	100	78,437	67,694	46.3
Nebraska	76,808	68,521	8,287	10.8	41,902	34,906	45.4	68,239	8,569	11.2
Nevada	109,821	2,165	107,656	98	1,977	107,844	98.2	188	109,633	99.8
New Hampshire	9,031	6,960	2,071	22.9	1,036	7,995	88.5	6,583	2,448	27.1
New Jersey	7,514	7,514	0	0	7,514	0	0	6,478	1,036	13.8
New Mexico	122,503	14,971	107,532	87.8	13,182	109,321	89.2	7,156	115,347	94.2
New York	47,654	42,287	5,367	11.3	39,925	7,729	16.2	29,669	17,985	37.7
North Carolina	48,740	29,473	19,267	39.5	8,192	40,548	83.2	23,164	25,576	52.5
North Dakota	70,183	70,183	0	0	0	70,183	100	70,183	0	0
Ohio	40,740	40,740	0	0	40,740	0	0	39,893	847	2.1
Oklahoma	69,414	58,286	11,128	16	50,470	18,944	27.3	49,435	19,979	28.8

Oregon	95,607	23,729	71,878	75.2	4,802	90,805	94.9	23,729	71,878	75.2
Pennsylvania	44,832	35,322	9,510	21.2	29,284	15,548	34.7	31,649	13,183	29.4
Rhode Island	1,067	1,067	0	0	785	282	26.4	1,067	0	0
South Carolina	30,495	24,105	6,390	21	6,309	24,186	79.3	23,823	6,672	21.9
South Dakota	76,868	70,936	5,932	7.7	7,722	69,146	90	70,936	5,932	7.7
Tennessee	41,687	40,275	1,412	3.4	35,661	6,026	14.5	20,056	21,631	51.9
Texas	262,398	198,682	63,716	24.3	161,299	101,099	38.5	163,465	98,933	37.7
Utah	82,184	25,800	56,384	68.6	24,105	58,079	70.7	7,345	74,839	91.1
Vermont	9,124	6,676	2,448	26.8	2,448	6,676	73.2	4,793	4,331	47.5
Virginia	40,262	22,466	17,796	44.2	14,407	25,855	64.2	15,592	24,670	61.3
Washington	66,836	51,695	15,141	22.7	9,793	57,043	85.3	51,695	15,141	22.7
West Virginia	24,022	23,834	188	0.8	21,103	2,919	12.2	22,892	1,130	4.7
Wisconsin	55,256	45,086	10,170	18.4	36,252	19,004	34.4	42,638	12,618	22.8
Wyoming	97,548	22,034	75,514	77.4	10,923	86,625	88.8	19,021	78,527	80.5
Total	2,973,776	1,827,638	1,146,138	38.5	1,124,269	1,849,507	62.2	1,598,334	1,375,442	46.3

[1] See p. 180 for explanation of daytime service areas.

TABLE VIII.—*Summary of nighttime service rendered by United States broadcast stations—by land areas*

State	Total area in square miles, 1930	All stations			Dominant clear channel stations			Other than dominant clear channel stations		
		Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outside service areas [1]	Area within service areas [1] (square miles)	Area outside service areas [1] (square miles)	Percentage area outsi de service areas [1]
Alabama	51,279	12,571	38,708	75.5	9,134	42,145	82.2	4,857	46,422	90.5
Arizona	113,810	7,619	106,191	93.3	0	113,810	100	7,619	106,191	93.3
Arkansas	52,525	9,089	43,436	82.7	4,708	47,817	91	4,381	48,144	91.7
California	155,652	82,376	73,276	47.1	75,424	80,228	51.5	32,476	123,176	79.1
Colorado	103,658	53,399	50,259	48.5	52,637	51,021	49.2	28,667	74,991	72.3
Connecticut	4,820	4,349	471	9.8	4,349	471	9.8	1,143	3,677	76.3
Delaware	1,965	1,588	377	19.2	1,588	377	19.2	190	1,775	90.3
District of Columbia	62	62	0	0	62	0	0	62	0	0
Florida	54,861	19,143	35,718	65.1	0	54,861	100	19,143	35,718	65.1
Georgia	58,725	23,838	34,887	59.4	22,505	36,220	61.7	2,571	56,154	95.6
Idaho	83,354	6,857	76,497	91.8	0	83,354	100	6,857	76,497	91.8
Illinois	56,043	55,855	188	0.3	55,855	188	0.3	24,286	31,757	56.7
Indiana	36,045	36,045	0	0	36,045	0	0	14,095	21,950	60.9
Iowa	55,586	54,578	1,008	1.8	52,102	3,484	6.3	22,952	32,634	58.7
Kansas	81,774	29,810	51,964	63.5	1,130	80,644	98.6	27,048	54,726	66.9
Kentucky	40,181	40,181	0	0	40,181	0	0	6,095	34,086	84.8
Louisiana	45,409	22,640	22,769	50.1	19,021	26,388	58.1	10,952	34,457	75.9
Maine	29,895	3,429	26,466	88.5	0	29,895	100	3,429	26,466	88.5
Maryland	9,941	6,972	2,969	29.9	6,591	3,350	33.7	1,810	8,131	81.8
Massachusetts	8,039	7,757	282	3.5	7,757	282	3.5	3,048	4,991	62.1
Michigan	57,480	41,906	15,574	27.1	41,620	15,860	27.6	10,667	46,813	81.4
Minnesota	80,858	52,323	28,535	35.3	46,704	34,154	42.2	12,476	68,382	84.6
Mississippi	46,362	10,131	36,231	78.1	5,179	41,183	88.8	5,238	41,124	88.7
Missouri	68,727	41,048	27,679	40.3	32,392	36,335	52.9	19,048	49,679	72.3
Montana	146,131	24,571	121,560	83.2	0	146,131	100	24,571	121,560	83.2
Nebraska	76,808	26,096	50,712	66	11,770	65,038	84.7	23,429	53,379	69.5
Nevada	109,821	2,072	107,749	98.1	1,977	107,844	98.2	95	109,726	99.9
New Hampshire	9,031	1,131	7,900	87.5	1,036	7,995	88.5	190	8,841	97.9
New Jersey	7,514	7,514	0	0	7,514	0	0	3,333	4,181	55.6
New Mexico	122,503	14,000	108,503	88.6	13,182	109,321	89.2	3,429	119,074	97.2
New York	47,654	40,020	7,634	16	39,925	7,729	16.2	5,429	42,225	88.6
North Carolina	48,740	16,762	31,978	65.6	6,874	41,866	85.9	10,286	38,454	78.9
North Dakota	70,183	29,810	40,373	57.5	0	70,183	100	29,810	40,373	57.5
Ohio	40,740	40,740	0	0	40,740	0	0	13,905	26,835	65.9
Oklahoma	69,414	43,578	25,836	37.2	36,911	32,503	46.8	17,333	52,081	75

Oregon	95,607	12,666	82,941	86.8	4,802	90,805	94.9	12,476	83,131	87
Pennsylvania	44,832	30,617	14,215	31.7	29,284	15,548	34.7	7,524	37,308	83.2
Rhode Island	1,067	785	282	26.4	785	282	26.4	381	686	64.3
South Carolina	30,495	8,286	22,209	72.8	6,309	24,186	79.3	2,381	28,114	92.2
South Dakota	76,868	12,952	63,916	83.2	1,601	75,267	98	11,619	65,249	84.9
Tennessee	41,687	38,510	3,177	7.6	36,320	5,367	12.9	4,952	36,735	88.1
Texas	262,398	174,074	88,324	33.7	160,169	102,229	39	58,667	203,731	77.6
Utah	82,184	24,772	57,412	69.9	24,105	58,079	70.7	3,238	78,946	96.1
Vermont	9,124	2,571	6,553	71.8	2,448	6,676	73.2	381	8,743	95.8
Virginia	40,262	15,564	24,698	61.3	13,183	27,079	67.3	2,952	37,310	92.7
Washington	66,836	20,381	46,455	69.5	9,793	57,043	85.3	17,333	49,503	74.1
West Virginia	24,022	21,856	2,166	9	21,856	2,166	9	3,524	20,498	85.3
Wisconsin	55,256	36,919	18,337	33.2	36,252	19,004	34.4	12,286	42,970	77.8
Wyoming	97,548	11,714	85,834	88	10,923	86,625	88.8	3,524	94,024	96.4
Total	2,973,776	1,281,527	1,692,249	56.9	1,032,743	1,941,033	65.3	542,158	2,431,618	81.8

[1] See p. 180 for explanation of nighttime service areas.

TABLE IX.—*Analysis of urban population within the service areas[1] of all United States standard broadcast stations*

State	A	Day					Night				
		B	C	D	E	F	G	H	I	J	K
	Urban population of State	Urban population within service areas	Urban population within service areas outside metropolitan districts, etc.[1]	Percentage, $\frac{C}{B}\times 100$	Urban population within metropolitan districts, etc.,[1] B−C	Percentage, $\frac{B-C}{B}\times 100$	Urban population within service areas	Urban population within service areas outside metropolitan districts, etc.[1]	Percentage, $\frac{H}{G}\times 100$	Urban population within metropolitan districts, etc.,[1] G−H	Percentage, $\frac{G-H}{G}\times 100$
Alabama	744,273	688,821	47,708	6.9	641,113	93.1	577,863	33,547	5.8	544,316	94.2
Arizona	149,856	120,697	15,069	12.5	105,628	87.5	120,697	15,069	12.5	105,628	87.5
Arkansas	382,878	324,041	102,648	31.6	221,393	68.4	215,052	38,041	17.7	177,011	82.3
California	4,160,596	4,131,923	296,412	7.2	3,835,511	92.8	4,052,597	301,207	7.4	3,751,390	92.6
Colorado	519,882	490,577	59,793	12.2	430,784	87.8	490,577	63,219	12.9	427,358	87.1
Connecticut	1,131,770	1,131,770	110,663	9.8	1,021,107	90.2	1,096,132	117,068	10.7	979,064	89.3
Delaware	123,146	123,146	8,519	6.9	114,627	93.1	123,146	8,519	6.9	114,627	93.1
District of Columbia	486,869	486,869	0	0	486,869	100.0	486,869	0	0	486,869	100.0
Florida	759,778	717,164	149,944	20.9	567,220	79.1	666,912	105,864	15.9	561,048	84.1
Georgia	895,492	799,232	152,664	19.1	646,568	80.9	667,969	176,940	26.5	491,029	73.5
Idaho	129,507	101,386	28,652	28.2	72,734	71.8	91,587	17,747	19.4	73,840	80.6
Illinois	5,635,727	5,635,727	752,124	13.3	4,883,603	86.7	5,619,647	806,757	14.4	4,812,890	85.6
Indiana	1,795,892	1,795,892	545,974	30.4	1,249,918	69.6	1,795,892	545,974	30.4	1,249,918	69.6
Iowa	979,292	979,292	456,332	46.7	522,960	53.3	979,292	453,012	46.3	526,280	53.7
Kansas	729,834	716,390	286,472	40.0	429,918	60.0	609,828	193,319	31.7	416,509	68.3
Kentucky	799,026	799,026	198,068	24.8	600,958	75.2	799,026	198,068	24.8	600,958	75.2
Louisiana	833,532	808,564	141,797	17.5	666,767	82.5	761,529	88,152	11.6	673,377	88.1
Maine	321,506	272,940	128,487	47.1	144,453	52.9	261,584	117,321	44.9	144,263	55.1
Maryland	974,869	959,806	33,911	3.5	925,955	96.5	945,199	44,674	4.7	900,525	95.3
Massachusetts	3,831,426	3,831,426	302,409	7.9	3,529,017	92.1	3,805,825	311,707	8.2	3,494,118	91.8
Michigan	3,302,075	3,150,821	315,009	10.0	2,835,812	90.0	3,140,413	420,533	13.4	2,719,880	86.6
Minnesota	1,257,616	1,216,689	181,994	15.0	1,034,695	85.0	1,195,629	201,271	16.8	994,358	83.2
Mississippi	338,850	235,878	88,495	37.5	147,383	62.5	178,547	54,107	30.3	124,440	69.7
Missouri	1,859,119	1,850,048	284,679	15.4	1,565,369	84.6	1,750,695	312,429	17.8	1,438,266	82.2
Montana	181,036	171,861	42,360	24.6	129,501	75.4	137,662	20,655	15.0	117,007	85.0
Nebraska	486,107	453,842	130,929	28.8	322,913	71.2	407,853	82,699	20.3	325,154	79.7
Nevada	34,464	23,037	0	0	23,037	100.0	23,037	0	0	23,037	100.0
New Hampshire	273,079	204,967	101,167	49.4	103,800	50.6	152,070	66,833	43.9	85,237	56.1
New Jersey	3,339,244	3,339,244	129,084	3.9	3,210,160	96.1	3,339,244	134,783	4.0	3,204,461	96.0
New Mexico	106,816	66,649	0	0	66,649	100.0	55,470	0	0	55,470	100.0
New York	10,521,952	10,474,876	725,378	6.9	9,749,498	93.1	10,414,856	750,300	7.2	9,664,556	92.8
North Carolina	809,847	718,387	265,471	37.0	452,916	63.0	499,421	176,777	35.4	322,224	64.6
North Dakota	113,306	113,306	16,443	14.6	96,863	85.4	100,039	3,176	3.2	96,863	96.8
Ohio	4,507,371	4,507,371	1,144,375	25.4	3,362,996	74.6	4,507,371	1,209,963	26.8	3,297,408	73.2

Oklahoma	821,661	813,607	315,872	38.8	497,735	61.2	759,530	282,789	37.2	476,741		62.8
Oregon	489,746	451,878	32,390	7.2	419,488	92.8	430,340	21,201	4.9	409,139		95.1
Pennsylvania	6,533,511	6,425,886	896,067	13.9	5,529,819	86.1	6,287,877	850,770	13.6	5,417,107		86.4
Rhode Island	635,429	635,429	18,674	3.0	616,755	97.0	583,706	7,677	1.3	576,031		98.7
South Carolina	371,090	335,817	135,130	40.1	200,687	59.9	170,768	62,042	36.3	108,726		63.7
South Dakota	130,907	127,990	29,651	23.1	98,348	76.9	90,309	10,942	12.1	79,367		87.9
Tennessee	896,538	886,944	216,763	24.4	670,181	75.6	617,545	213,598	34.6	403,947		65.4
Texas	2,389,348	2,318,522	587,073	25.3	1,731,449	74.7	2,269,220	654,884	28.9	1,614,336		71.1
Utah	266,294	263,197	57,237	21.7	205,960	78.3	263,197	57,237	21.7	205,960		78.3
Vermont	118,766	113,672	49,697	43.7	63,975	56.3	79,042	18,944	24.0	60,098		76.0
Virginia	785,537	775,585	154,823	20.0	620,762	80.0	670,892	87,461	13.0	583,431		87.0
Washington	884,539	878,496	66,369	7.6	812,127	92.4	804,533	29,723	3.7	774,810		96.3
West Virginia	491,504	491,504	147,382	30.0	344,122	70.0	476,647	126,277	26.5	350,370		73.5
Wisconsin	1,553,843	1,513,449	332,299	21.9	1,181,180	78.1	1,462,252	352,339	24.1	1,109,913		75.9
Wyoming	70,097	62,154	28,559	45.9	33,595	54.1	59,565	25,970	43.6	33,595		56.4
Total	68,954,823	67,535,864	10,310,986	15.3	57,224,878	84.7	65,074,955	9,871,585	15.2	55,203,370		84.8

[1] See p. 181 for explanation.

TABLE X.—*Population and number of United States cities within the daytime service area [1] of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*

State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Alabama	53	12	744, 273	47, 708	1	0	259, 678	0	2	0	134, 281	0
Arizona	14	3	149, 856	15, 069					2	0	80, 624	0
Arkansas	49	24	382, 878	102, 648					[2] 3	0	123, 872	0
California	155	53	4, 160, 596	296, 412	5	0	2, 446, 532	0	16	1	764, 609	29, 696
Colorado	27	10	519, 882	59, 793	1	0	287, 861	0	2	0	83, 333	0
Connecticut	33	9	1, 131, 770	110, 663	3	0	473, 443	0	9	1	398, 815	26, 040
Delaware	5	2	123, 146	8, 519	1	0	106, 597	0				
District of Columbia	1	0	486, 869	0	1	0	486, 869	0				
Florida	58	30	759, 778	149, 944	3	0	341, 347	0	4	0	125, 944	0
Georgia	64	28	895, 492	152, 664	1	0	270, 366	0	4	0	242, 326	0
Idaho	21	8	129, 507	28, 652								
Illinois	192	109	5, 635, 727	752, 124	2	0	3, 481, 407	0	22	2	1, 005, 034	82, 518
Indiana	95	72	1, 795, 892	545, 974	5	0	785, 975	0	12	2	474, 215	59, 578
Iowa	81	65	979, 292	456, 332	1	0	142, 559	0	9	4	406, 505	126, 747
Kansas	62	46	729, 834	286, 472	2	0	232, 967	0	2	0	91, 205	0
Kentucky	53	37	799, 026	198, 068	1	0	307, 745	0	5	0	203, 347	0
Louisiana	48	31	833, 532	141, 797	1	0	458, 762	0	3	0	133, 412	0
Maine	26	12	321, 506	128, 487					3	1	134, 507	34, 948
Maryland	21	9	974, 869	33, 911	1	0	804, 874	0	2	0	68, 608	0
Massachusetts	122	27	3, 831, 426	302, 409	9	0	1, 774, 375	0	21	2	1, 036, 878	78, 047
Michigan	114	45	3, 302, 075	315, 009	3	0	1, 893, 746	0	14	1	712, 589	26, 944
Minnesota	73	37	1, 257, 616	181, 994	3	0	837, 425	0				
Mississippi	39	15	338, 850	88, 495					2	0	80, 236	0
Missouri	72	51	1, 859, 119	284, 679	2	0	1, 221, 706	0	4	0	197, 725	0
Montana	18	8	101, 036	42, 360					2	0	68, 354	0
Nebraska	35	24	486, 107	130, 929	1	0	214, 006	0	1	0	75, 933	0
Nevada	5	0	34, 464	0								
New Hampshire	18	9	273, 079	101, 167					3	1	133, 525	31, 463
New Jersey	169	21	3, 339, 244	129, 084	6	0	1, 254, 210	0	20	0	936, 186	0
New Mexico	16	0	106, 816	0					1	0	26, 570	0
New York	196	89	10, 521, 952	725, 378	7	0	8, 404, 778	0	16	4	800, 121	137, 398
North Carolina	68	41	809, 847	265, 471					8	0	420, 142	0
North Dakota	12	4	113, 306	16, 443					1	0	28, 619	0
Ohio	174	102	4, 507, 371	1, 144, 375	8	0	2, 663, 801	0	18	7	734, 964	269, 545
Oklahoma	68	53	821, 681	315, 872	2	0	326, 647	0	2	0	58, 425	0
Oregon	28	9	489, 746	32, 390	1	0	301, 815	0	1	0	26, 266	0
Pennsylvania	354	123	6, 533, 511	896, 067	5	0	2, 991, 349	0	22	1	1, 113, 014	25, 561

Rhode Island	19	2	635,429	18,674	1	0	252,981	0	6	0	252,941	0
South Carolina	40	24	371,080	135,130					4	0	171,723	0
South Dakota	16	6	130,907	29,651					1	0	33,362	0
Tennessee	48	39	896,538	216,763	4	0	632,609	0	1	1	25,080	25,080
Texas	159	100	2,389,348	587,073	5	0	1,050,237	0	[2] 11	1	456,631	43,690
Utah	21	13	266,264	57,237	1	0	140,267	0	1	0	40,272	0
Vermont	14	8	118,766	49,697								
Virginia	45	25	785,537	154,823	2	0	312,639	0	5	1	218,552	28,564
Washington	38	15	884,539	66,369	3	0	587,914	0	2	0	61,390	0
West Virginia	39	24	491,504	147,382					5	0	256,128	0
Wisconsin	83	52	1,553,843	332,269	1	0	578,249	0	12	2	480,878	65,375
Wyoming	8	3	70,097	28,559								
Total	3,169	1,529	68,954,823	10,310,986	93	0	36,325,736	0	284	32	12,917,141	1,091,194
	Cities of 10,000 to 25,000				Cities of 5,000 to 10,000				Cities of 2,500 to 5,000			
Alabama	11	0	185,622	0	11	2	69,654	12,909	28	10	95,038	34,799
Arizona					6	1	44,224	7,693	6	2	25,008	7,376
Arkansas	6	0	97,261	0	9	6	56,416	37,537	31	18	105,329	65,111
California	28	5	409,460	60,877	48	15	342,421	101,459	58	32	197,574	104,350
Colorado	5	2	56,894	22,712	10	4	60,916	22,976	9	4	30,878	14,105
Connecticut	12	3	209,500	57,284	5	2	33,752	15,201	4	3	16,260	12,138
Delaware									4	2	16,549	8,519
District of Columbia												
Florida	7	2	91,359	22,931	17	10	112,719	67,396	27	18	88,409	59,617
Georgia	10	2	153,017	34,153	16	8	113,785	54,768	33	18	115,998	63,743
Idaho	2	0	38,015	0	5	0	44,122	0	14	8	47,370	28,652
Illinois	34	15	482,439	222,865	56	35	393,926	244,980	78	57	272,921	201,761
Indiana	17	15	237,807	214,981	27	25	172,871	161,989	[2] 34	30	125,024	109,426
Iowa	11	6	167,405	89,241	14	13	94,173	87,671	46	42	168,650	152,673
Kansas	16	10	216,992	125,573	12	8	81,815	59,194	30	28	106,855	98,705
Kentucky	7	3	89,511	34,720	16	12	112,451	83,373	24	22	85,972	79,975
Louisiana	4	1	67,480	14,029	11	9	72,564	56,414	29	21	101,314	71,354
Maine	6	3	93,503	47,011	9	5	64,962	35,362	8	3	28,534	11,166
Maryland	3	0	37,962	0	3	1	20,517	5,588	12	8	42,878	28,323
Massachusetts	43	9	693,428	141,243	39	8	287,939	53,424	10	8	38,806	29,695
Michigan	23	7	327,343	96,919	32	18	213,702	122,638	42	19	154,395	68,508
Minnesota	11	3	159,550	35,264	18	10	123,500	67,392	41	24	137,111	79,338
Mississippi	11	3	157,153	37,440	4	3	23,448	18,160	22	9	78,013	32,895
Missouri	10	3	165,060	57,339	21	17	151,136	115,753	35	31	123,492	111,587
Montana	4	1	55,334	12,494	6	2	38,245	13,566	6	5	19,103	16,300
Nebraska	6	4	78,013	55,235	9	5	62,216	31,819	18	15	55,939	43,875
Nevada	1	0	18,529	0	1	0	5,165	0	3	0	10,770	0
New Hampshire	7	4	96,937	49,953	4	2	24,460	10,511	4	2	18,157	8,940
New Jersey	40	2	609,321	34,736	50	8	351,371	54,580	53	11	188,156	39,768

[1] See associated text for explanation of daytime service areas.
[2] Includes 1 place counted also in another State.

TABLE X.—*Population and number of United States cities within the daytime service area of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*—Continued

State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
New Mexico	2	0	22,349	0	4	0	25,920	0	9	0	31,977	0
New York	47	20	730,349	316,424	41	14	277,831	91,720	85	51	308,873	179,836
North Carolina	13	8	172,672	115,304	17	12	113,693	78,886	30	21	103,340	71,281
North Dakota	3	0	44,301	0	6	2	34,074	10,131	2	2	6,312	6,312
Ohio	33	19	517,498	280,689	51	34	359,925	443,296	[2] 64	42	231,183	150,845
Oklahoma	12	6	168,698	74,647	22	18	162,358	139,841	30	29	105,553	101,384
Oregon	4	0	56,350	0	9	2	61,218	11,208	13	7	44,097	21,182
Pennsylvania	75	25	1,157,990	394,960	103	38	734,549	269,957	149	59	536,609	205,589
Rhode Island	7	1	95,671	10,997	4	1	30,170	7,677	1	0	3,666	0
South Carolina	5	3	63,279	34,122	12	11	73,855	68,773	19	10	62,223	32,235
South Dakota	5	1	58,971	10,942	2	1	11,805	5,733	8	4	26,769	12,976
Tennessee	[3] 3	1	46,091	11,914	14	13	99,184	93,781	26	24	93,574	85,988
Texas	20	8	292,594	99,799	47	38	314,208	251,476	76	53	275,678	192,108
Utah	1	1	14,766	14,766	4	2	25,379	10,228	14	10	45,580	32,243
Vermont	3	1	53,411	11,307	7	4	50,278	28,256	4	3	15,077	10,134
Virginia	[3] 9	3	118,830	33,558	10	6	68,993	40,703	19	15	66,523	51,968
Washington	10	2	142,702	20,358	4	1	27,976	6,564	19	12	64,557	39,447
West Virginia	[2] 5	2	87,952	31,043	12	10	85,750	73,448	17	12	61,674	42,691
Wisconsin	14	3	223,821	44,307	20	15	141,905	109,048	36	32	128,990	113,539
Wyoming	2	1	33,980	17,361	3	1	25,585	8,609	3	1	10,532	2,589
Total	608	208	9,097,200	2,992,528	851	452	5,897,156	3,291,988	1,333	837	4,717,590	2,935,276

[2] Includes 1 place counted also in another States.
[3] Includes 2 places counted also in other States.

TABLE XI.—*Population and number of United States cities within the nighttime service area [1] of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*

State	Total of all classes				100,000 or more				25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Alabama	53	6	744,273	33,547	1	0	259,678	0	2	0	134,281	0
Arizona	14	3	149,856	15,069		0		0	2	0	80,624	0
Arkansas	49	10	382,878	38,041		0		0	[2] 3	0	123,872	0
California	155	52	4,160,596	301,207	5	0	2,446,532	0	16	1	764,609	29,696
Colorado	27	11	519,982	63,219	1	0	287,861	0	2	0	83,333	0
Connecticut	33	9	1,131,770	117,068	3	0	473,443	0	9	2	398,815	55,680
Delaware	5	2	123,146	8,519	1	0	106,597	0				
District of Columbia	1	0	486,869	0	1	0	486,869	0				
Florida	58	20	759,778	105,864	3	0	341,347	0	4	0	125,944	0
Georgia	64	25	895,492	176,940	1	0	270,366	0	4	1	242,326	53,829
Idaho	21	3	129,507	17,747								
Illinois	192	111	5,635,727	806,757	2	0	3,481,407	0	22	4	1,005,034	148,113
Indiana	95	72	1,795,892	545,974	5	0	785,975	0	12	2	474,215	59,578
Iowa	81	64	979,292	453,012	1	0	142,559	0	9	4	406,505	126,747
Kansas	62	29	729,834	193,319	2	0	232,967	0	2	0	91,205	0
Kentucky	53	37	799,026	198,068	1	0	307,745	0	5	0	203,347	0
Louisiana	48	18	833,532	88,152	1	0	458,762	0	3	0	133,412	0
Maine	26	9	321,506	117,321		0		0	3	1	134,507	34,948
Maryland	21	9	974,869	44,674	1	0	804,874	0	2	0	68,608	0
Massachusetts	122	27	3,831,426	311,707	9	0	1,774,375	0	21	2	1,036,878	78,047
Michigan	114	46	3,302,075	420,533	3	0	1,893,746	0	14	3	712,589	139,020
Minnesota	73	37	1,257,616	201,271	3	0	837,425	0				
Mississippi	39	8	338,850	54,107					2	0	80,236	0
Missouri	72	40	1,859,119	312,429	2	0	1,221,706	0	4	1	197,725	80,935
Montana	18	4	181,036	20,655					2	0	68,354	0
Nebraska	35	17	486,107	82,699	1	0	214,006	0	1	0	75,933	0
Nevada	5	0	34,464	0								
New Hampshire	18	5	273,079	66,833								
New Jersey	169	22	3,339,244	134,783	6	0	1,254,210	0	3	1	133,525	31,463
New Mexico	16	0	106,816	0					20	0	936,186	0
New York	196	86	10,521,052	750,300	7	0	9,404,778	0	1	0	26,570	0
North Carolina	68	28	809,847	176,777					16	4	800,121	150,590
North Dakota	12	1	113,306	3,176					8	0	420,142	0
									1	0	28,619	0

[1] See associated text for explanation of nighttime service areas.
[2] Includes one place counted also in another State.

TABLE XI.—*Population and number of United States cities within the nighttime service area of one or more United States broadcast stations but not having a station and not located within a metropolitan area or contiguous to a city having a station*—Continued

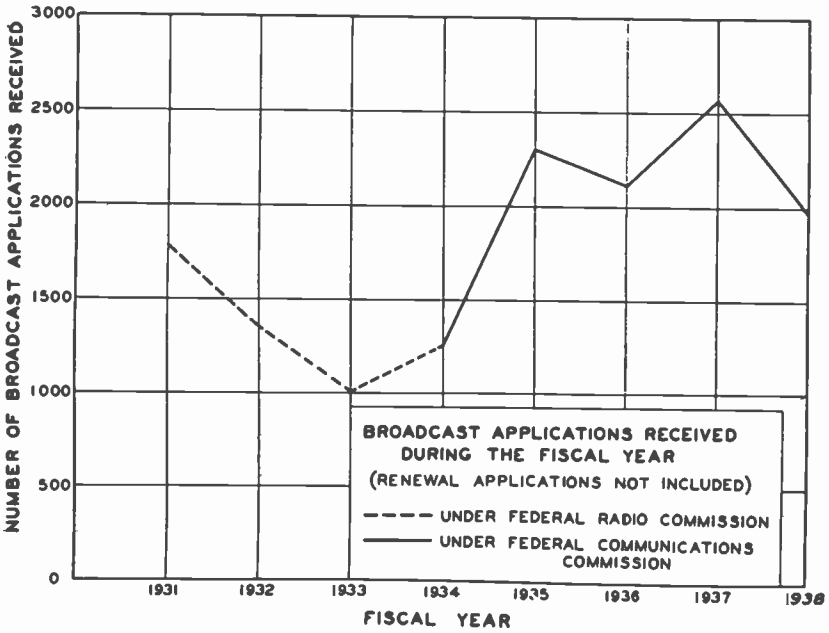
State	Total of all classes				Cities of 100,000 or more				Cities of 25,000 to 100,000			
	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas	Number cities in State	Number cities within service areas	Total population in cities of class	Population within service areas
Ohio	174	104	4,507,371	1,209,963	8	0	2,663,801	0	18	8	734,964	311,832
Oklahoma	68	45	821,681	282,789	2	0	326,647	0	2	0	58,425	0
Oregon	28	6	489,746	21,201	1	0	301,815	0	1	0	26,266	0
Pennsylvania	354	112	6,533,511	850,770	5	0	2,991,349	0	22	2	1,113,014	74,235
Rhode Island	19	1	635,429	7,677	1	0	252,981	0	6	0	252,941	0
South Carolina	40	12	371,080	62,042					4	0	171,723	0
South Dakota	16	1	130,907	10,942					1	0	33,362	0
Tennessee	48	39	896,538	213,598	4	0	632,609	0	1	1	25,080	25,080
Texas	159	99	2,389,348	654,884	5	0	1,050,237	0	[3] 11	2	456,631	104,592
Utah	21	13	266,264	57,237	1	0	140,267	0	1	0	40,272	0
Vermont	14	4	118,766	18,944								
Virginia	45	12	785,537	87,461	2	0	312,639	0	5	1	218,552	28,564
Washington	38	7	884,539	29,723	3	0	587,914	0	2	0	61,390	0
West Virginia	39	22	491,504	126,277					5	0	256,128	0
Wisconsin	83	51	1,553,843	352,339	1	0	578,249	0	12	3	480,878	91,662
Wyoming	8	2	70,097	25,970								
Total	3,169	1,341	68,954,823	9,871,585	93	0	36,325,736	0	284	43	12,917,141	1,624,611

	Cities of 10,000 to 25,000				Cities of 5,000 to 10,000				Cities of 2,500 to 5,000			
Alabama	11	1	185,622	15,593	11	0	69,654	0	28	5	95,038	17,954
Arizona		0		0	6	1	44,224	7,693	6	2	25,008	7,376
Arkansas	6	0	97,261	0	9	2	56,416	10,297	31	8	105,329	27,744
California	28	5	409,460	61,074	48	16	342,421	112,462	58	30	197,574	97,975
Colorado	5	2	56,894	22,712	10	4	60,916	22,976	9	5	30,878	17,531
Connecticut	12	2	209,500	34,363	5	2	33,752	15,201	4	3	16,260	11,824
Delaware									4	2	16,549	8,519
District of Columbia												
Florida	7	2	91,359	22,931	17	7	112,719	48,166	27	11	88,409	34,767
Georgia	10	1	153,017	20,131	16	7	113,785	46,608	33	16	115,998	56,372
Idaho	2	0	38,015	0	5	1	44,122	8,297	14	2	47,370	9,450
Illinois	34	14	482,439	209,333	56	35	393,926	244,980	78	58	272,921	204,331
Indiana	17	15	237,807	214,981	27	25	172,871	161,989	[3] 34	30	125,024	109,426

Iowa	11	6	167,405	89,241	14	13	94,173	87,671	46	41	168,650	149,353
Kansas	16	7	216,992	89,447	12	5	81,815	40,933	30	17	106,855	62,939
Kentucky	7	3	89,511	34,720	16	12	112,451	83,373	24	22	85,972	79,975
Louisiana	4	1	67,480	14,029	11	5	72,564	31,715	29	12	101,314	42,408
Maine	6	3	93,503	47,011	9	5	64,962	35,362	8	0	28,534	0
Maryland	3	1	37,962	14,434	3	1	20,547	5,588	12	7	42,878	24,652
Massachusetts	43	10	693,428	156,743	39	7	287,939	47,222	10	8	38,806	29,695
Michigan	23	7	327,343	96,919	32	17	213,702	116,086	42	19	154,695	68,508
Minnesota	11	5	159,580	66,283	18	9	123,500	60,190	41	23	137,111	74,798
Mississippi	11	2	157,153	27,397	4	1	23,448	6,220	22	5	78,013	20,490
Missouri	10	3	165,060	58,129	21	15	151,136	100,241	35	21	123,492	73,124
Montana	4	1	55,334	12,494	6	0	38,245	0	6	3	19,103	8,161
Nebraska	6	2	78,013	21,704	9	5	62,216	31,819	18	10	55,939	29,176
Nevada	1	0	18,529	0	1	0	5,165	0	3	0	10,770	0
New Hampshire	7	2	96,937	26,171	4	1	24,460	5,131	4	1	18,157	4,068
New Jersey	40	3	609,321	40,435	50	8	351,371	54,580	53	11	188,156	39,768
New Mexico	2	0	22,349	0	4	0	25,920	0	9	0	31,977	0
New York	47	21	730,349	342,007	41	15	277,831	96,781	85	46	308,873	160,922
North Carolina	13	6	172,672	79,756	17	6	113,693	40,796	30	16	103,340	56,225
North Dakota	3	0	44,301	0	6	0	34,074	0	2	1	6,312	3,176
Ohio	33	20	517,498	303,990	51	34	359,925	443,296	[3] 64	42	231,183	150,845
Oklahoma	12	7	168,698	91,744	22	14	162,358	106,889	30	24	105,553	84,156
Oregon	4	0	56,350	0	9	1	61,218	5,325	13	5	44,097	15,876
Pennsylvania	75	22	1,157,990	348,302	103	34	734,549	239,397	149	54	536,609	188,836
Rhode Island	7	0	95,671	0	4	1	30,170	7,677	1	0	3,666	0
South Carolina	5	1	63,279	11,322	12	5	73,855	30,015	19	6	62,223	20,705
South Dakota	5	1	58,971	10,942	2	0	11,805	0	8	0	26,769	0
Tennessee	[2] 3	1	46,091	11,914	14	13	99,184	90,030	26	24	93,574	86,574
Texas	20	9	292,594	115,715	47	37	314,208	249,472	76	51	275,678	185,105
Utah	1	1	14,766	14,766	4	2	25,379	10,228	14	10	45,580	32,243
Vermont	3	0	53,411	0	7	2	50,278	12,499	4	2	15,077	6,445
Virginia	[2] 9	2	118,830	21,598	10	2	68,993	13,395	19	7	66,523	23,904
Washington	10	1	142,702	10,170	4	0	27,976	0	19	6	64,557	19,553
West Virginia	[2] 5	1	87,952	16,186	12	9	85,750	67,200	17	12	61,674	42,891
Wisconsin	14	4	223,821	57,930	20	13	141,905	92,127	36	31	128,990	110,620
Wyoming	2	1	33,980	17,361	3	1	25,585	8,609	3	0	10,532	0
Total	608	196	9,097,200	2,849,978	851	393	5,897,156	2,898,536	1,333	709	4,717,590	2,498,460

[2] Includes two places counted also in other States.
[3] Includes one place counted also in another State.

APPENDIX G


NUMBER OF BROADCAST APPLICATIONS RECEIVED
3000
2500
2000
1500
1000
500
0
1931
1932
1933
1934
1935
1936
1937
1938
FISCAL YEAR
BROADCAST APPLICATIONS RECEIVED
DURING THE FISCAL YEAR
(RENEWAL APPLICATIONS NOT INCLUDED)
UNDER FEDERAL RADIO COMMISSION
UNDER FEDERAL COMMUNICATIONS COMMISSION

APPENDIX H

FINANCIAL AND OTHER STATISTICAL DATA CONCERNING BROADCAST STATIONS

STATISTICS RELATING TO BROADCAST STATIONS

Tables I to IX, inclusive, and chart 1, which follow, contain financial, operating, and other statistical data relating to broadcasting. These tables, as indicated on their face, are based upon responses to Commission Order No. 38 as supplemented by correspondence relating to broadcast networks; and upon subsequent questionnaires relating to programs and employees (all of which are mentioned on page 59 of this report), except table IX which is based, in part, on information from other sources as indicated. Chart 1 is associated with table IX and is based on the same sources of information.

The following statement shows the distribution of the returns (as of June 3, 1938) to Commission Order No. 38 mentioned above:

	Number
Total station licensees and construction permits authorized as of Dec. 31, 1937	721
Broadcast stations included in summaries	624
Broadcast stations filing joint reports embraced within the 624 responses	5
Noncommercial stations	32
Stations filing too late for tabulation	7
Stations filing reports that were incomplete and could not be used	6
Delinquent stations which did not file responses	5
Extraterritorial stations	10
Construction permits only	32
Total	721

Of the 32 noncommercial stations which filed returns to Commission Order No. 38, mentioned above, 21 were operated by educational institutions, 9 by religious groups, and 2 by miscellaneous organizations. Data concerning these stations are not contained in the following tables.

Tables I to IX, inclusive, and chart 1, referred to above, contain various analyses of revenue, expenses, income, and investment of broadcast stations and networks, and also concerning programs and employees of broadcast stations and other items indicated.

These tables and chart follow:

TABLE I.—*Analysis of net revenue from broadcast services and other financial data—all networks and 629 broadcast stations operating on a commercial basis, 1937*

[Combined summary of information submitted to the Commission by networks in response to letters requesting financial data in connection with network operations and by broadcast stations in response to Commission Order No. 38]

	Item		*Amount*
(a)	Revenues:		
	1. Network portion of network time sales		$35,812,537
	2. Time sales by stations	$80,055,694	
	3. Time sales by stations, paid for commissions, sustaining programs, or other contract method	2,040,742	
			82,096,436
	Total time sales by networks and stations		117,908,973
	4. Sustaining program sales to stations		60,384
	5. Sale of talent, booking commission, and miscellaneous sales		11,264,748
	6. Other revenue incidental to broadcasting		1,759,631
	7. Rent received for broadcast equipment and other fixed assets leased to others		212,130
	Total sales and other revenues		131,205,866
	8. Deduct: Commissions to agents and brokers		16,982,960
9	Balance: Total revenues of networks and stations		114,222,906

TABLE I.—*Analysis of net revenue from broadcast services and other financial data—all networks and 629 broadcast stations operating on a commercial basis, 1937*—Continued

Item	Amount
(b) Expenses:	
1. Salaries to officers	$4,817,466
2. Salaries to others, except program, advertising, and selling staffs	15,616,243
3. Payments for use of communication lines used in program transmission	7,489,065
4. Payments for rent of complete broadcast stations and equipment leased from others	693,438
5. Program and talent expense, including sustaining programs purchased	32,500,677
6. Advertising, selling, and publicity expense	5,551,202
7. Repairs, maintenance, and supplies	2,490,403
8. Light, heat, power, and miscellaneous rents	4,836,527
9. Depreciation of assets devoted to broadcasting	3,936,158
10. Amortization of intangible assets devoted to broadcasting	485,593
11. Taxes applicable to broadcasting (except Federal income taxes)	2,017,696
12. Unclassified broadcast expenses of stations	3,066,323
13. All other general expenses (including rents paid for use of land)	8,155,520
Total expenses	91,656,311
(c) Net revenue from broadcast services	22,566,595
(d) Other income (not included in (a), above)	840,845
(e) Gross income	23,407,440
(f) Deductions from gross income (not included in (b), above)	777,266
(g) Net income before Federal income taxes	22,630,174
(h) Estimated Federal income taxes (deduct)	3,746,239
(i) Net income for the period	18,883,935
References:	
Networks, Table II	[1] 3,471,807
Stations, Table III	[2] 15,412,128
Total	18,883,935

[1] Excluding 9 network key stations. If they were included, this amount would then be $6,395,954.
[2] Includes 9 network key stations. If they were excluded, the amount would then be $12,487,980.

TABLE II.—*Analysis of net revenues of networks from broadcast services and other financial data—all networks, not including key stations operated by networks, 1937*

[Summary of information submitted to the Commission by broadcast networks in response to letters requesting financial data in connection with network operations)

Item		Amount
(a) Revenues:		
1. Time sales to advertisers (after trade discounts)		$55,917,189
2. Received of other networks and stations for network broadcasting of their time sales to advertisers		214,763
3. Total commercial time sales		56,131,952
4. Less:		
Portion of sales paid to other networks	$219,020	
Portion of sales paid to stations	20,100,395	
		20,319,415
5. Balance: Time sales to advertisers retained by networks		35,812,537
6. Sustaining program sales to stations		60,384
7. Sale of talent, and booking commissions		5,533,056
8. Other revenue incidental to broadcasting		1,759,631
9. Rent received from broadcast equipment and other fixed assets leased to others		89,576
10. Total sales and other revenues of networks		43,255,184
11. Deduct: Commissions paid to agencies and brokers		8,585,359
12. Balance: Total revenues of networks		34,669,825
(b) Expenses:		
1. Salaries:		
Officers	$787,499	
Program staff	1,625,274	
Advertising and selling	1,275,048	
Other salaries	3,770,414	
		7,458,235
2. Payments for communication lines used in program transmission		5,710,222
3. Payments for rent of complete broadcast stations leased from others		36,550
4. Program expense, including sustaining programs purchased		9,945,867
5. Advertising and selling, not including salaries		1,056,915
6. Repairs, maintenance, and supplies		394,447
7. Light, heat, power, and miscellaneous rents		1,964,588

TABLE II.—*Analysis of net revenues of networks from broadcast services and other financial data—all networks, not including key stations operated by networks, 1937*—Continued

Item		Amount
8.	Depreciation of assets devoted to broadcasting	$601,471
9.	Amortization of intangible assets applicable to broadcasting	290,412
10.	Taxes applicable to broadcasting (except Federal income taxes)	619,253
11.	All other general expenses (including rents paid for use of land)	2,407,827
12.	Total expenses	30,485,787
(c)	Net revenue from broadcast services	4,184,038
(d)	Other income (not included in (a), above)	384,981
(e)	Gross income	4,569,019
(f)	Deductions from income (not included in (b), above)	25,129
(g)	Net income before Federal income taxes	4,543,890
(h)	Estimated Federal income taxes (deduct)	1,072,083
(i)	Net income for the period	3,471,807

TABLE III.—*Revenues, expenses, and other income items of broadcast stations, by class of station and time designation*

[Summary of responses of broadcast stations to Commission Order No. 38]

1937

Item	Clear channel				Regional				Local			Grand total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part time	Unlimited	Day	Part time	
	Unlimited	Part time	Unlimited	Part time	High power	Other						
STATIONS WITH NET SALES OF $25,000 OR MORE												
Number of stations	29	4	8	9	8	175	46	30	106	8	20	443
Time sales:												
Network	$9,508,283	$432,303	$839,478	$233,087	$599,486	$9,580,920	$70,635	$345,572	$492,333	$10,524	$28,516	$22,141,137
Local	5,176,548	156,823	607,907	664,643	736,368	14,978,025	2,712,971	2,525,901	5,350,141	292,532	822,806	34,024,665
National spot	10,038,441	956,760	716,086	475,711	579,727	8,235,765	776,707	618,826	644,955	6,159	67,999	23,117,136
Total	24,723,272	1,545,886	2,163,471	1,373,441	1,915,581	32,794,710	3,560,313	3,490,299	6,487,429	309,215	919,321	79,282,938
Talent and miscellaneous sales	2,136,458	336,139	162,824	120,983	96,320	2,264,418	187,932	155,070	239,849	7,707	23,932	5,731,692
Gross sales	26,859,730	1,882,025	2,326,295	1,494,424	2,011,901	35,059,128	3,748,245	3,645,369	6,727,278	316,982	943,253	85,014,630
Less:												
Agency commissions	2,564,441	44,221	124,993	83,710	153,352	2,314,702	277,609	329,369	201,858	16,049	68,106	6,178,410
Net sales	24,295,289	1,837,804	2,201,302	1,410,714	1,858,549	32,744,426	3,470,636	3,316,000	6,525,420	300,933	875,147	78,836,220
Expenses:												
Salaries to officers	520,821	80,931	47,926	78,852	73,852	1,969,463	271,058	242,093	625,284	26,677	93,010	4,029,967
Salaries to all others (except employees included under program expenses as detailed below)	2,421,138	156,392	318,399	209,181	334,207	5,483,620	660,758	625,084	1,415,357	53,846	167,847	11,845,829
Payments to national representatives, and other time brokerage commissions	516,284	53,996	56,461	74,549	61,998	1,046,140	112,876	76,943	198,839	275	20,830	2,219,191
Program expenses	6,509,871	585,802	506,096	347,364	399,816	8,187,038	1,077,771	828,658	1,589,087	70,779	222,112	20,324,394
Program and talent expenses—Extraordinary	332,450	----------	42,106	----------	19,301	184,562	198	11,460	14,493	----------	572	605,142
Advertising, sales promotion, miscellaneous selling, and publicity	893,538	76,895	66,825	81,999	87,346	1,291,094	193,089	165,588	314,546	11,074	37,245	3,219,239

Repairs, maintenance, and supplies	558,220	17,817	49,640	36,172	51,890	947,592	137,751	96,643	168,881	7,728	23,622	2,095,956
Light, heat, power, and miscellaneous rents	1,083,773	37,360	65,492	72,177	76,812	1,040,472	137,925	105,532	186,575	12,145	53,676	2,871,939
Rent for broadcasting equipment leased from others	138,955	140,676	1,264	5,189	1,500	324,838	15,991	8,400	16,454	201	3,420	656,888
Wire costs	378,433	56,785	24,569	40,648	47,048	742,658	114,168	114,235	227,817	10,472	22,010	1,778,843
All other general expenses not detailed above	1,229,474	82,241	125,961	142,358	171,131	2,520,988	393,474	338,416	627,491	48,655	67,504	5,747,693
Depreciation	862,425	18,186	60,806	68,086	157,603	1,454,295	170,900	166,941	317,344	15,604	42,497	3,334,687
Amortization of intangibles applicable to broadcasting	21,901	20,000	3,318	1,563	----------	103,030	7,097	7,270	30,727	----------	275	195,181
Taxes (applicable to broadcasting, except Federal income taxes)	358,403	26,454	35,627	23,858	34,804	645,979	71,393	56,326	119,445	4,692	21,462	1,398,443
Total expenses	15,825,686	1,353,535	1,404,490	1,181,996	1,517,308	25,941,769	3,364,449	2,843,589	5,852,340	262,148	776,082	60,323,392

ALL COMMERCIAL STATIONS

Number of stations	29	4	8	10	8	188	68	37	187	35	50	624
Net sales	$24,295,289	$1,837,804	$2,201,302	$1,422,263	$1,858,549	$33,037,389	$3,809,346	$3,402,676	$7,800,050	$658,982	$1,326,068	$81,649,718
Total expenses	15,825,686	1,353,535	1,404,490	1,205,218	1,517,308	26,249,543	3,828,385	2,939,769	7,190,347	652,967	1,222,467	63,389,715
Net revenue from broadcasting services	8,469,603	484,269	796,812	217,045	341,241	6,787,846	[1] *19,039*	462,907	609,703	6,015	103,601	18,260,003
Rent from broadcasting equipment leased to others	----------	58,338	----------	----------	----------	50,117	21	4,049	7,483	1,750	796	122,554
Total broadcasting services income	8,469,603	542,607	796,812	217,045	341,241	6,837,963	[1] *19,018*	466,956	617,186	7,765	104,397	18,382,557
Other income	152,563	7,009	5,380	15,576	7,914	178,300	12,694	9,152	28,434	579	38,263	455,864
Gross income	8,622,166	549,616	802,192	232,621	349,155	7,016,263	[1] *6,324*	476,108	645,620	8,344	142,660	18,838,421
Income deductions	196,591	42	2,743	72,326	7,475	281,911	34,896	24,684	69,819	16,342	45,308	752,137
Net income before Federal income taxes	8,425,575	549,574	799,449	160,295	341,680	6,734,352	[1] *41,220*	451,424	575,801	[1] *7,998*	97,352	18,086,284
Estimated Federal income taxes (deduct)	929,019	72,295	107,124	56,424	44,501	1,207,668	42,906	81,321	114,774	5,549	12,575	2,674,156
Net income	7,496,556	477,279	692,325	103,871	297,179	5,526,684	[1] *84,126*	370,103	461,027	[1] *13,547*	84,777	15,412,128

[1] Deficit or other reverse item.

NOTE A.—Of the 624 responses accounted for in this table, 5 cover 2 stations each. Thus the table actually embraces data for 629 stations.
NOTE B.—The term part time as used in this table refers to share-time and specified-hour stations.

TABLE IV.—*Income items of broadcast stations by States and broadcast regions*

[Summary of responses of broadcast stations to Commission Order No. 38]

1937

State and broadcast region	Stations with net sales of $25,000 or more								All commercial stations				
	Number of stations	Time sales				Talent and miscellaneous sales	Gross sales	Less agency commissions	Net sales	Number of stations	Net sales	Total expenses	Net broadcast revenue	Net income
		Network	Local	National spot	Total									
Northern district	254	$16,290,112	$22,856,032	$17,232,824	$56,378,968	$4,273,610	$60,652,578	$4,745,969	$55,906,609	328	$57,147,840	$43,476,075	$13,671,765	$11,514,462
Northeastern region, total	111	7,701,234	11,552,578	6,408,520	25,662,332	1,776,049	27,438,381	2,140,551	25,297,830	140	25,751,497	19,694,341	6,057,156	5,053,092
Connecticut	8	392,913	429,066	294,282	1,116,261	37,291	1,153,552	72,094	1,081,458	9	1,105,619	968,141	137,478	34,019
Delaware, Maryland	8	423,802	763,380	283,904	1,471,086	37,810	1,508,896	98,779	1,410,117	9	1,411,852	994,655	417,197	349,177
Maine, New Hampshire, Vermont	5	167,558	198,937	110,597	477,092	25,767	502,859	19,761	483,098	13	600,830	473,223	127,607	77,205
Massachusetts	15	1,098,865	1,630,394	399,257	3,178,525	78,999	3,257,525	280,217	2,977,308	15	2,977,308	2,425,470	551,838	449,207
New Jersey	4	366,693	941,062	1,548,364	2,855,119	421,771	3,277,890	422,341	2,855,549	9	2,914,967	2,392,045	522,922	475,621
New York	35	3,357,527	3,805,634	2,326,866	9,490,027	639,438	10,129,465	649,550	9,479,915	45	9,660,264	7,229,672	2,430,592	2,099,570
Pennsylvania	29	1,261,939	2,830,461	1,198,512	5,290,912	431,383	5,722,295	441,200	5,281,086	33	5,351,358	3,915,350	1,436,008	1,202,662
Rhode Island	3	310,348	245,638	134,952	690,938	1,474	692,412	46,077	646,335	3	646,335	423,564	222,771	186,577
District of Columbia	4	321,589	658,006	111,776	1,091,371	102,116	1,193,487	110,523	1,082,964	4	1,082,964	872,221	210,743	179,054
Great Lakes region, total	89	6,181,728	7,786,530	7,478,687	21,446,945	1,689,166	23,136,111	1,998,273	21,137,838	112	21,610,899	16,114,575	5,496,324	4,716,449
Illinois	23	1,128,708	2,262,599	2,597,431	5,988,738	610,572	6,599,310	552,336	6,046,974	30	6,180,421	4,734,561	1,445,860	1,280,199
Indiana	12	262,093	739,302	377,141	1,378,536	63,498	1,442,034	54,476	1,387,558	16	1,457,829	1,117,890	339,939	298,378
Kentucky	6	326,632	359,559	324,149	1,010,340	1,164	1,011,504	61,471	950,033	6	950,033	753,729	196,304	151,795
Michigan	14	1,017,776	1,497,032	1,278,968	3,793,776	248,651	4,042,427	373,984	3,668,443	17	3,714,294	2,674,233	1,040,061	838,774
Ohio	18	3,176,119	1,841,879	2,296,947	7,314,945	595,971	7,910,916	895,121	7,015,795	22	7,074,042	4,998,524	2,075,518	1,810,577
West Virginia	5	44,488	363,861	180,755	589,104	42,204	631,308	26,420	604,888	7	670,635	574,948	95,687	80,482
Wisconsin	11	225,912	722,298	423,296	1,371,506	127,106	1,498,612	34,465	1,464,147	14	1,563,645	1,260,690	302,955	256,244
Midwest region, total	54	2,407,150	3,516,924	3,345,617	9,269,691	808,395	10,078,086	607,145	9,470,941	76	9,785,444	7,667,159	2,118,285	1,744,921
Iowa	9	408,557	535,973	841,763	1,786,293	158,129	1,944,422	142,542	1,801,880	11	1,821,734	1,417,606	404,128	316,784
Kansas	8	121,638	321,024	210,661	653,323	31,461	684,784	21,948	662,836	13	731,203	690,308	40,895	26,021
Minnesota	10	483,017	883,875	602,423	1,969,315	200,218	2,169,533	153,814	2,015,719	12	2,042,269	1,547,043	495,226	422,384
Missouri	14	896,428	1,248,841	1,153,967	3,299,236	321,447	3,620,683	204,357	3,416,326	17	3,473,621	2,604,751	868,870	700,412

Nebraska	7	341,740	296,396	378,584	1,016,720	93,779	1,110,499	60,598	1,049,901	10	1,096,369	874,052	222,317	211,877
North Dakota	3	125,960	112,125	97,077	335,162	3,179	338,341	13,393	324,948	8	384,025	308,595	75,430	[2] 63,050
South Dakota	3	29,810	118,690	61,142	209,642	182	209,824	10,493	199,331	5	236,223	224,804	11,419	4,393
Southern district	105	2,981,109	5,444,675	3,705,015	12,190,799	684,345	12,875,144	631,944	12,243,200	166	13,138,725	10,273,775	2,864,950	2,539,752
Southeastern region, total	70	1,955,681	3,312,862	2,414,992	7,683,535	328,079	8,011,614	371,364	7,640,250	111	8,225,516	6,497,319	1,728,197	1,513,903
Alabama	6	93,776	293,054	94,294	481,124	22,301	503,425	17,584	485,841	11	556,225	432,862	123,363	88,262
Arkansas, Mississippi	6	85,308	181,473	117,035	383,816	23,822	407,638	18,235	389,403	17	514,697	458,686	56,011	46,808
Florida	10	332,535	427,676	340,128	1,100,339	20,012	1,120,351	33,972	1,086,379	15	1,141,724	947,909	193,815	167,733
Georgia	6	273,703	364,278	343,061	981,642	13,382	995,024	65,948	929,076	13	1,015,856	701,524	314,332	291,533
Louisiana	9	306,420	382,456	326,167	1,015,043	29,346	1,044,389	49,662	994,727	12	1,050,722	727,892	322,830	296,655
North Carolina	9	238,939	416,848	393,857	1,049,644	63,223	1,112,867	63,000	1,049,267	13	1,123,457	837,425	286,032	236,186
South Carolina	5	34,377	242,043	71,351	347,771	9,714	357,485	34,017	323,468	6	329,292	330,595	[1] 1,303	[1] 239
Tennessee	12	403,892	704,705	433,804	1,542,401	67,434	1,609,835	76,084	1,533,751	13	1,570,134	1,306,640	263,494	245,360
Virginia	7	186,731	300,329	294,095	781,755	78,845	860,600	12,262	848,338	11	923,409	753,786	169,623	141,605
South Central region, total	35	1,025,428	2,131,813	1,350,023	4,507,264	356,266	4,863,530	960,580	4,602,950	55	4,913,209	3,770,456	1,136,753	1,025,849
Oklahoma	6	296,114	413,800	363,984	1,063,898	62,866	1,126,764	58,317	1,068,447	14	1,188,873	1,001,702	187,171	160,394
Texas	29	739,314	1,718,013	986,039	3,443,366	293,400	3,736,766	202,263	3,534,503	41	3,724,336	2,774,754	949,582	875,455
Western district	84	2,869,916	5,723,958	2,119,297	10,713,171	773,737	11,486,908	800,497	10,686,411	130	11,363,153	9,639,865	1,723,288	1,357,914
Mountain region, total	24	621,865	1,581,174	451,625	2,654,664	236,706	2,891,370	154,980	2,736,390	47	3,027,614	2,560,640	466,974	359,086
Arizona	3	52,535	167,717	51,829	272,081	42,451	314,532	8,131	306,401	6	333,629	284,870	48,759	42,983
Colorado, Wyoming	7	262,539	647,056	102,669	1,012,264	102,175	1,114,439	92,002	1,022,437	15	1,126,634	1,028,192	98,442	64,378
Idaho	4	----------	127,480	22,721	150,201	63	150,264	3,907	146,357	6	193,335	173,452	19,883	18,376
Montana	4	27,853	155,918	92,563	276,334	55,732	332,096	11,378	320,718	7	361,185	278,137	83,048	62,262
Nevada, New Mexico	3	8,838	118,536	26,813	154,187	5,531	159,718	5,032	154,686	8	210,559	192,486	18,073	7,837
Utah	3	270,070	364,467	155,030	789,567	30,754	820,321	34,530	785,791	5	802,272	603,503	198,769	163,250
Pacific region, total	60	2,248,051	4,142,784	1,667,672	8,058,507	537,031	8,595,538	645,517	7,950,021	83	8,335,539	7,079,225	1,256,314	998,828
California	38	1,565,636	2,886,421	1,083,213	5,535,270	331,535	5,866,805	515,842	5,350,963	49	5,595,111	4,782,932	722,179	564,208
Oregon	7	261,183	374,479	250,175	885,837	33,048	918,885	34,351	884,534	13	998,432	772,520	225,912	192,637
Washington	15	421,232	881,884	334,284	1,637,400	172,448	1,809,848	95,324	1,714,524	21	1,831,996	1,523,773	308,223	241,983
United States	443	22,141,137	34,024,665	23,117,136	79,282,938	5,731,692	85,014,630	6,178,410	78,836,220	624	81,649,718	63,389,715	18,260,003	15,412,128

[1] Deficit or other reverse item.

NOTE.—Of the 624 responses accounted for in this table, 5 cover 2 stations each. Thus the table actually embraces data for 629 stations.

TABLE V.—*Investment in broadcasting property according to maximum licensed power, 1937*

[Summary of responses of broadcast stations to Commission Order No. 38]

Class of station and maximum power	Original cost			Depreciated value			Replacement value new		
	Number of stations	Technical equipment	Total investment	Number of stations	Technical equipment	Total investment	Number of stations	Technical equipment	Total investment
Clear channel stations:									
500,000 watts	32	$7,929,427	$14,244,069	31	$2,339,190	$7,071,708	25	$7,924,397	$14,634,747
50,000 watts									
25,000 watts	10	689,571	1,007,987	10	347,233	596,070	10	930,143	1,278,964
10,000 watts									
7,500 watts	8	495,898	758,695	8	163,994	333,736	6	339,351	547,193
5,000 watts									
Total	50	9,114,896	16,010,751	49	2,850,417	8,001,514	41	9,193,891	16,460,904
Regional stations:									
25,000 watts	4	856,145	1,041,874	4	353,927	500,147	4	579,608	827,915
20,000 watts									
10,000 watts	90	6,874,865	11,961,566	38	3,852,432	7,582,900	82	5,947,427	10,761,092
5,000 watts	11	642,236	940,617	11	262,766	487,998	11	562,113	815,752
2,500 watts	113	4,800,956	7,416,936	109	2,286,720	4,010,545	104	3,861,199	6,234,858
1,000 watts	49	1,502,744	2,106,835	45	789,850	1,222,156	43	1,255,300	1,834,388
500 watts	22	375,935	609,216	22	258,553	427,270	21	337,556	557,123
250 watts									
200 watts	7	117,549	136,261	8	68,818	86,393	6	92,351	110,330
100 watts									
Total	296	15,170,430	24,213,305	287	7,873,066	14,317,409	271	12,635,584	21,171,458
Local stations:									
250 watts	134	2,227,476	3,405,357	128	1,293,772	2,084,029	121	1,726,970	2,826,605
100 watts	133	1,870,216	2,610,715	121	937,405	1,392,152	123	1,571,967	2,288,902
50 watts									
Total	267	4,097,692	6,016,072	249	2,231,177	3,476,181	244	3,298,937	5,115,507
Grand total	613	28,383,018	46,240,128	585	12,954,660	25,795,104	556	25,128,412	42,747,869

NOTE A.—Of the 613 responses showing original cost data, 5 cover 2 stations each. Thus the table actually embraces data for 618 stations.

NOTE B.—The figures shown in this table include the investment of networks in network-owned stations. However, the figures exclude network investment in other broadcasting property in the amount of $8,820,880 (before depreciation), making a total reported investment of $55,061,008.

TABLE VI.—*Functional employment and pay-roll data for the week beginning Mar. 6, 1938*

[Summary of responses from broadcast stations to employee questionnaire]

UNITED STATES

Class of employee	Number employed				Weekly pay roll			
	Full time		Part time		Full-time paid	Average weekly pay	Part-time paid	Average weekly pay
	Paid	Not paid	Paid	Not paid				
I. Executives:								
General managerial	671	30	142	19	$77,639	$115.70	$9,857	$69.46
Technical	373	4	33	6	23,247	62.35	709	21.72
Program	349		16	2	21,649	62.12	375	22.87
Commercial	280	6	13		26,055	90.09	659	51.09
Publicity	88	1	14	1	5,294	59.89	406	29.74
Miscellaneous	9				1,672	185.78		
Total I	1,779	41	218	28	155,556	87.44	12,006	55.20
II. Employees:								
A. Technical:								
Research and development	307		28	1	14,880	48.45	376	13.67
Operating	2,869	7	243	5	121,134	42.22	3,100	12.76
Miscellaneous	17		1		400	23.53	21	21.00
Total	3,193	7	272	6	136,414	42.72	3,497	12.88
B. Program:								
Production	872	3	61	10	39,884	45.72	955	15.70
Writers	614	1	63	36	21,920	35.68	1,058	16.70
Announcers	1,890	12	293	14	65,011	34.40	3,352	11.43
Staff musicians	2,318	11	991	19	136,176	58.74	16,996	17.16
Other artists	684	1	2,849	300	23,504	34.36	58,303	20.46
Miscellaneous	547		285	112	19,132	35.00	4,023	14.12
Total	6,925	28	4,542	491	305,627	44.13	84,687	18.65
C. Commercial:								
Outside salesman	1,276	52	149	8	64,742	50.76	3,526	23.59
Promotion and merchandising	250	7	27	1	12,251	48.90	721	27.21
Miscellaneous	96				2,951	30.74		
Total	1,622	59	176	9	79,944	49.28	4,247	24.13

TABLE VI.—*Functional employment and pay-roll data for the week beginning Mar. 6, 1938*—Continued

Class of employee	Number employed				Weekly pay roll			
	Full time		Part time		Full-time paid	Average weekly pay	Part-time paid	Average weekly pay
	Paid	Not paid	Paid	Not paid				
II. Employees—Continued								
D. General and administration:								
Accounting	593	4	168	7	$20,000	$33.71	$1,993	$11.87
Clerical	839	2	92	1	18,628	22.20	748	8.14
Stenographic	1,015	2	87	2	23,210	22.90	994	11.44
Miscellaneous	964	2	265	----	23,988	24.90	2,244	8.44
Total	3,411	10	612	10	85,856	25.17	5,979	9.76
E. Miscellaneous	155	----	----	----	7,497	48.37	----	----
Total II	15,306	104	5,602	516	615,338	40.20	98,410	17.57
III. Grand total	17,085	145	5,820	544	770,894	45.12	110,416	18.97

NOTE A.—Of the 626 responses accounted for in this table, 5 cover 2 stations each. Thus the table actually embraces data for 631 stations.
NOTE B.—Includes data for employees whose services at certain key stations include network and other operations.

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*

[Summary of responses from broadcast stations to program questionnaire]

UNITED STATES

Type of program	Commercial														Percent
	Live talent						Electrical transcriptions		Records		Announcements		Total		
	Taken from national networks		Taken from regional networks		Originated locally										
	Hr.	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	
I. Music:															
Serious	189	44	5	51	83	34	140	46	176	19	28	39	624	53	1.00
Light	252	1	11	3	333	51	364	55	333	42	73	6	1,368	38	2.20
Popular	387	33	35	16	1,010	19	1,722	55	1,542	14	298	12	4,996	29	8.01
Other	27	9	34	14	328	52	177	40	153	3	32	34	753	32	1.21
Total I	856	27	86	24	1,756	36	2,406	16	2,205	18	432	31	7,743	32	12.42
II. Dramatic:															
General drama	1,948	33	106	10	132	17	626	2	2	15	14	38	2,829	55	4.54
Comedy scripts	300	29	6	45	45	2	46	1			1	31	399	48	.64
Children's drama	165	10	48	25	57	25	266	14	1	30	3	46	542	30	.87
Total II	2,414	12	161	20	234	44	938	17	3	45	19	55	3,772	13	6.05
III. Variety	1,652	15	79	19	626	4	343	59	111	33	54	57	2,868	7	4.60
IV. Talks and dialogues:															
Social and economic	76	33	32	43	144	26	22	5	4	45	22	13	302	45	.49
Literature, history, and general cultural	73	41	6	8	115	5	15	28	1		6	13	217	35	.34
Household and others of special interest to women	275	22	47	42	437	37	102	46	3	48	91	40	958	55	1.54
Farm management and others of special interest to farmers	3	45	6	45	88	41	24	3	1	30	17	29	142	13	.23
Political	2	14	12	7	65	49	10		1		2	3	93	13	.15
Others	162	9	16	46	312	11	32	3	4		159	7	686	16	1.10
Total IV	593	44	122	11	1,163	49	206	25	16	3	298	45	2,400	57	3.85
V. News:															
News reports	315	20	118	26	1,135	12	5	57			47	54	1,622	49	2.60
Sport flashes	9	48	25	35	184	39	5	48			3	32	229	22	.37
Market, crop, and weather reports		44	5	58	102	4	1	20			27	22	137	23	.22
Total V	325	52	149	54	1,421	55	13	5			78	48	1,989	34	3.19
VI. Religious and devotional	75	26	65	36	1,032	22	57	42	6	25	12	16	1,249	47	2.00

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*—Continued

Commercial

Type of program	Live talent: Taken from national networks	Live talent: Taken from regional networks	Live talent: Originated locally	Electrical transcriptions	Records	Announcements	Total	Percent
VII. Special events:								
Meetings and occasions of civic interest	2 39	------ 15	38 27	5 22	----------	2 9	48 52	.08
Sports	23 49	40 9	311 1	1 22	----------	5 4	381 25	.61
Other	2 ------	1 ------	42 16	1 2	----------	1 9	47 27	.08
Total VII	28 28	41 24	391 44	7 46	----------	8 22	477 44	.77
VIII. Miscellaneous	18 3	12 32	111 41	22 44	13 45	861 51	1,040 36	1.67
IX. Grand total	5,964 27	718 40	6,738 55	3,996 14	2,356 49	1,767 25	21,542 30	34.55

Sustaining

Type of program	Live talent: Taken from national networks	Live talent: Taken from regional networks	Live talent: Originated locally	Electrical transcriptions	Records	Announcements	Total	Percent
	Hr. min.	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	*Hr. min.*	
I. Music:								
Serious	1,534 39	108 23	369 44	925 10	463 7	18 27	3,419 30	5.48
Light	1,378 35	178 57	726 28	1,776 59	741 9	32 18	4,834 26	7.75
Popular	4,615 28	528 ------	2,284 44	4,436 30	3,169 44	88 35	15,123 1	24.26
Other	210 32	40 1	578 3	438 50	299 47	18 24	1,585 37	2.54
Total I	7,739 14	855 21	3,958 59	7,577 29	4,673 47	157 44	24,962 34	40.03
II. Dramatic:								
General drama	481 57	94 19	240 8	398 17	6 31	6 3	1,227 15	1.96
Comedy scripts	69 14	11 55	58 6	70 17	----------	------ 30	210 2	.34
Children's drama	256 45	15 3	137 57	61 9	----------	2 20	473 14	.76
Total II	807 56	121 17	436 11	529 43	6 31	8 53	1,910 31	3.06
III. Variety	1,260 16	156 33	551 49	462 14	190 6	20 52	2,641 50	4.24

Type of program	Live talent: Taken from national networks		Live talent: Taken from regional networks		Live talent: Originated locally		Electrical transcriptions		Records		Announcements		Total: Grand total		Percent
	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	Hr.	min.	
IV. Talks and dialogues:															
Social and economic	479	56	60	26	526	35	65	26	----	15	15	13	1,147	51	1.84
Literature, history, and general cultural	456	27	54	6	675	53	49	9	----	38	7	36	1,243	49	2.00
Household and others of special interest to women	110	19	48	13	502	----	32	25	1	32	15	2	709	31	1.14
Farm management and others of special interest to farmers	432	28	33	3	397	29	15	3	2	20	16	33	896	56	1.44
Political	37	18	10	7	50	45	2	19	----	----	----	11	100	40	.16
Others	140	16	28	36	388	9	26	53	----	30	29	53	614	17	.98
Total IV	1,656	44	234	31	2,540	51	191	15	5	15	84	28	4,713	4	7.56
V. News:															
News reports	215	57	119	34	2,079	20	6	7	----	----	45	16	2,466	14	3.96
Sport flashes	43	40	18	1	294	57	4	43	----	----	4	58	366	19	.59
Market, crop, and weather reports	17	54	51	38	403	39	----	5	----	----	32	58	506	14	.81
Total V	277	31	189	13	2,777	56	10	55	----	----	83	12	3,338	47	5.36
VI. Religious and devotional	285	34	44	17	1,482	56	129	59	5	46	15	19	1,963	51	3.15
VII. Special events:															
Meetings and occasions of civic interest	80	9	20	51	290	9	9	41	----	21	28	29	429	40	.69
Sports	98	39	35	16	220	----	12	59	2	30	4	59	374	23	.60
Other	25	33	2	15	57	56	3	18	2	15	3	37	94	54	.15
Total VII	204	21	58	22	568	5	25	58	5	6	37	5	898	57	1.44
VIII. Miscellaneous	30	41	19	20	132	2	29	24	2	55	166	10	380	32	.61
IX. Grand total	12,262	17	1,678	54	12,448	49	8,956	57	4,889	26	573	43	40,810	6	65.45
I. Music:															
Serious	1,724	23	114	14	453	18	1,065	56	639	26	47	6	4,044	23	6.48
Light	1,630	36	190	----	1,060	19	2,141	54	1,074	51	105	24	6,203	4	9.95
Popular	5,003	1	563	16	3,295	3	6,159	25	4,711	58	386	47	20,119	30	32.27
Other	237	41	74	15	906	55	616	30	452	50	50	58	2,339	9	3.75
Total I	8,595	41	941	45	5,715	35	9,983	45	6,879	5	590	15	32,706	6	52.45
II. Dramatic:															
General drama	2,430	30	200	29	372	25	1,024	19	8	46	20	41	4,057	10	6.50
Comedy scripts	369	43	18	40	103	8	116	18	----	----	2	1	609	50	.98
Children's drama	421	55	63	28	195	22	327	23	1	30	6	6	1,015	44	1.63
Total II	3,222	8	282	37	670	55	1,468	----	10	16	28	48	5,682	44	9.11
III Variety	2,912	31	235	52	1,177	53	806	13	301	39	75	49	5,509	57	8.84

TABLE VII.—*Types of programs broadcast for the week beginning Mar. 6, 1938*—Continued

Type of program	Total															
	Live talent						Electrical transcriptions		Records		Announcements		Total		Percent	
	Taken from national networks		Taken from regional networks		Originated locally											
	Hr.	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*	*Hr.*	*min.*		
IV. Talks and dialogues:																
Social and economic	556	29	93	9	671	1	87	31	5	------	37	26	1,450	36	2.33	
Literature, history, and general cultural	530	8	60	14	790	58	64	37	1	38	13	49	1,461	24	2.34	
Household and others of special interest to women	385	41	95	55	939	37	135	11	5	20	106	42	1,668	26	2.68	
Farm management and others of special interest to farmers	436	13	39	48	486	10	39	6	3	50	34	2	1,039	9	1.67	
Political	39	32	22	14	116	34	12	19	1	------	2	14	193	53	.31	
Others	302	25	45	22	700	20	58	56	4	30	189	-- ---	1,300	33	2.08	
Total IV	2,250	28	356	42	3,704	40	397	40	21	18	383	13	7,114	1	11.41	
V. News:																
News reports	531	17	238	------	3,214	32	12	4	----------		93	10	4,089	3	6.56	
Sport flashes	53	28	43	36	479	36	10	31	----------		8	30	595	41	.96	
Market, crop, and weather reports	18	38	57	31	505	43	1	25	----------		60	20	643	37	1.03	
Total V	603	23	339	7	4,199	51	24	------	----------		162	------	5,328	21	8.55	
VI. Religious and devotional	361	------	109	53	2,515	18	187	41	12	11	27	35	3,213	38	5.15	
VII. Special events:																
Meetings and occasions of civic interest	82	48	21	6	328	36	15	3	------	21	30	38	478	32	.77	
Sports	122	28	75	25	531	1	14	21	2	30	10	3	755	48	1.21	
Other	27	33	3	15	100	12	4	20	2	15	4	46	142	21	.23	
Total VII	232	49	99	46	959	49	33	44	5	6	45	27	1,376	41	2.21	
VIII. Miscellaneous	48	44	31	52	213	43	52	8	16	40	1,028	1	1,421	8	2.28	
IX. Grand total	18,226	44	2,397	34	19,187	44	12,953	11	7,216	15	2,341	8	62,352	36	100.00	

NOTE A.—Of the 629 responses accounted for in this table, 4 cover 2 stations each. Thus the table actually embraces data for 633 stations.

NOTE B.—Rebroadcast programs reported by 11 stations amounting to 15 hours 5 minutes of commercial time and 144 hours 41 minutes of sustaining time are included under the heading, "Live talent—Taken from regional networks."

NOTE C.—In addition to the time for announcements separately shown above, a total of 10,121 announcements and 15 hours 20 minutes for an unreported number of announcements are included in the total commercial time, and 1,487 announcements and 4 hours 22 minutes for an unreported number are included in the total sustaining time. The time of these announcements is included in the program time according to the type of rendition.

TABLE VIII.—*Types of programs broadcast for the week beginning Mar. 6, 1938, on a percentage basis*

[Summary of responses from broadcast stations to program questionnaire]

CLASS OF STATION AND TIME DESIGNATION

Type of program	Clear channel				Regional				Local			All classes
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part time	Unlimited	Day	Part time	
	Unlimited	Part time	Unlimited	Part time	High power	Other						
I. Commercial:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Music	10.887	14.400	9.902	11.160	6.450	11.075	16.227	15.396	12.112	13.439	18.428	12.419
Dramatic	20.787	16.165	12.227	6.873	13.069	8.863	2.031	3.586	1.998	.951	1.856	6.050
Variety	8.603	11.945	8.036	4.212	7.531	6.007	2.267	5.959	2.908	1.707	2.910	4.600
Talks and dialogues	6.989	6.526	5.009	3.721	5.486	4.460	3.546	3.028	2.924	2.475	2.866	3.850
News	4.026	1.057	2.818	2.752	3.606	3.626	2.586	1.991	3.073	2.437	2.987	3.191
Religious and devotional	.654	1.450	1.679	4.540	.853	1.779	2.806	2.165	2.201	1.589	2.472	2.004
Special events	.196	.....	.091	.778	.209	.814	.337	.873	.978	.523	1.121	.766
Miscellaneous	.898	.696	.924	2.159	1.268	1.589	1.771	2.392	1.693	1.781	2.352	1.669
Total I	53.040	52.239	40.686	36.195	38.472	38.213	31.571	35.390	27.887	24.902	34.992	34.549
II. Sustaining:												
Music	28.172	23.091	37.061	34.363	36.649	37.920	38.889	34.245	45.799	50.063	38.154	40.034
Dramatic	2.215	1.643	1.905	3.697	2.358	2.929	2.759	2.991	3.496	3.699	2.969	3.064
Variety	3.181	6.172	3.673	6.164	4.007	4.439	2.973	4.759	4.489	3.213	4.575	4.237
Talks and dialogues	6.955	6.998	8.000	9.454	8.463	7.579	9.706	9.830	6.880	5.832	6.621	7.559
News	3.386	6.011	3.280	5.963	4.076	4.624	7.695	5.929	5.842	5.706	5.655	5.355
Religious and devotional	2.095	2.319	3.218	1.860	2.929	2.430	4.256	4.466	3.422	4.400	4.135	3.150
Special events	.658	1.379	1.721	1.769	2.374	1.382	1.335	1.760	1.529	1.411	1.694	1.442
Miscellaneous	.298	.148	.456	.535	.672	.484	.816	.630	.656	.774	1.205	.610
Total II	46.960	47.761	59.314	63.805	61.528	61.787	68.429	64.610	72.113	75.098	65.008	65.451
III. Total:												
Music	39.059	37.491	46.963	45.523	43.099	48.995	55.116	49.641	57.911	63.502	56.582	52.453
Dramatic	23.002	17.808	14.132	10.570	15.427	11.792	4.790	6.577	5.494	4.650	4.825	9.114
Variety	11.784	18.117	11.709	10.376	11.538	10.446	5.240	10.718	7.397	4.920	7.485	8.837
Talks and dialogues	13.944	13.524	13.009	13.175	13.949	12.039	13.252	12.858	9.804	8.307	9.487	11.409
News	7.412	7.068	6.008	8.715	7.682	8.250	10.281	7.920	8.915	8.143	8.642	8.546
Religious and devotional	2.749	3.769	4.897	6.400	3.782	4.209	7.062	6.631	5.623	5.989	6.607	5.154
Special events	.854	1.379	1.812	2.547	2.583	2.196	1.672	2.633	2.507	1.934	2.815	2.208
Miscellaneous	1.196	.844	1.380	2.694	1.940	2.073	2 587	3.022	2.349	2.555	3.557	2.279
Total III	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000

NOTE.—Of the 629 responses accounted for in this table, 4 cover 2 stations each. Thus the table actually embraces data for 633 stations.

TABLE IX.—*Analysis of total population, total families, families owning radios, total retail sales of all retail stores, and total net sales (time, talent, etc.) of commercial broadcast stations, in the United States by States and broadcast regions*

State	Total United States population July 1, 1937 [1]	Total United States families July, 1937 [2]	Families owning radios Jan. 1, 1938 [3]			Retail sales of all United States retail stores, 1935 [3]		Total net sales (time, talent, etc.) of commercial broadcast stations, 1937 [4]		
			Number	Percent of total United States families	Percent of radio families	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
United States	129,257,000	32,641,000	26,666,500	82.00	100.00	$33,161,276	100.00	$81,649,718	100.00	$3.06
Northern district	83,087,000	21,167,000	18,673,100	88.00	70.02	23,466,400	70.76	57,147,840	69.99	3.06
Northeastern region	38,642,000	9,733,000	8,917,700	92.00	33.44	12,053,392	36.35	25,751,497	31.54	2.89
Connecticut	1,741,000	437,000	402,100	92.00	1.51	556,722	1.68	1,105,619	1.35	2.75
Delaware	261,000	67,000	57,600	86.00	.22	76,877	.23	1,411,852	1.73	3.42
Maryland	1,679,000	410,000	355,100	87.00	1.33	462,874	1.40			
Maine	856,000	221,000	201,100	91.00	.75	232,599	.70	600,830	.74	1.45
New Hampshire	510,000	136,000	124,400	92.00	.47	152,583	.46			
Vermont	383,000	99,000	88,600	90.00	.33	99,121	.30			
Massachusetts	4,426,000	1,104,000	1,019,200	92.00	3.82	1,461,180	4.41	2,977,308	3.65	2.92
New Jersey	4,343,000	1,098,000	1,022,500	93.00	3.84	1,220,299	3.68	2,914,967	3.57	2.85
New York	12,959,000	3,372,000	3,132,300	93.00	11.75	4,749,708	14.32	9,660,264	11.83	3.08
Pennsylvania	10,176,000	2,452,000	2,206,400	90.00	8.27	2,490,910	7.51	5,351,358	6.55	2.43
Rhode Island	681,000	169,000	155,500	92.00	.58	219,706	.66	646,335	.79	4.16
District of Columbia	627,000	168,000	152,900	91.00	.57	330,813	1.00	1,082,964	1.33	7.08
Great Lakes region	30,626,000	7,854,000	6,893,500	88.00	25.85	7,891,054	23.79	21,610,899	26.47	3.13
Illinois	7,878,000	2,063,000	1,857,100	90.00	6.96	2,173,069	6.55	6,180,421	7.57	3.33
Indiana	3,474,000	934,000	816,800	87.00	3.06	780,508	2.35	1,457,829	1.79	1.78
Kentucky	2,920,000	708,000	494,900	70.00	1.86	388,278	1.17	950,033	1.16	1.92
Michigan	4,830,000	1,220,000	1,122,200	92.00	4.21	1,398,236	4.19	3,714,294	4.55	3.31
Ohio	6,733,000	1,777,000	1,641,500	92.00	6.15	1,956,941	5.90	7,074,042	8.66	4.31
West Virginia	1,865,000	417,000	348,300	84.00	1.31	332,190	1.00	670,635	.82	1.93
Wisconsin	2,926,000	735,000	612,700	83.00	2.30	871,832	2.63	1,563,645	1.92	2.55
Midwest region	13,819,000	3,580,000	2,861,900	80.00	10.73	3,521,954	10.62	9,785,444	11.98	3.42
Iowa	2,552,000	680,000	577,800	85.00	2.17	650,029	1.96	1,821,734	2.23	3.15
Kansas	1,864,000	501,000	367,800	73.00	1.38	448,261	1.35	731,203	.90	1.99
Minnesota	2,652,000	652,000	556,000	85.00	2.09	820,010	2.47	2,042,269	2.50	3.67
Missouri	3,989,000	1,072,000	822,800	77.00	3.08	946,125	2.85	3,473,621	4.25	4.22

CHART 1

COMPARISON OF BROADCAST STATION NET SALES, 1937[1]

WITH

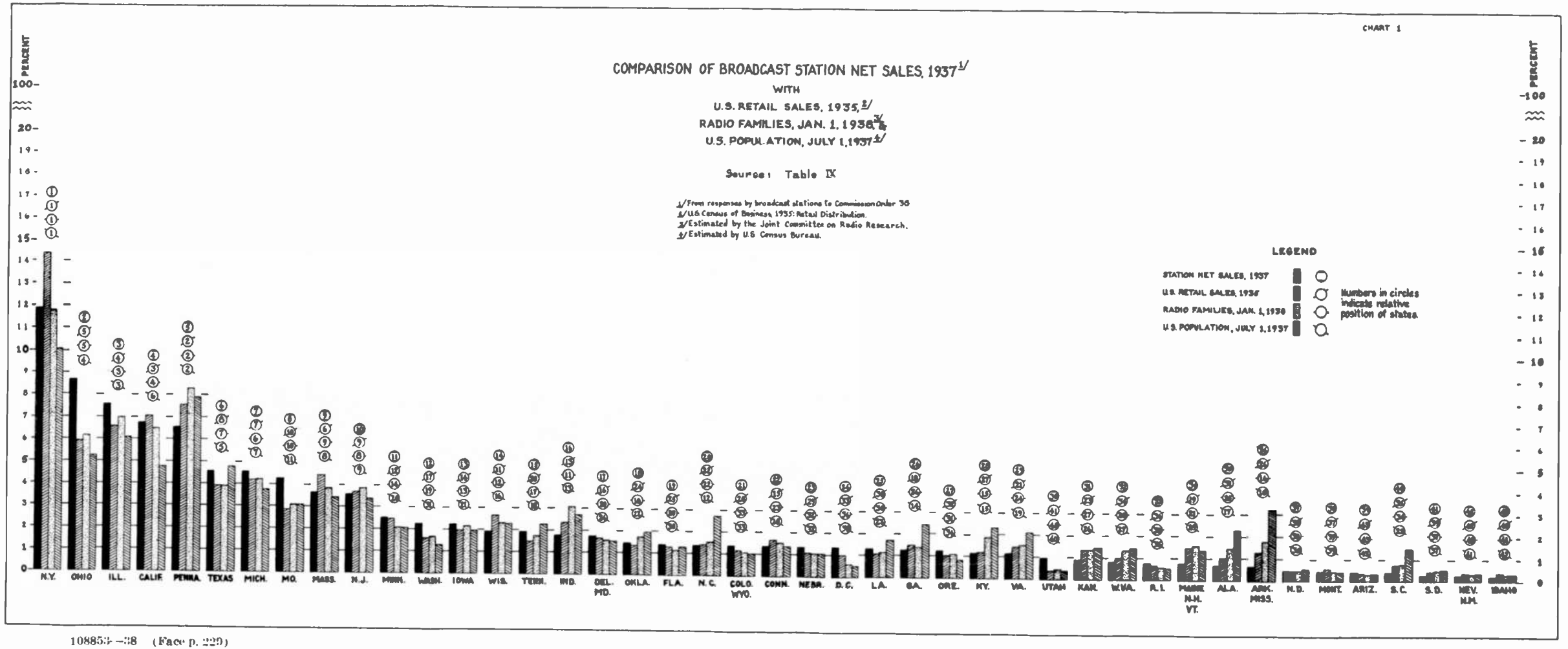
U.S. RETAIL SALES, 1935,[2]

RADIO FAMILIES, JAN. 1, 1938,[3]

U.S. POPULATION, JULY 1, 1937[4]

Source: Table IX

1/ From responses by broadcast stations to Commission Order 36
2/ U.S Census of Business, 1935: Retail Distribution.
3/ Estimated by the Joint Committee on Radio Research.
4/ Estimated by U.S. Census Bureau.



APPENDIX I

Decisions of the United States Court of Appeals for the District of Columbia in Broadcast Cases and Principles Enunciated Therein

The Great Western Broadcasting Association, Inc. and Intermountain Broadcasting Corporation Cases (Nos. 6852, 6853, and 6854)

These cases deal with the applications of Great Western Broadcasting Association for new radiobroadcast stations at Logan and Provo, Utah, and the application of Jack Powers and associates for a new station at Salt Lake City, Utah. The court held that the Commission did not err in denying the applications of Great Western Broadcasting Association because the evidence sustained the findings that the applications did not furnish complete information as to the ownership of the applicant and that the applicant did not have sufficient finances to insure the successful operation and construction of the stations.

The court dismissed the appeal of Intermountain Broadcasting Corporation, licensee of station KDYL, Salt Lake City, from the decision granting the application of Jack Powers and associates on the ground that this appellant had no appealable interest. The court said that appellant had not alleged in its notice of appeal that it would suffer pecuniary damage by the granting of the application and that appellant is restricted to the points urged in its notice of appeal. Appellant contended merely that the city of Salt Lake enjoyed all the service to which it was entitled but did not contend that the grant of the additional station would adversely affect its interests. Consequently, the court held the appellant had no appealable interest under section 402 (b) (2) of the Communications Act of 1934 and dismissed the appeal.

The Heitmeyer Case (No. 6762)

This was an appeal under section 2 (b) (1) of the Communications Act of 1934 from a decision of the Commission denying appellant's application for a permit to construct a new radiobroadcast station at Cheyenne, Wyo. The court reversed the Commission and remanded the case with instructions to proceed in accordance with the court's opinion.

The Commission found the applicant not financially qualified because he did not have sufficient capital unless he relied upon borrowed money which was obtained without giving security, except stock in a corporation to which the license was to be assigned in the event the applicant was successful in obtaining a license. The court held that in the absence of a Commission regulation to the contrary, an appellant can rely upon borrowed capital to prove his financial ability to construct and maintain a station, and that this is so even though the money lent to the applicant is not secured by collateral. The court also held that the Commission's "Statement of Facts and Grounds for Decision" did not constitute findings of fact as required by statute.

Upon receipt of the certified copy of opinion and judgment, the Commission recalled its "Statement of Facts and Grounds for Decision and Order" and reopened the case for further consideration. Thereafter, it designated the application of Heitmeyer for further hearing, together with several conflicting applications which were pending. Thereupon, the applicant, Heitmeyer, filed a bill of complaint for injunction in the United States District Court for the District of Columbia (No. 76291, *Heitmeyer* v. *McNinch, et al*). The Commission moved to dismiss the bill of complaint for injunction on the ground that the District Court of the United States for the District of Columbia had no jurisdiction in the cause for the reason that it involved the discretion and judgment of an administrative body authorized by law to act in the premises. That court denied the Commission's motion to dismiss, whereupon it took an appeal to the United States Court of Appeals for the District of Columbia, which appeal is now pending.

Nebraska	1,364,000	352,000	284,100	81.00	1.06	359,757	1.09	1,096,369	1.34	3.86
North Dakota	706,000	156,000	119,600	77.00	.45	150,208	.45	384,025	.47	3.21
South Dakota	692,000	167,000	132,900	80.00	.50	147,564	.45	236,223	.29	1.78
Southern district	33,539,000	7,914,000	4,766,900	60.00	17.88	5,400,579	16.29	13,138,725	16.09	2.76
Southeastern region	24,819,000	5,779,000	3,279,100	57.00	12.30	3,676,522	11.09	8,225,516	10.07	2.51
Alabama	2,895,000	670,000	375,200	56.00	1.41	337,217	1.02	556,225	.68	1.48
Arkansas	2,048,000	501,000	254,800	51.00	.96	240,724	.73	514,697	.63	1.11
Mississippi	2,023,000	494,000	207,000	42.00	.78	178,348	.54			
Florida	1,670,000	443,000	297,900	67.00	1.12	425,807	1.28	1,141,724	1.40	3.83
Georgia	3,085,000	716,000	370,800	52.00	1.39	484,693	1.46	1,015,856	1.24	2.74
Louisiana	2,132,000	510,000	297,400	58.00	1.11	344,393	1.04	1,050,722	1.29	3.53
North Carolina	3,492,000	736,000	408,600	55.00	1.53	463,219	1.40	1,123,457	1.38	2.75
South Carolina	1,875,000	407,000	207,300	51.00	.78	248,206	.75	329,292	.40	1.59
Tennessee	2,893,000	689,000	459,900	67.00	1.72	482,586	1.45	1,570,134	1.92	3.41
Virginia	2,706,000	613,000	400,200	65.00	1.50	471,329	1.42	923,409	1.13	2.31
South central region	8,720,000	2,135,000	1,487,800	70.00	5.58	1,724,057	5.20	4,913,209	6.02	3.30
Oklahoma	2,548,000	619,000	454,300	73.00	1.70	434,793	1.31	1,188,873	1.46	2.62
Texas	6,172,000	1,516,000	1,033,500	68.00	3.88	1,289,264	3.89	3,724,336	4.56	3.60
Western district	12,631,000	3,560,000	3,226,500	91.00	12.10	4,294,297	12.95	11,363,153	13.92	3.52
Mountain region	3,792,000	975,000	778,000	80.00	2.92	1,100,728	3.32	3,027,614	3.71	3.89
Arizona	412,000	104,000	79,600	77.00	.30	121,083	.37	333,629	.41	4.19
Colorado	1,071,000	288,000	233,500	81.00	.87	302,559	.91	1,126,634	1.38	3.98
Wyoming	235,000	62,000	49,800	80.00	.19	82,681	.25			
Idaho	493,000	124,000	98,700	80.00	.37	140,167	.42	193,335	.24	1.96
Montana	539,000	142,000	114,600	81.00	.43	189,457	.57	361,185	.44	3.15
Nevada	101,000	30,000	28,500	95.00	.11	43,932	.13	210,559	.26	2.32
New Mexico	422,000	102,000	62,300	61.00	.23	88,751	.27			
Utah	519,000	123,000	111,000	90.00	.42	132,098	.40	802,272	.98	7.23
Pacific region	8,839,000	2,585,000	2,448,500	95.00	9.18	3,193,569	9.63	8,335,539	10.21	3.40
California	6,154,000	1,818,000	1,719,800	95.00	6.45	2,329,009	7.02	5,505,111	6.74	3.20
Oregon	1,027,000	299,000	285,400	95.00	1.07	335,851	1.01	998,432	1.22	3.50
Washington	1,658,000	468,000	443,300	95.00	1.66	528,709	1.60	1,831,996	2.25	4.13

[1] Estimated by U. S. Census Bureau.
[2] Estimated by the Joint Committee on Radio Research.
[3] U. S. Census of Business, 1935: Retail Distribution.
[4] From responses by broadcast stations to Commission Order No. 38.

The Pulitzer Publishing Company Case (No. 6866)

This was an appeal from an order of the Commission granting a construction permit to the Star-Times Publishing Co., St. Louis, Mo., for a new radio station at that place. The appellant, Pulitzer Publishing Co., owner and operator of KSD in St. Louis, objected to the grant on the ground that it would adversely affect its economic interests in the city of St. Louis. It further contended that if any new or additional facilities were to be added to the city of St. Louis, appellant's pending application for increased facilities should be granted before a new licensee is permitted to enter the field. The court held, however, that a radio-broadcast station is not a public utility in the sense in which a railroad is a public utility and that the Commission, as a matter of positive duty, is not required to give the owner of an existing station priority to enlarge or extend its facilities because alone of the primacy of its grant. The court said that where the effect of granting an application for new license will be to destroy the ability of the holder of the old license to carry on in the public interest, the application should be denied. But that is not this case. The court sustained the Commission on the ground that the evidence sustained the findings made by the Commission.

Missouri Broadcasting Company Case (No. 6869)

This was an appeal by the Missouri Broadcasting Co. operating station WIL from a decision of the Commission granting the application of Star-Times Publishing Co. for a new station at St. Louis, Mo. Appellant contended that the decision of the Commission was invalid because the order was made first and the Commission's "Statement of Facts and Grounds for Decision" later. The court said:

> " * * * the act unquestionably requires the Commession in every case of appeal to file not only the record and its decision but a statement of the facts and a statement of the grounds of its decision. The exact language is—file a full statement in writing of the facts and grounds for its decision *as found and given by it*. The six words we have emphasized imply, we think, that the grounds of decision and a brief factual statement of the reasons therefor have been previously given, that is, previously to the filing of the full statement, i. e., findings of fact in this court. Certainly, this would be the reasonable and ordinary course because no commission exercising the judicial function ought to give a decision without knowing the grounds therefor and the statement of those grounds necessarily must be drawn from the facts found. If this rule be adopted the appellant will, when the Commission enters its order, know the grounds of the decision and will know whether he desires to appeal and will be able to frame intelligently his assignments of error. On the other hand, the Commission will not be inconvenienced by being required to include in its order a succinct statement of facts and grounds therefor since necessarily in every case the Commission will know why it is deciding as it is. We are not unmindful that the reduction of the factual findings to a concise statement in writing takes time and undoubtedly it was this consideration which moved Congress to afford the Commission extra time for filing its "full" statement in writing. And in this view there is no reason why the formal findings of fact—as is not unusual in cases either in law or equity—should not await the taking of the appeal. * * * "

The Tri-State Broadcasting Company Case (No. 6931)

This case arose from a decision of the Commission granting the application of Dorrance Roderick for a construction permit to erect a new station at El Paso, Tex. Appellant was the existing station at El Paso, Tex., and its appeal is predicated upon the contention that it would be adversely affected economically by the grant of the Roderick application. Appellant raised three points. First, that the Commission's finding of public need was not sufficient as a finding of fact. The court agreed with appellant. Second, that the Commission erred in failing to find on the question of whether or not ownership of the proposed station by Roderick would result in unfair and destructive competition to the appellant's station because Roderick is the owner of a

newspaper in El Paso so that as asserted his joint control of newspaper and broadcasting facilities would give him an unduly advantageous competitive position. The court held that there was no provision of statute or rule of law which forbids broadcasting by an owner of a newspaper and, hence, the absence of a finding on the topic of Roderick's ownership of a newspaper was not error. Third, appellant complained that certain testimony of Roderick, which was admitted by the Commission over objection was incompetent. The Commission urged that it was competent as the testimony of an expert but the court said the testimony admitted was clearly hearsay and that the witness had not qualified as an expert. The court, therefore, reversed the Commission and remanded the case to it for further proceedings.

The Saginaw Broadcasting Company Case (No. 6990)

This was an appeal from a decision of the Commission granting the application of Gross and Shields and denying the application of Saginaw Broadcasting Co. for a construction permit to erect a station at Saginaw, Mich. Prior to the appeal, appellant filed a petition for rehearing before the Commission under section 405 of the Communications Act of 1934. The Commission took no action with reference to the petition until the 20-day period from the effective date had expired. The petition for rehearing was denied on June 2, 1937, and an appeal was noted in the court of appeals on June 18, 1937. The first question presented to the court was whether or not the notice of appeal had been filed within the time limit fixed by section 402 (c) of the Communications Act of 1934, namely, 20 days from the effective date of the Commission's order. The court held the filing of the petition for rehearing suspended the running of the statutes and that therefore the appeal was timely. The court reversed the Commission on the ground that its decision was made without proper findings of fact.

The Red River Broadcasting Company Case (No. 6906)

This was an appeal from a decision of the Commission granting a construction permit to Fred A. Baxter, Superior, Wis., to erect a new broadcast station at that place. A motion to dismiss the appeal was filed by intervener on the ground, among others, that appellant failed to exhaust all its remedies before the Commission and has not brought itself into position to invoke jurisdiction of the court. The court sustained the motion to dismiss. The court said appellant's duty was to seek the first administrative remedy available to it from the Commission, and not having done so, the motion to dismiss must be granted.

Appellant complained it had not been given notice of hearing on the Baxter application and consequently the obligation to pursue its administrative remedies was not operative, but the court said:

> "There is nothing in the act which requires such notice under the circumstances here present or makes it a prerequisite to the seeking of administrative remedies which are otherwise available."

The court further said:

> "The right to administrative relief is a privilege afforded by law to persons who consider themselves interested or aggrieved; unless the interests of such a person are brought to the attention of the Commission through established procedual channels it will be impossible for it to give them proper consideration. The act and the rules of the Commission have made adequate provision therefor. The burden, therefore, is and properly should be upon an interested person to act affirmatively to protect himself. It is more reasonable to assume in this case a legislative intent that an interested person should be alert to protect his own interests than to assume that Congress intended the Commission to consider on its own motion the possible effect of its action in each case upon every person who might possibly be affected thereby. Such a person should not be entitled to sit back and wait until all interested persons who do so act have been heard and then complain that he has not been properly treated. * * *"

The Pottsville Case (No. 7016)

The Pottsville Broadcasting Co. appealed from the Commission's decision denying its application for a new broadcast station at Pottsville, Pa. The denial was based upon an alleged lack of financial ability because of a mutual mistake of law of appellant and the Commission. The applicant testified before the Commission to the effect that certain stock subscriptions would be paid "if and when the present application is granted and the requisite order secured from the Pennsylvania Securities Commission." The Commission held that the subscription was not binding without the approval of the Pennsylvania Securities Commission. The court said this was a mutual mistake of law and that it would be a silly business to perpetuate the error.

The Commission found that Drayton, the principal stockholder of the appellant corporation, was not a resident of Pottsville, was not familiar with its local broadcasting needs, and was interested in the proposed grant primarily for investment purposes. The court said that as this was intended to be a statement of policy that it should be applied with substantial uniformity, and that since it had not been so applied that it was arbitrary and capricious, and reversed the Commission, remanding the case to it for further proceedings.

The Pittsburgh Radio Supply House, Intermountain Broadcasting Corporation, and Head of the Lakes Broadcasting Company Cases (Nos. 7024, 7025, and 7027)

These appeals all arose out of the Commission's decision granting an application of WATR to change frequency and increase power and hours of operation. All three appellants are licensees of stations operating on 1290 kilocycles. Pittsburgh Radio Supply House and Head of the Lakes Broadcasting Co. filed applications with the Commission for increase in power from 1 to 5 kilowatts prior to the filing of the application of WATR. These applications were in violation of the Commission's rule 120 restricting the power of stations upon regional frequencies to 1 kilowatt at night. Those applications were designated for hearing but no date determined. Appellants' arguments are as follows: That the Commission erred in granting WATR's application prior to deciding the applications of Head of the Lakes and Pittsburgh Radio Supply House and that the granting of the application of WATR was arbitrary and capricious and not in accord with the weight of the evidence. The court dismissed all three applications and held that it was plain none of the appellants could appeal under section 402 (b) (1) because none of its applications had been refused, and since it was clear that none of them would suffer economic injury or objectionable interference they had no appealable interest.

With respect to the application of Pittsburgh Radio Supply House, which was in violation of rule 120, the court said:

> "Here Pittsburgh has applied for a grant which would be in direct violation of rule 120, and it can succeed in its objective only by inducing the Commission to change the rule. This is a matter so wholly of policy under the provisions of the act and so peculiarly within the special and expert knowledge of the Commission that to undertake to control it judicially would be clearly an impingement upon the jurisdiction of the Commission. The Commission has in the past considered whether rule 120 ought to be changed in the manner Pittsburgh requests, but no change has been made; and, while the question may be said to be still open, we have no reason to assume it will be changed and certainly no right to say that the Commission should suspend its functions pending its determination of that question. Hence, we think Pittsburgh has no appealable interest which we may consider here."

The Southland Industries and Woodmen of the World Life Insurance Association Cases (Nos. 7018 and 6994)

Appeals were taken in these cases while petitions for rehearing before the Commission were pending and undecided. The court dismissed both appeals on the ground that it had no jurisdiction in the case until action on the motion

to dismiss by the Commission had been had. The court refused to hear arguments on the merits in either case.

The Evangelical Lutheran Synod Case (No. 7150)

In this case the Commission moved to dismiss on the ground that the appeal was not in time, having been taken 21 days after the Commission had denied the petition for rehearing. Appellant contended that it was in time because a petition for rehearing on a related application had been denied some months later and that its appeal was filed within 20 days from the date of that denial. The court said that the motion to dismiss must be granted for two reasons:

> "If the applications of Evangelical Lutheran Synod and Pulitzer Publishing Co. were consolidated for hearing, with the result, as contended, that they were presented to and decided by the Commission as a single case so that for appeal purposes there is but a single decision of the Commission disposing of both applications (as to which we express no opinion), the pendency of a motion for rehearing by Pulitzer made the filing of the notice of appeal by Evangelical Lutheran Synod premature, and therefore this court has no jurisdiction (*Southland Industries, Incorporated*, v. *Federal Communications Commission*, — F. (2d) —, — App. D. C. — (decided June 15, 1938)).
>
> "If the applications were not so consolidated for hearing and if the decision of the Commission on the applications of Pulitzer Publishing Co. and Evangelical Lutheran Synod permits separate or separable appeals (which we need not decide to dispose of this motion), then we have no jurisdiction, because Evangelical Lutheran Synod's notice of appeal was filed late."

APPENDIX J

APPLICATIONS FOR RADIOTELEGRAPH AND RADIOTELEPHONE AUTHORIZATIONS

TELEGRAPH SECTION

For the period July 1, 1937, to June 30, 1938, there were received 14,935 applications and there were issued 13,088 authorizations. There are listed below the number of applications received and authorizations issued according to service and class of station.

	Applications received	Authorizations issued
Agriculture: Point-to-point telegraph	8	8
Aviation:		
Aeronautical	595	612
Aeronautical, Point-to-point	239	226
Aeronautical and aeronautical Point-to-point	67	67
Aircraft	1,880	1,802
Airport	141	75
Obstruction marker beacon	3	0
Instruction aircraft	1	0
Coastal, private:		
Coastal telegraph	5	2
Coastal harbor	0	0
Coastal, public:		
Coastal telegraph	149	122
Coastal harbor	120	98
Emergency:		
Marine fire	3	3
Police, municipal	621	523
Police, State	355	240
Police, zone	60	44
Police, interzone	45	36
Special emergency	128	126
Police, municipal and zone	7	2
Police, municipal and interzone	2	2
Police, State and zone	12	20
Police, State and zone, and special emergency	1	0
Experimental:		
General experimental	4,647	3,726
Special experimental	493	434
Fixed, private: Point-to-point telegraph	1	0
Fixed, public: Point-to-point telegraph	735	627
Fixed, public press: Point-to-point telegraph	109	83
Geophysical	255	252
Marine relay	58	53
Mobile press	5	3
Temporary: Motion picture	8	16
Ship	4,137	3,835
Joint applications: [1]		
Marine relay and coastal telegraph	6	8
Coastal and Point-to-point telegraph	4	8
Point-to-point telephone and point-to-point telegraph	1	1
Point-to-point telegraph, Point-to-point telephone, and aeronautical	1	0
Coastal, Point-to-point telegraph, and marine relay	1	2
Special	5	0
Aeronautical, aeronautical Point-to-point, special experimental, and aircraft	1	0
Wire certificates	26	32
	14,935	13,088

[1] Construction permits to be licensed for more than 1 service.

TELEPHONE SECTION

For the period July 1, 1937, to June 30, 1938, there were received 1,643 applications and there were issued 1,375 authorizations. There are listed below the number of applications received and authorizations issued according to service and class of station.

	Applications received	Authorizations issued
Coastal, private:		
Coastal harbor	6	5
Coastal telephone	1	0
Coastal, public:		
Coastal harbor	25	15
Coastal telephone	11	5
Ship	1,141	944
Experimental:		
General experimental	20	10
Special experimental	36	28
Fixed, private: Point-to-point telephone	6	0
Fixed, public: Point-to-point telephone	336	313
Joint applications:[1] Point-to-point and coastal harbor	24	10
Telephone wire certificates	37	45
Total	1,643	1,375

[1] Construction permits to be licensed for more than 1 service.

The following is a detailed report, arranged according to service, showing the number of new stations authorized, number of stations deleted, and the total number of authorized radio stations as of June 30, 1938:

	Number of stations June 30, 1937	New stations authorized	Stations deleted	Total number of stations June 30, 1938
Agriculture: Point-to-point telegraph	7	0	0	7
Aviation:				
Aeronautical	298	74	48	324
Aeronautical point-to-point	133	15	11	137
Aircraft	734	462	250	946
Airport	43	11	1	53
Obstruction marker beacons	[1] 4	0	4	0
Coastal, private:				
Coastal telegraph	3	0	0	3
Coastal harbor	2	0	0	2
Coastal, public:				
Coastal telegraph	101	10	0	111
Coastal harbor	79	27	4	102
Coastal telephone	4	0	0	4
Emergency:				
Municipal police	302	44	7	339
State police	136	40	10	166
Interzone police	14	7	0	21
Zone police	14	24	1	37
Marine fire	3	0	0	3
Special emergency	66	41	11	96
Experimental:				
General experimental	1,833	1,052	162	2,723
Special experimental	138	38	57	119
Fixed, private:				
Point-to-point telegraph	0	0	0	0
Point-to-point telephone	0	0	0	0
Fixed, public:				
Point-to-point telegraph	439	16	21	434
Point-to-point telephone	199	43	15	227
Fixed, public press: Point-to-point telegraph	75	0	17	58
Geophysical	201	27	10	218
Marine relay	40	0	0	40
Mobile press	5	0	2	3
Temporary: Motion picture	8	0	4	4
Ships	2,193	1,236	175	3,254
Total	7,074	3,167	810	9,431

[1] Class of station abolished.

Radiotelegraph and radiotelephone applications

	1934	1935	1936	1937	1938	Percent
Applications	8,139	8,221	9,751	12,192	16,578	+36
Authorizations	7,336	7,772	8,427	11,834	14,463	+22
Stations			5,693	7,151	9,431	+32

MISCELLANEOUS

	1936	1937	1938	Percent
Call letters assigned [1]	1,812	2,313	2,742	+19
Letters written	1,433	1,925	2,106	+14
Telegrams sent	688	1,174	1,133	

[1] Does not include blocks of call letters allocated to Government departments for assignment.

The Radio Service Bulletin, containing in tabular form a complete record of all new assignments, changes, and deletions relative to all classes of radio stations, commercial and Government, in the United States and its possessions, was issued semimonthly.

The following publications were prepared by the Commercial License Section: Municipal, State, zone, and interzone police stations; point-to-point telephone, telegraph, and press stations; aeronautical and aerounatical point-to-point stations; and coastal stations.

APPENDIX K

International telephone circuits showing connections to various foreign countries and distant possessions of the United States

Circuit terminals	Direct radio circuit or first link beyond the United States (1)	Extension from the United States to foreign country shown in preceding column (1) or to terminal of second radio circuit (2)	Extension from preceding column (2) to foreign country indicated (3)
North America:			
Alaska	Seattle-Juneau		
Canada	Land wires		
Cuba	Submarine cables		
Mexico	Land wires		
Costa Rica	Miami-San Jose		
Dominican Republic	Miami-Trujillo		
El Salvador	Miami-San Salvador		
Guatemala	Miami-Guatemala		
Haiti	Miami-Port au Prince		
	Miami-Tegucigalpa		
Honduras	Miami-La Lima		
Jamaica	Miami-Kingston		
Nicaragua	Miami-Managua		
Panama and Canal Zone.	Miami-Panama		
Puerto Rico	Miami-San Juan		
Bahamas	Miami-Nassau		
Bermuda	New York-Hamilton		
Europe:			
Austria	New York-London	Submarine cable and land wires.	
Balearic Islands	do	do	Radio Barcelona. Palma.
Belgium	do	Submarine cable	
Bulgaria	do	Submarine cable and land wires.	
Czechoslovakia	do	do	
Danzig	do	do	
Denmark	do	do	
Finland	do	do	
France	New York-Paris		
Germany	New York-London	Submarine cable and land wires.	
Gibraltar	do	do	
Great Britain (also Northern Ireland).			
Hungary	New York-London	Submarine cable and land wires.	
Iceland	do	London-Reykjavik	
Ireland	do	Submarine cable	
Italy	do	Submarine cable and land wires.	
Jugoslavia	do	do	
Latvia	do	do	
Lithuania	do	do	
Luxemburg	do	do	
Netherlands	do	Submarine cable	
Norway	do	Submarine cable and land wires.	
Poland	do	do	
Portugal	do	do	
Roumania	do	do	
Spain	do	do	
Sweden	do	do	
Switzerland	do	do	
South America:			
Argentina	New York-Buenos Aires		
Brazil	New York-Rio de Janeiro		
Chile	New York-Buenos Aires	Land wires	
	Miami-Bogota		
	Miami-Barranquilla		
	Miami-El Centro		

International telephone circuits showing connections to various foreign countries and distant possessions of the United States—Continued

Circuit terminals	Direct radio circuit or first link beyond the United States (1)	Extension from the United States to foreign country shown in preceding column (1) or to terminal of second radio circuit (2)	Extension from preceding column (2) to foreign country indicated (3)
Paraguay	New York-Buenos Aires	Land wires	
Peru	New York-Lima		
Uruguay	New York-Buenos Aires	Land wires	
Venezuela	Miami-Caracas		
Asia:			
China	San Francisco-Shanghai (Canton).		
French Indochina	New York-Paris	Paris-Saigon	
India	New York-London	London-Bombay	
Iraq	do	London-Cairo	Land wires.
Japan	San Francisco-Tokyo		
Palestine	New York-London	London-Cairo	Do.
Siam	do	Submarine cable and land wires to Berlin.	Berlin-Bangkok.
Syria	do	London-Cairo	Land wires.
Oceania:			
Australia (including Tasmania).	do	London-Sydney	
Hawaiian Islands	San Francisco-Honolulu		
Netherlands Indies:			
Java	San Francisco-Bandoeng		
Sumatra	do	Bandoeng-Medan	
Madeira	do	Submarine cable	
Bali	do	do	
Celebes	do	Bandoeng-Makassar	
Philippine Islands	San Francisco-Manila		
Africa:			
Canary Islands	New York-London	Submarine cable and land wires to Madrid.	Madrid-Tenariffe.
Algeria	New York-Paris	Paris-Algiers	
Egypt	New York-London	London-Cairo	
French Morocco	New York-Paris	Paris-Rabat	
Kenya	New York-London	London-Nairobi	
Spanish Morocco	do	Submarine cable and land wires.	
Tunisia	New York-Paris	Paris-Algiers	
Union of South Africa.	New York-London	London-Cape Town	

APPENDIX L

Amateur Section

Applications for amateur radio privileges continued to reach the Commission at a rate exceeding a hundred per business day. In the following figures a defective application, corrected and filed again, is counted a second time, but in much larger numbers applications made jointly for operator and station licenses are counted as one:

Amateur radio applications

Receipts:		
Pending July 1, 1937	536	
Received during the fiscal year	36,402	
		36,938
Disposals:		
Approved	23,427	
Returned to applicants	6,533	
Referred to other Federal agencies, etc	283	
Failed required examinations	5,805	
		36,048
Pending, close of June 30, 1938		890

About a third of the applications were for new or increased privileges, entailing examinations, given at Washington and many points in the States, Territories, and possessions. In the following figures an individual is counted twice if he failed and after a required wait of 3 months repeated the examination, or if a single examination comprised both classes A and B envelopes:

Amateur radio examinations

Nature	Number	Passed	Failed	Percent failed
Code tests	10,249	7,060	3,189	31
Written tests:				
Class A envelope [1]	2,137	1,416	721	34
Class B envelope [1]	4,832	3,612	1,220	25
Class C envelope	2,062	1,500	562	27
Abridged (rules 405–406)	956	764	192	20
Total	9,987	7,292	2,695	27

[1] In 247 instances the examination included both A and B envelopes.

A radio amateur ordinarily holds two licenses, one for his station and one for himself as an operator, commonly joined in card form. Some hold one without the other and occasionally an amateur holds a second station license, ordinarily in behalf of an amateur radio society or a group of amateurs connected with a military or Naval Reserve unit.

Amateur radio authorizations

Station licenses:		
New	5,606	
Renewed	7,948	
Modified and reissued	7,755	
		21,309
Operator licenses	21,239	
Operator-license endorsements	1,480	
Duplicates of lost or destroyed licenses	525	
		23,244
Total		44,553

While the issuance of new licenses added many newcomers to the holders of amateur licenses, there were also many eliminations due to licenses expiring without renewal, etc. However, the net effect of all such changes was a continued increase in numbers represented by licenses valid of record.

Amateur radio-station licenses valid of record

Valid at close of fiscal year 1937		47,444
Plus:		
Expired but not deleted June 30, 1937	1,336	
New issues, fiscal year 1938	5,606	
		6,942
		54,386
Less eliminations, fiscal year 1938:		
Revocations	2	
Cancelations	153	
Deletions	3,247	
Expirations (renewal yet possible)	1,073	
		4,475
Valid of record, close of June 30, 1938		49,911

The amateur license holders are distributed widely. The division between call areas in terms of station licenses valid of record June 30 was approximately as follows:

Amateur radio stations, June 30, 1938

Call area	States, etc.	Stations
1	New England	4,925
2	Southern New York, northern New Jersey	5,600
3	Southern New Jersey, eastern Pennsylvania, and Delaware to Virginia	3,500
4	North Carolina to Florida, Alabama, Tennessee, Puerto Rico, and the Virgin Islands	2,750
5	Arkansas, Oklahoma, and Mississippi to New Mexico	3,225
6	Arizona, California, Nevada, Utah, and Pacific Islands	7,100
7	Alaska, Idaho, Montana, Oregon, Washington, and Wyoming	3,150
8	Ohio, West Virginia, and parts of Michigan, New York, and Pennsylvania	8,350
9	Balance of interior United States	11,300

○

FIFTH ANNUAL REPORT

FEDERAL COMMUNICATIONS COMMISSION

FISCAL YEAR ENDED JUNE 30, 1939

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1940

MEMBERS OF THE FEDERAL COMMUNICATIONS COMMISSION

(AS OF NOVEMBER 1, 1939)

JAMES LAWRENCE FLY,[1] *Chairman*

PAUL A. WALKER	GEORGE HENRY PAYNE
NORMAN S. CASE	FREDERICK I. THOMPSON [2]
T. A. M. CRAVEN	THAD H. BROWN

[1] Succeeded Frank R. McNinch, resigned September 1, 1939.

[2] Appointed April 8, 1939, to succeed Eugene O. Sykes, resigned.

LETTER OF TRANSMITTAL

FEDERAL COMMUNICATIONS COMMISSION,
WASHINGTON, D. C., *November 15, 1939.*

To the Congress of the United States;

It is my pleasure to transmit herewith the Fifth Annual Report of the Federal Communications Commission for the fiscal year ended June 30, 1939, pursuant to the provisions of section 4 (k) of the Communications Act of 1934, as amended.

The report as a whole reflects the increasing volume and importance of the Commission's widely varied regulatory problems. In efficiency and in scope the communications industry is constantly progressing. Its complexities are myriad; its national significance great. The pressing need for a numerically adequate staff and for the effective facilities which will enable the Commission to discharge its responsibilities under the law has created a situation which warrants particular consideration by the Congress.

Respectfully.

JAMES LAWRENCE FLY, *Chairman.*

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APPENDIX I

CHAPTER I

Introductory Summary

INTRODUCTORY SUMMARY

The Federal Communications Commission has, since the outbreak of the European war, undertaken new and exacting burdens in connection with the preservation of neutrality and the important relationship of all forms of communications to the national defense.

Its policing of the ether waves must now take cognizance of the role assigned to radio in national emergency. For the war in Europe is the first major conflict to be fought on the land, on the sea, and in the air to the inclusion of the ether. In the World War there was no broadcast or high-frequency communication problem as we know it today; only wireless. Today the United States has some 800 broadcast stations (not to mention 55,000 amateur stations and more than 5,000 commercial stations), whose air messages filter to more than 40,000,000 receiving sets. And international broadcasts, thanks to the short wave, now cut across time and distance to challenge any claim of isolation.

Until the Federal Communications Commission was created in 1934, domestic regulation of communications services was a patchwork affair. Jurisdiction was shared by the Post Office Department, the Interstate Commerce Commission, and the Federal Radio Commission (which had been set up in 1927 to handle that newcomer in the field). The Communications Act of 1934 not only coordinated supervision under a single agency—the Federal Communications Commission—but established the basis for a national communications policy.

The Commission has since pursued the mandate of Congress set forth in section 1 of the act, as amended:

> For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication, and for the purpose of securing a more effective execution of this policy by centralizing authority heretofore granted by law to several agencies and by granting additional authority with respect to interstate and foreign commerce in wire and radio communication, there is hereby created a Commission to be known as the "Federal Communications Commission," which shall be constituted as hereinafter provided and which shall execute and enforce the provisions of this act.

In its early years the Commission functioned with three divisions—Broadcast, Telephone, and Telegraph—but today it operates as a single unit. The Examining Department was abolished in December 1938. Hearings are now conducted by Commissioners or suitably qualified employees.

During the past fiscal year the Commission held 550 regular meetings, presided at 143 hearings, heard 86 oral arguments en banc, issued 480 final orders as a result of such hearings, and designated 490 applications for formal hearing. In addition, 467 formal motions were acted upon by the Commission, and such interlocutory matters were disposed of through the Motions Docket.

Besides spending at least three days of every week at regular meetings of the full Commission, the commissioners meet as committees, individually preside at hearings in particular matters, hold informal staff conferences, and discharge special duties assigned to them.

For the fiscal year reported, the Commission received and studied nearly 17,000 tariff schedules. In the interest of safety at sea, approximately 16,500 ship inspections were made. Some 1,200 point-to-point telephone applications were examined. More than 550 new police-radio systems—mostly in the smaller communities—were authorized, and nearly 250 forestry-radio systems received Commission approval.

In the same period 7,500 applications for various types of broadcast stations were received. Of that number, about 1,650 were for new or increased facilities, and nearly 2,300 were renewals. In that same time the Commission heard oral argument in more than 100 broadcast matters, and adopted formal decisions in more than 200 such cases. Investigation was made of 265 broadcast stations, and licenses of eight stations were canceled or otherwise vacated.

Public service is the basic consideration in licensing broadcast stations. "Just as it may be a powerful instrumentality for public good," opined the Commission in a recent case, "so a broadcast station has potentialities of causing great public harm, and it is accordingly imperative that the limited broadcast channels belonging to the public should be entrusted to those who have a sense of public responsibility."

The continued growth of the broadcast industry was reflected in the number of new stations and increased facilities. Twenty-nine new stations were licensed and 76 applications were denied. Effective August 1, 1939, the Commission increased the license period for standard broadcast stations from 6 months to 1 year.

In 1938, the Commission began inquiry into chain broadcasting practices with respect to contractual relationship in programs and advertising, competitive practices, and network policies in general. Hearings, which ran 73 days, from November 1938 to May 1939 produced nearly 100 witnesses, 700 exhibits, and almost 9,000 pages of testimony. The report, when issued, will be the basis of possible new regulations and recommendations to Congress. The special committee assigned to this task comprises Commissioners Brown, Walker, and Thompson.

A notable contribution during the year was the adoption of revised rules and regulations governing all radio services. Chief among these were the rules affecting standard broadcast stations which were made effective August 1, 1939. Hearings were held from June 6 to June 30, 1938, before a committee composed of Commissioners Case, committee chairman; Craven, and Payne. More than 2,500 pages of testimony and more than 200 exhibits were considered. Forty-five representatives of broadcast equipment manufacturers attended the conference which preceded adoption of the Standards of Good Engineering Practice which were incorporated in this exhaustive work.

Commissioner Brown is completing a detailed "Special Study of the Radio Requirements Necessary or Desirable for Safety Purposes for Ships Navigating the Great Lakes and the Inland Waters of the United States," which was ordered by Congress. Hearings were held at Cleveland, Detroit, and elsewhere, and Canadian authorities have cooperated in working out standards to make more effective the

International Convention for Safety of Life at Sea and for other mutual purposes.

The Commission has active representation on the Interdepartment Radio Advisory Committee which allots frequencies to Government radio stations. Of more than 9,500 such present assignments, more than half—nearly 5,500—were made during the fiscal year.

Interest in the amateur field was attested in the nearly 50,000 types of licenses issued to these operators. In addition, nearly 18,000 commercial operator applications were received, and more than 15,000 were granted.

The year witnessed increased interest in television. For the first time, the Commission received applications for use of television frequencies in public service. A special committee, consisting of Commissioners Craven, as chairman; Brown, and Case, made painstaking inquiry into the present status of television. In its first report this committee found that television has barely emerged from the "technical" research stage of development and that it would be unwise for the Commission to adopt standards that may "freeze" further progress. The committee stressed that careful coordination is essential to television's progress. Extreme limitation of television channels also presents a serious problem. Only seven of the 19 channels allocated to television have been satisfactorily developed technically for television service. The committee's second report—on television application—was in final preparation.

On June 13, 1939, the Commission reported on its special investigation of the telephone industry. This inquiry was inaugurated by Public Resolution No. 8 of the Seventy-fourth Congress and was begun by Commissioner Walker, as chairman of the former Telephone Division of the Commission. The final report, consisting of approximately 900 mimeographed pages, traced the history, development, and operating practices of the largest single business in the world—the Bell System. Savings to telephone subscribers of more than $30,000,000 to date through rate reductions resulting from this investigation justified Congress' reference that "the American people are entitled to know if they are being overcharged for this service even though they may be satisfied with the service." The report made 9 specific recommendations looking to stricter regulation of the industry.

In 1935, the Commission had made certain legislative recommendations with respect to telegraph companies. Pursuant to Senate Resolution 95, Seventy-sixth Congress, first session, which directed the Senate Interstate Commerce Committee to investigate the telegraph industry with a view to possible merger, a Senate subcommittee headed by Senator Burton K. Wheeler of Montana is utilizing records and other services of the Commission.

During the year, the Commission undertook to define the nature of services to be rendered by international broadcast. On May 23, 1939, it issued specific rules and regulations governing such international service, which marked a new policy in opening these channels to commercial programs.

The subsequent outbreak of the European war introduced such complications that a committee, composed of Chairman Fly and Commissioners Brown and Craven, was appointed to maintain contact with other Government agencies, as well as with the industry, to study and report on new problems presented.

In cooperation with the State Department and other Government agencies, the Commission has effected arrangements with other American republics in working out mutual communications problems. The Commission is charged with carrying out certain provisions of treaties and international agreements to which the United States is a party.

In administering and enforcing laws, regulations, and international treaties pertaining to radio, the Commission effectively utilizes a field staff. The ether waves are, in effect, patrolled by field offices at strategic points throughout the United States and its possessions, augmented by seven radio monitoring stations located at Atlanta, Baltimore, Boston, Grand Island, Nebr.; Great Lakes, Ill.; San Pedro, Calif., and Portland, Oreg. Mobile equipment, additions to which the Commission urgently needs, is useful in tracing unlicensed stations and, at the same time, maintaining an effective neutrality patrol of the entire radio spectrum.

Through its Engineering Department, the Commission has investigated many communication techniques and refinements. It has made considerable study of frequency modulation, a subject now commanding much broadcast interest. The Commission's engineers have also given attention to directional antennas, facsimile reproducers, and a wide variety of other devices to improve the communication services. At the same time these engineers are working to reduce interference from electromedical and other low-power radio-frequency electrical apparatus.

The most comprehensive study of sunspot effect on communications yet undertaken has been begun by the Commission's engineering staff. Several new types of carrier telephone systems have been developed by the industry and are being closely followed. One type permits 15 telephone channels over a single pair of open wires. The pioneer experimental coaxial cable system between New York and Philadelphia has resulted in installation of the first commercial system of this type, from Minneapolis to Stevens Point, Wis., a distance of nearly 200 miles. This one small cable will be capable of transmitting 480 simultaneous telephone conversations. Other possibilities with respect to message-telegraph communications are 12 times greater.

Other experimental and research activities included charting ground frequency wave field intensities, experiment with automatic devices on shipboard to receive distress signals, and comparative study of frequency modulation and amplitude modulation.

There were no amendments to the Communications Act during the year. This report makes no recommendation for new legislation with respect to the act.

However, the Commission is seriously concerned about its lack of personnel and equipment to carry out the increased duties, particularly in the field of radio monitoring, and in the better preparation of cases involving the issuance of radio licenses. This is more fully discussed in the chapter, Recommendations to Congress.

CHAPTER II

General

1. ORGANIZATION
2. PROCEDURE
3. LEGISLATION
4. INTERNATIONAL MATTERS
5. INTERDEPARTMENT RADIO ADVISORY COMMITTEE
6. EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATIONS
7. PUBLICATIONS

1. ORGANIZATION

The Commission, composed of seven members, functions as a unit with respect to all duties which it performs under the Communications Act, other laws, and international agreements. During the first 3 years of its existence, the Commission operated largely through three divisions (Broadcast, Telephone, and Telegraph). Effective November 15, 1937, these divisions were abolished.

Supplementing the general unit plan, under which the Commission directly supervises all its activities, a delegation of responsibility with respect to certain classes of matters has been effected. Committees of the Commission, consisting usually of three members, have been delegated to make special studies and supervise particular undertakings. Detailed activities have been delegated to individual Commissioners and the heads of certain departments. Special care, however, has been exercised to reserve to the Commission as a whole all important policy determinations.

The only change in the membership of the Commission during the fiscal year was appointment, on April 8, 1939, of Frederick I. Thompson to fill the unexpired term ending June 30, 1941, caused by the resignation of Commissioner Eugene O. Sykes. Commissioner Paul A. Walker, whose term expired June 30, 1939, was reappointed, for seven years. (Subsequently, on September 1, 1939, James Lawrence Fly succeeded Frank R. McNinch as Chairman, to complete the unexpired term of the late Anning S. Prall, ending June 30, 1942.)

DEPARTMENTS

The staff organization consists of the following departments:

Accounting, Statistical, and Tariff Department, whose functions include matters of accounting regulation, compilation and analysis of statistics, and tariff analysis and regulations.

Engineering Department, whose functions include the engineering phases of broadcast, common carrier, and private and ship service regulation and enforcement; international and interdepartmental matters; supervision of the field staff; and technical engineering information and research.

Law Department, whose functions include the legal phases of radio licensing and of common carrier regulation; administration (including legislation, rule-making, and international matters) and litigation before the courts.

Secretary's Office which has charge of all matters of internal administration.

The heads of the Commission's departments meet regularly as a Committee on Rules for the consideration, looking to recommendations to the Commission, of proposals for new or revised rules and regulations, and upon other matters of administration, and by means of the functioning of this Committee coordination of Commission activities has been further promoted.

2. PROCEDURE

The procedure under which hearings are conducted and the procedural steps leading up to final action by the Commission were revised in several important respects during the year. From the standpoint of internal administration, the changes made have simplified and expedited the process; under the new procedural rules, the speeding up of the process has proved possible without sacrifice of thorough-going consideration of the merits of the matters the Commission is called upon to act upon. At the close of the fiscal year there were only 25 pending and undecided cases, a very considerable reduction from the number pending at the close of the previous year.

Formerly it was the practice of the Commission to include in the issues upon which hearings on applications were to be held not only those matters on which the Commission entertained doubt but issues which required affirmative proof of all items contained in the applications. As a result, the task of preparation for hearings was rendered extremely burdensome, and hearings were unnecessarily prolonged by the applicant's tedious proof of many facts not really in controversy. The Commission has now undertaken the burden of determining and specifying limited issues which are actually controversial in character and upon which the result of the proceeding must turn.

Under its former rules the Commission permitted any party to intervene if his petition disclosed a "substantial interest in the subject matter." Furthermore the Commission designated as parties to its hearings those persons shown by its records to have some potential interest, whether or not such persons were known to have an intention to appear. The effects of comparatively unrestricted intervention and of automatic inclusion of parties to the proceeding were the unnecessary prolongation of discussion of noncontroversial issues and the unnecessary multiplication of evidence on relevant issues, due to the cross-examination to which witnesses were subjected by the various parties. The Commission's rules now require all parties who desire to appear in opposition to an application to file petitions to intervene, by means of which their interests may be tested, and parties are required to make a showing that the requested intervention will be in the public interest. At the same time, the Commission has made specific provision for the filing and consideration of motions for enlargement of the issues, a further safeguard for the protection of interests of applicants and other parties.

Following abolition of the Examining Department on November 9, 1938, the Commission changed its entire post-hearing procedure. In substitution for the plan under which the facts developed in hearings were reported by examiners, the practice has been set up of requiring all parties to proceedings to submit proposed findings of fact, following which proposed findings and conclusions are issued by the Commission. To these proposed decisions the parties have full opportunity to file exceptions upon which they may base oral argument before the Commission. Benefits derived from the new procedure include better preparation of cases by practitioners, with resulting reduction in size of records, simplification of the problem of preparing decisions and improvement generally, in speeding up, accuracy, and substantive comprehensiveness and utility of decisions. Under the new procedure the standards of "fair play" in reaching final

determinations, as laid down by the courts, have been fully met. The parties are notified in advance of the grounds upon which the Commission proposes to take action and opportunity is given for consideration of their objections. Thus, the proprieties as set forth in the second *Morgan* case [1] are completely satisfied.

As a further measure for the improvement of its procedure, the Commission on January 1, 1939, made provision for the holding of oral argument on all interlocutory pleadings and motions. Previously these motions were disposed of by the Commission without opportunity for argument, and thus without full opportunity for interested parties to make a contest. These interlocutory matters are now placed on a Motions Docket presided over by an individual Commissioner, which is called Friday of each week. During the period January 1 to June 30, 1939, 345 motions and petitions were disposed of on the Motions Docket.

3. LEGISLATION

The basic law under which the Commission functions is the Communications Act of 1934, as amended. There were no amendments to the Communications Act during the fiscal year 1939.

On June 19, 1939, Senate Resolution 95 was adopted, which authorized an investigation of the telegraph industry in the United States by the Interstate Commerce Committee of the United States Senate. Pursuant to this resolution, a subcommittee of the Interstate Commerce Committee, headed by Senator Burton K. Wheeler, of Montana, was directed to conduct the study. The Commission has cooperated with this subcommittee in the furnishing of statistical data, and is lending its facilities and records, as requested. Also, representatives of the Commission have appeared and given testimony at the hearings on the resolution.

The Commission submitted to Congress its report on the special telephone investigation, which contains a number of proposals for new legislation looking to more comprehensive and effective regulation of the telephone industry. These proposals are more fully reviewed elsewhere in this report.

A number of matters were studied with a view to the possibility of subsequent recommendations for legislation.

Various measures were introduced in Congress affecting activities of the Commission, and the Commission was requested by the various congressional committees to furnish reports and comments on a large number of these bills. A list of the measures on which the Commission furnished information, data, and recommendations to Congress during the year is contained in the Appendixes.

4. INTERNATIONAL MATTERS

GENERAL

The Commission has collaborated with the Department of State in international matters involving communications, including radio, wire, and cable services. During the last fiscal year two international communications conferences were held in which representatives of the Commission participated, one in Guatemala City, Guatemala,

[1] *Morgan* v. *United States*, 304 U. S. 1.

in December 1938 and one in Cracow, Poland, in May 1939. These conferences are discussed separately hereafter.

In addition, the Commission has participated in preparatory work for future international conferences, particularly the meeting of the International Consulting Committee on Radio (C. C. I. R.) scheduled to be held in Stockholm, Sweden, in June 1940, and the Inter-American Radio Conference to be held in Santiago, Chile, in January 1940.

A vast amount of correspondence relative to international problems has been handled, and an accurate record of international communications statistics is maintained so that such information is available upon request. The Commission compiles lists of the international broadcast stations of the world, as well as all Canadian, Mexican, and Cuban broadcast stations.

The work involved in the notification of radio frequencies to the Bureau of the International Telecommunication Union, Berne, Switzerland, has been continued, including general supervision of the Radio Service Bulletin issued semimonthly by the Commission.

CENTRAL AMERICAN CONFERENCE

The Regional Radio Conference of Central America, Panama, and the Canal Zone was in session from November 24 to December 8, 1938.

The principal subject before the conference was the allocation of the frequency band 2300–2400 kilocycles, in accordance with the provisions of article 7, paragraph 8, section 1, subsection 3, division (b) and (c) of the General Radio Regulations of Cairo, 1938, annexed to the International Telecommunications Convention of Madrid, 1932. The Convention, by unanimous vote, recognized the special needs for tropical broadcasting in the Central American area without prejudicing the interests of either the military departments or non-Government radio as represented by the Commission.

CRACOW RADIO CONFERENCE

By designation of the President, Mr. E. M. Webster, Assistant Chief Engineer of the Commission, attended the meeting of the subcommittee of the Third World Conference of Radiotelegraph Experts for Aeronautics at Cracow, Poland, on May 19, 1939.

The conference produced a set of recommendations addressed to the interested governments for study with the expectation that final conclusions would be reached at a future "World Conference of Radiotelegraph Experts for Aeronautics" at Berlin in February of 1940. Tentative arrangements were also concluded among the representatives of the countries particularly concerned with flights across the North Atlantic relative to the use of the radio frequencies assigned to the route by the Cairo Radio Conference of 1938, effective September 1, 1939.

INTERCONTINENTAL AVIATION

In view of the fact that, except for Government stations, all aeronautical radio in the United States is subject to the licensing authority of the Commission, any arrangements made in regard to allocation of frequencies and to the use of radio by aircraft flights to and from the United States must be coordinated with the Communications Act and the policies of the Commission.

The number of intercontinental aircraft flights is rapidly increasing and the radio problems in their connection have increased proportionately. These flights involve coordination with radio stations of foreign countries, and accordingly increased consultation with foreign governments through conference is to be expected.

NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT

Considerable study has been given by the Commission to the placing into effect of the North American Regional Broadcasting Agreement which will go a long way in clearing problems among broadcasting stations in the North American region. This agreement, which has now been ratified by Canada, Cuba, Haiti, and the United States of America, will be made effective after approval by the Mexican Government.

INTERNATIONAL SCIENTIFIC RADIO UNION

The International Scientific Radio Union is an international scientific organization which has contributed important studies on the scientific aspects of radio, especially in the field of radio wave propagation. The Chief of the International Division attended the General Assembly of the International Scientific Radio Union held in Venice, Italy, in September 1938 as a delegate for the National Research Council.

COMMITTEE ON COOPERATION WITH AMERICAN REPUBLICS

The Chief of the International Division has participated regularly in the work of the Committee on Cooperation with the American Republics, which has met periodically in the Department of State under the chairmanship of the Under Secretary of State, Mr. Sumner Welles.

5. INTERDEPARTMENT RADIO ADVISORY COMMITTEE

The representatives of the Commission have devoted much time and effort during the fiscal year to the work of the Interdepartment Radio Advisory Committee. This Committee is the Government committee established for the purpose of advising the President with reference to the assignment of frequencies to Government radio stations, under the Communications Act of 1934, as amended. The Committee has had frequent meetings and has approved the assignment of 5,425 frequencies for Government radio stations during the past year. At the present time there are 9,508 active assignments to Government radio stations, all of which have been recommended by the Committee since its establishment. In view of the increasing magnitude and importance of the Committee's work, increased attention was given to systematizing the assignment of frequencies to all Government radio stations. A set of principles was developed and coordinated with the practices of the Federal Communications Commission in its assignment of frequencies to non-Government stations. Definitions of classes of stations were adopted and a system of symbols indicating restrictions on frequency assignments was developed. On April 4, 1939, the Committee elected Mr. E. K. Jett, Chief Engineer of the Commission, as its chairman to succeed Judge E. O. Sykes, formerly member of the Commission, who resigned.

6. EXPERIMENTAL, RESEARCH, AND TECHNICAL INVESTIGATIONS

The experimental, research, and technical investigations undertaken by the Commission during the year included the following:

1. *Investigation of necessary power for ship transmitters.*—Analysis of the mass of data obtained, the results of an investigation of over 100 ship antennas of the measurements of continuous recordings of average noise over a period of 2,311.5 hours and the results of over 100 separate tests of the ability of ship operators to copy code signals through varying amounts of static, required approximately 3 months' time, after which a report was prepared for use at the ship power hearing of November 11, 1938.

2. *Preparation of ground wave field intensity charts.*—For use in connection with the Standards of Good Engineering Practice Governing Standard Broadcast Stations.

3. *Study of the distribution of received sky wave field intensities of broadcast stations with time.*

4. *Interference to broadcast reception caused by atmospheric noise.*

5. *Eleven-Year sunspot cycle recording program.*—An accurate knowledge of field intensity and of atmospheric noise is essential in order to have a measure of the present service areas of broadcast stations and a measure of the expected improvements of any proposed reallocations. This program involves the measurement of approximately 20 different broadcast stations by the Commission's monitoring stations at Baltimore, Grand Island, and Portland, Oreg. The survey, if continued over the sunspot cycle as contemplated, will constitute the most extensive and comprehensive investigation of radio wave propagation ever made.

6. *Investigation of the performance and reliability of automatic alarms used on board ship for the reception of distress signals.*

7. *Investigation of the methods of measuring field intensity and noise at the various frequencies utilized by the different radio services.*

8. *Comparative study of frequency modulation and amplitude modulation.*—Demonstrations, through actual field tests of the results of frequency modulated transmissions as compared to amplitude modulated transmissions, that have been witnessed by members of the Commission, have revealed many interesting factors requiring serious study. Most impressive of these is the substantial improvement with respect to freedom from noise caused by the ignition systems of automobiles, also demonstrations indicating the possibility of operating frequency modulated transmitters in different cities on the same frequency while at the same time providing service areas practically free from interference.

9. *Investigations of the extent and of the necessary methods of minimizing the interference being caused to radio communications by the operation of diathermy and other electromedical apparatus.*—Complaints of interference to radio reception caused by the operation of therapeutic machines have increased materially during the year. A thorough study of the known methods of eliminating the interference at the source through the use of filters and metallic screens was made by the Commission's field force during the year from which it is known that from an engineering standpoint the solution of the problem is simple. From the standpoint of the manufacturers and the medical profession the solution is encumbered with economic and practical

difficulties. The extreme importance of the use of surgical and medical diathermy apparatus to the medical profession and the public in the preservation of health and life is unquestioned. Unquestioned also—and for the same reason, the preservation of life and property—is the necessity that a reasonable solution of the problem be found promptly so that interruption to the service of the vital communication circuits of the Nation caused by this type of interference may be eliminated.

10. *Carrier call apparatus.*—As mentioned in the Fourth Annual Report, preliminary investigations of the operation of carrier call apparatus, designed primarily for interoffice communication, showed that this type of equipment is capable of causing a considerable amount of interference to radio reception. Later tests of equipment made by a number of manufacturers have indicated, however, that if operation is confined to frequencies within the range of approximately 60 to 300 kilocycles, and if correctly designed filter circuits are installed and maintained in proper operation, these devices could be operated without causing objectionable interference.

11. *Low power radio frequency devices.*—As a result of the increased use of many different types of low-power radio frequency electrical devices for alarms, phonograph-record-playing and remote-control purposes, an informal engineering conference was held at the Commission's offices in Washington on September 19, 1938, for the purpose of considering proposed rules and regulations governing their operation. The rules and regulations were based on certain radiation characteristics of importance in regulating the operation of the devices so as to prevent interference to radio reception.

The rules and regulations were tentatively adopted by the Commission. The tests of the apparatus made by the Commission's field offices have indicated that if the rules and regulations are strictly complied with the devices may be used without causing interference to established radio services.

7. PUBLICATIONS

Publications prepared and released by the Commission during the fiscal year included the Report of the Commission on the Special Telephone Investigation, various parts of the Rules and Regulations, including the Standards of Good Engineering Practice applicable to Standard Broadcast Stations and to Ship Radio Services, and volume 5 of the Federal Communications Commission Reports. [A list of publications relating to the work of the Commission, appears in the appendixes.]

Volume 5 covers the decisions and reports of the Commission for the period November 16, 1937, to June 30, 1938, and contains the Commission's decisions in 140 cases. The compilation of volume 6, covering the period June 30, 1938, to February 28, 1939, was in preparation at the end of the fiscal year.

A number of factors combined to make necessary the complete revision of all the Commission's rules. This important and laborious undertaking was begun in 1938 and completed (except for final printing) by the close of the fiscal year 1939. Fundamental changes in the Commission's decision processes, which have already been discussed, necessitated revision of the Rules of Practice. The adoption by the Federal Courts of the revised Federal Rules of Civil Procedure prompted further revisions.

Technical advances in the art and developments of a national and international character in the use of the frequencies available for broadcasting brought about a complete overhaul of the rules affecting the broadcast services. Many of the remaining provisions of the Commission's substantive Rules and Regulations had been carried over from the Federal Radio Commission and the Interstate Commerce Commission. Some were out of print and for other reasons they were difficult of ready access. Also provisions had become obsolete, and as to others the need for revision had become apparent on the basis of informative reports, investigations, developments in hearings, and other researches conducted by the Commission.[2]

Accordingly the Commission during the fiscal year devoted special attention to the complete revision of its rules, collecting them in a logical arrangement, with systematized section numbers. All the revisions have been published in the Federal Register, and in addition, they are in process of being printed in convenient pamphlet form, suitable for inclusion in a single volume of all the Commission's rules.

[2] The description of the new rules and regulations relating to a particular service is contained in the part of this report dealing with such service. For example, a review of the provisions of the new rules governing standard broadcast stations is contained elsewhere in this report.

CHAPTER III

Regulation of Telephone and Telegraph Carriers

1. INTRODUCTION

All telephone and telegraph companies engaged as common carriers for hire in interstate or foreign communication by wire or radio are subject to the jurisdiction of the Commission. The regulation of matters having to do with their operations as common carriers, such as rates and tariffs, supervision of accounts, complaints, and investigations, etc., is discussed herein both as to companies which operate by wire and as to companies which operate by radio. The licensing of radio facilities to telephone and telegraph carriers, however, is discussed hereinafter.

The discussion which follows includes those matters which were the subject of hearings before the Commission or its staff and revisions of rules and regulations directly related to rates and tariffs. Elsewhere in the report are contained matters relating to hearings and the adoption of rules concerning the licensing function of the Commission in connection with telephone and telegraph carriers.

2. TELEPHONE INVESTIGATION

The telephone investigation, instituted in 1935, has been completed and the Commission, under date of June 14, 1939, forwarded to Congress its final report. This report has been printed as House Document No. 340, Seventy-fourth Congress.

The report suggests certain amendments to the Communications Act for the purpose of clarification, and also amendments to enlarge the Commission's authority over the telephone industry. This report also contains a detailed discussion of the problems in the regulation of the telephone industry, particularly the Bell System. The investigation has resulted in the development and the analysis of a large and important fund of data which is ample to form the foundation upon which adequate regulatory machinery may be constructed. Data developed have proved of value to State commissions in meeting the problems with which they are confronted in the regulation of intrastate rates of telephone companies.

The preliminary report was made by Commissioner Walker, chairman of the former Telephone Division of the Commission. The Commission has pending before it at this time a proceeding involving interstate rates of the Pacific Telephone & Telegraph Co., covering business originating and terminating in the State of Washington. The successful conduct of this proceeding depends, of course, upon adequate personnel, and demonstrates the necessity of keeping the material gathered by the special investigation in a current condition available for use in the regulation of rates as the necessity arises.

The savings to telephone subscribers resulting from this special investigation now approximate $30,000,000, and it is essential, if the telephone subscribers are to continue to receive the benefit of effective regulation, that sufficient funds be provided to enable the work commenced by the special investigation to be carried on.

Congress appropriated originally $750,000 for the telephone investigation. This was supplemented by two additional appropriations of $400,000 and $350,000, respectively. During the period of the investigation, when additional funds were suggested for permanent organization for telephone regulation, the Commission was advised that such appropriations were not needed during the period of the investigation but that Congress should have definite recommendations growing out of the investigation, both as to the character of regulatory work to be done and the amount of money needed therefor. Now that the telephone report has been submitted to Congress, together with certain recommendations of the Commission, it is obvious that if there is to be effective regulation increased funds and expanded personnel are needed.

3. RATES AND TARIFFS

RATE SCHEDULES

On June 30, 1939, 230 communication carriers had tariffs and concurrences on file with the Commission. During the fiscal year they filed 16,746 tariff publications (books, pamplets, and loose-leaf tariffs, revised loose-leaf pages, and concurrences), containing changes in rates, regulations, practices, and classifications of service or establishing new communication services, also 357 new or revised instruments of concurrence whereby some carriers adopted as their own certain tariffs of other carriers. Of the total number of tariff publications filed, 10,868 related to telephone services, 3,552 related to telegraph services, and 2,326 related to both telephone and telegraph services. A total of 28 tariff publications were rejected for failure to conform to statutory requirements.

These tariffs and concurrences were carefully examined and studied with a view to the discovery and correction of rates and regulations therein which might appear to be unjustly discriminatory or otherwise unlawful. Numerous irregularities in the rate schedules were corrected or eliminated through correspondence with the carriers, in connection with which 689 letters were written.

During the year special and successful effort was made to secure the filing by international carriers of tariff schedules of rates and regulations applicable to inbound-communication service from foreign countries to the United States and its territories and possessions.

The Commission continued to make copies of the tariff schedules available for inspection by the public. An increased use of these facilities was noted.

INVESTIGATIONS AND SUSPENSIONS

Volume rates.—In four instances, schedules of charges of telegraph carriers were suspended or ordered investigated where the charges for the same communication service differed solely because of differences in the number of words offered by the users for transmission during a fixed period. In each case the carrier voluntarily amended its schedules and the proceedings were dismissed.

Allowances.—The tariff schedules of two telegraph carriers which proposed to effect allowances for non-communication services performed by users were suspended. The carriers withdrew the proposed schedules and the orders of suspension were vacated.

Non-communication-service charges.—The schedules of charges of five radiotelegraph carriers relating to the transmission of multiple-press or news service were made the subject of an order of investigation because the published charges included the charges for both the communication service and the news itself. Revised tariff schedules containing only the communication-service charges were filed and the order of investigation was vacated.

Multiple-address service.—The charges, practices, classifications, and regulations for and in connection with multiple-address press services to outlying territories and possessions of the United States were the subject of investigation and hearing. At the close of the fiscal year a decision was pending with regard to this matter.

Reforwarding of messages.—The regulations and practices of the telegraph carriers concerning the reforwarding of telegraph messages were the subject of investigation and hearing. At the close of the fiscal year a decision was pending with regard to this matter.

Ship-telephone service.—The schedules of charges of two carriers relating to the furnishing of radiotelephone service to and from vessels on the Great Lakes have been suspended or ordered investigated. At the close of the fiscal year hearings on this matter were pending.

Interzone telephone rates.—An investigation is pending regarding the action of one large telephone carrier in withdrawing from publication certain rates for interstate telephone service to and from points in the vicinity of a large metropolitan area, and the establishment by such carrier of alleged local exchange service through the extension of the local service area of the metropolitan center for considerable distances in order to include the interstate points mentioned. The question at issue is of importance in the case of various other large metropolitan areas in the United States located at or near State boundaries, and may involve the question of whether, through such an arrangement, telephone carriers would be able to avoid the jurisdiction of the Commission in many of their activities. At the close of the fiscal year this matter had been designated for hearing.

Concurring carriers.—Schedules of charges were suspended in one instance when such schedules proposed to discontinue certain carriers as "concurring carriers" on the alleged ground that such carriers had become "agents" of the filing carrier. This matter was pending at the close of the fiscal year.

RATE CHANGES

Among the changes in communication rates or services during the fiscal year the following items are worthy of note: Ship-telephone service was enlarged in scope and reduced rates were made applicable; radiotelephone service to and from ships on the Great Lakes was enlarged; message toll telephone service to Newfoundland was established; direct radiotelephone service to Australia was inaugurated; "radio-mail" service was discontinued as a classification of service; and telemeter service was extended to additional points.

4. SUPERVISION OF ACCOUNTS

ACCOUNTANTS NEEDED FOR FIELD SERVICE

Accomplishments in the matter of regulating the accounts of communication carriers have been confined largely to the development

and prescription of accounting regulations and have not included adequate field examinations to enforce these regulations and to assemble necessary factual data. For instance, during a prior fiscal year, the Commission pioneered in the matter of prescribing accounting regulations requiring telephone carriers to restate their plant accounts on the basis of original cost, and, during the present fiscal year, prescribed similar regulations for radiotelegraph carriers.

However, the Commission has been without sufficient funds to provide an adequate force in the field to examine the records of the carriers for the purpose of testing compliance with the prescribed accounting rules or for the other regular and continuing duties contemplated by section 220 of the act (relating to the accounts and records of communication carriers) and by section 215 of the act (relating to the accounts and records of affiliated companies including manufacturing subsidiaries and others furnishing equipment, supplies, or services, the cost of which affects or may affect the rates charged for communication service). It is important to effective regulation to be able to gather the information and facts upon which the Commission must rely at first hand through its representatives, and by direct access to the accounts and records of carriers, manufacturing subsidiaries, and others contemplated by these sections of the act. Otherwise, the Commission is forced to rely upon ex parte statements made in response to questionnaires and inquiries.

ACCOUNTING REGULATIONS

The activities of the Commission in the matter of regulating the accounts of communication carriers during the fiscal year, as in previous fiscal years, were confined largely to the prescription of accounting regulations rather than to field enforcement, which latter activity was not possible to a satisfactory extent because of the limited funds available to the Commission. Among the Commission's activities in the matter of accounting regulations were the following:

Uniform system of accounts—radiotelegraph carriers.—A draft of a uniform system of accounts for radiotelegraph carriers having average annual operating revenues in excess of $50,000 was completed during the year and was prescribed, to be effective January 1, 1940. While this system was not made effective for the smaller carriers having average annual operating revenues of $50,000 or less, it is expected that such carriers will voluntarily adopt it in principle and will apply its provisions insofar as they are applicable to their affairs. This is the first uniform system of accounts that has been prescribed for radiotelegraph carriers.

Uniform system of accounts—class C telephone carriers.—A uniform system of accounts for class C telephone carriers was prescribed by the Commission in June 1938, and became effective January 1, 1939. Class C telephone carriers are those having average annual operating revenues exceeding $25,000 but not exceeding $50,000. This uniform system of accounts is an abridged system designed for the practical use of the smaller telephone carriers.

Uniform system of accounts—wire-telegraph and ocean-cable carriers.—Wire-telegraph and ocean-cable carriers are now subject to a uniform system of accounts that was prescribed by the Interstate Commerce

Commission in January 1914. It is contemplated, however, that a revised uniform system of accounts for such carriers will be prescribed during the coming year. There are several intercorporate and other situations that should receive thorough study prior to the issuance of this revised system.

Restatement of plant accounts on basis of original cost.—The recently issued uniform system of accounts for radiotelegraph carriers mentioned above contains a requirement that these carriers restate their plant accounts on the basis of original cost, and such a requirement is also contained in the uniform system of accounts for the larger telephone companies that was prescribed by this Commission effective January 1, 1937.

The telephone carriers are now in the process of restating their accounts for the purpose of complying with the foregoing requirements. The restatement creates a difference to be disposed of as directed by the Commission, with due regard to all the pertinent facts concerning its component parts.

Depreciation.—Accounting studies have been actively pursued with respect to depreciation with a view to the formulation of appropriate accounting regulations therefor. The cost of furnishing communication service for the year 1937 included approximately $181,000,000 as depreciation expense. The justification for such charges rests on the fact that they represent portions of the original investments consumed in the public service and form an appropriate part of the cost of rendering such service. It is, therefore, important that the depreciation expense entering into the cost of furnishing service be limited to amounts consistent with the base on which a fair return is allowed to be earned, which can only be determined after extensive studies.

Relief and pensions.—Comprehensive financial, actuarial, and accounting data were prepared and testimony was presented by members of the accounting staff in connection with the hearing in Docket 5188, *In the Matter of Additional Charges to Operating Expense Account 672 (Relief and pensions) in the Uniform System of Accounts for Telephone Companies.*

The study of the data submitted by telephone and telegraph carriers with respect to their several relief and pension plans pursuant to a previous outstanding order of the Commission was being continued at the end of the fiscal year, and the announcement of a decision as to compliance with applicable regulations, as revealed by these data, was being withheld pending a decision in Docket 5188, which will be the controlling factor in the interpretation of a number of controversial points.

Cost accounting.—The uniform system of accounts for radiotelegraph carriers, hereinbefore referred to, was designed with a view to the possible superimposing of cost-accounting routines. As indicated, however, by the first recommendation in the Commission's Report on the Telephone Investigation transmitted to the Congress on June 14, 1939, the most important field for cost-accounting developments is believed to be that of the associated manufacturing companies.

Accounting studies have been continued looking to the development of data bearing on the reasonableness of the "spread" between the costs of manufacturing and furnishing equipment and supplies by companies under direct or indirect common control with communica-

tion carriers on the one hand, and the prices at which these items are sold to such carriers by their respective affiliates, on the other hand.

Continuing property record.—Progress has been made in connection with developing a system of records designed for the purpose of recording changes in telephone property and the cost associated therewith, as required by the Commission's regulations.

Miscellaneous.—The accounting features involved in 62 applications by common carriers for extensions of lines and acquisitions of property were examined and reported upon during the year.

Attention was also given to accounting or financial considerations involved in 68 applications of radiotelegraph carriers for various authorizations from the Commission, such as construction permits for new stations and for changes in equipment.

FIELD EXAMINATIONS

During the year general examinations were made of the accounts of 2 ocean-cable carriers and 1 radiotelegraph carrier, and 10 special examinations along particular lines were concluded. These 3 general examinations marked the first time that a regulatory body had examined the accounting practices of these companies.

COOPERATION WITH STATE AND OTHER FEDERAL REGULATORY BODIES

A policy of active cooperation with State and other Federal regulatory bodies, including the National Association of Railroad and Utilities Commissioners, has been pursued in all matters relating to the regulation of telephone and telegraph accounts and in the development of a form of report that would meet the requirements of both State and Federal authorities, thus tending to reduce the number of reports to be filed by common carriers. This subject is touched upon in the Federal Communications Act of 1934 and cooperation between the respective Federal and State commissions has been generally practiced since the inception of the Commission. The first important example was the promulgation of accounting rules which were adopted after cooperative conferences between the former Telephone Division and State commission representatives, and which rules were affirmed by both the Federal Court for the Southern District of New York and the Supreme Court of the United States.

During the last year, this Commission has cooperated regularly with the State commissions on accounting matters.

It has also cooperated in litigation involving both state and interstate jurisdiction. An example in point is litigation pending before the Department of Public Service of the State of Washington involving rates of the Pacific Telephone & Telegraph Co. and the complaint of the Department of Public Service of Washington before this Commission, attacking interstate rates, charges, and practices of the Pacific Telephone & Telegraph Co. between points in the State of Washington on one hand and points in the remainder of the territory of the Pacific Telephone & Telegraph Co. on the other hand.

Subsequent thereto this Commission, on its own motion, instituted an investigation into the rates, charges, classifications, services, and practices of the Pacific Telephone & Telegraph Co. throughout the territory covered by that company. An invitation was extended by this Commission to the State telephone regulatory authorities of the

States of Washington, California, Oregon, Idaho, and Nevada to cooperate therein, and these States have indicated their intention of so doing.

This policy of cooperation was also pursued with the view of coordinating the accounting rules applicable to the regulation of all public utilities in so far as it may be appropriate to apply similar principles to each class of utility.

5. FINANCIAL AND OTHER STATISTICAL DATA

ANNUAL AND MONTHLY REPORTS

Annual reports for the calendar year 1938 were filed by a total of 170 companies. Of this number, 92 were telephone carriers, 15 were wire-telegraph and ocean-cable carriers, 19 were radiotelegraph carriers, and 44 were holding companies. Monthly reports were filed during this period by 91 telephone carriers, 8 wire-telegraph and ocean-cable carriers, and 9 radiotelegraph carriers.

In the case of telephone carriers, only those having average annual operating revenues in excess of $50,000 were required to file annual reports and only those having such revenues in excess of $250,000 were required to file monthly reports. All telegraph carriers subject to the jurisdiction of the Commission were required to file annual reports, but only those having average annual operating revenues in excess of $50,000 were required to file monthly reports. The large telephone carriers having such revenues in excess of $1,000,000 were required to file additional monthly reports showing various income and balance-sheet items. The matter of designing a brief annual report form for small telephone carriers having average annual operating revenues not exceeding $50,000 was receiving attention at the close of the fiscal year.

Among the changes in the annual report form prescribed for telephone carriers was the inclusion of a schedule requiring the showing of data concerning radiotelephone service pertaining principally to service between points in the United States and points in foreign countries or between the United States and ships at sea.

STATISTICAL COMPILATIONS AND PUBLICATIONS

The following regularly published statistical summaries were compiled by the Commission during the fiscal year:

Selected financial and operating data from the annual reports of telephone carriers for the year ended December 31, 1937.
Selected financial and operating data from the annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1937.
Summary of the monthly reports of large telephone carriers in the United States.
Operating data from the monthly reports of telegraph carriers.
Salary report of telephone and telegraph carriers, and holding companies, 1937.
Telephone hand-set charges and changes since January 1, 1938.
Selected financial data from the annual reports of holding companies controlling carriers.
Intercorporate relations of carriers and controlling companies, 1938, including an index to companies.

Various other statistical data were compiled during the fiscal year, which included the following: (1) Statements regarding the holdings of the thirty largest stockholders in four of the major communication

carriers, (2) statistical data concerning domestic and international traffic to and from the principal countries of the world, and (3) a special study of the traffic of American companies operating in South America, Central America, and the West Indies. In addition, responses were made to numerous inquiries by the public, embracing statistical data shown by reports filed with the Commission and held open for public inspection.

COMPARATIVE DATA RELATING TO COMMON CARRIERS

Comprehensive statistical data pertaining to the communication industry are shown in the appendixes of this report. Some of the important financial and operating data concerning 73 class A telephone carriers operating in the United States, and 34 telegraph, cable, and radiotelegraph carriers for the calendar year 1938, and comparisons with similar information for the calendar year 1937, are shown below:

Class A telephone carriers [1]

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Investment in telephone plant	$4,783,082,079	$4,678,893,476	$104,188,603	2.23
Capital stock	$4,284,792,921	$4,276,220,332	$8,572,589	.20
Funded debt	$1,031,567,735	$941,509,080	$90,058,655	9.57
Depreciation reserve	$1,316,367,516	$1,262,171,574	$54,195,942	4.29
Total surplus	$362,922,201	$390,180,025	−$27,257,824	−6.99
Operating revenues	$1,139,737,155	$1,138,132,784	$1,604,371	.14
Operating expenses	$783,964,478	$774,549,427	$9,415,051	1.22
Operating taxes	$151,692,583	$142,167,406	$9,525,177	6.70
Net operating income	$204,052,989	$221,416,111	−$17,363,122	−7.84
Total interest deductions	$54,125,410	$52,182,146	$1,943,264	3.72
Dividends declared	$338,175,841	$351,031,702	−$12,855,861	−3.66
Miles of wire	87,395,243	85,525,108	1,870,135	2.19
Number of telephones	17,431,353	17,005,401	425,952	2.50
Number of employees at close of year	285,550	295,088	−9,538	−3.23
Total compensation of employees	$501,504,752	$488,797,654	$12,707,098	2.60

Telegraph, cable, and radiotelegraph carriers

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Investment in plant and equipment	$537,843,572	$536,883,818	$959,754	.18
Capital stock	$165,189,841	$172,910,813	−$7,720,972	−4.47
Unmatured funded debt	$111,026,210	$114,740,918	−$3,714,708	−3.24
Reserve for accrued depreciation	$166,552,579	$162,340,960	$4,211,619	2.59
Total corporate surplus	$67,194,086	$70,116,329	−$2,922,243	−4.17
Operating revenues	$133,650,346	$146,299,718	−$12,649,372	−8.65
Operating expenses	$120,074,182	$126,515,291	−$6,441,109	−5.09
Operating taxes	$7,955,671	$7,626,530	$329,141	4.32
Operating income	$5,109,741	$11,460,700	−$6,350,959	−55.42
Total interest deductions	$8,553,738	$8,753,388	−$199,650	−2.28
Dividends declared	$542,210	$4,496,257	−$3,954,047	−87.94
Miles of wire	2,428,245	2,428,750	−505	−.02
Number of revenue messages transmitted	205,382,652	222,431,477	−17,048,825	−7.66
Number of employees at close of year	65,573	72,820	−7,247	−9.95
Total compensation of employees	$82,793,030	$90,413,563	−$7,620,533	−8.43

[1] Class A. telephone carriers are those having average annual operating revenues exceeding $100,000.
Note—Dash [−] indicates deficit or other reverse item.

6. COMPLAINTS AND INVESTIGATIONS

A large number of investigations covering a wide range of subjects, including rates, charges, services, discrimination, and other related matters have been conducted during the year. Many of such complaints have been satisfactorily adjusted without the necessity of formal proceedings and in other cases the matters were adjusted before a hearing was actually held.

A considerable number of complaints were received during the year, a large number of which, as in previous years, relate to local telephone exchange or intrastate toll service over which this Commission has no jurisdiction. When such a complaint relative to a matter outside the jurisdiction of the Commission is received, the complainant is so advised and referred to the proper local or State regulatory authority.

INVESTIGATIONS AND SUSPENSION CASES

In addition to the investigations made upon complaints filed, the Commission has conducted a number of investigations upon its own motion. During the past fiscal year, investigation and suspension cases were instituted in connection with tariff schedules filed by telegraph carriers, both wire and radio, and radiotelephone carriers. In a majority of such cases, the carriers withdrew the objectionable features of the tariffs prior to the date of hearing and the proceedings were dismissed. Among the investigation and suspension cases now before the Commission is one involving the radiotelephone rates and service furnished to ships operating on the Great Lakes.

WIRE FACILITIES USED IN CONNECTION WITH BROADCASTING

Complaints relative to charges and practices in connection with program transmission channels furnished by telephone companies for use in connection with radiobroadcasting have been received during the year. Several concerned the restrictive provisions of the Bell System tariffs covering program transmission service for broadcast stations. One of especial interest involved the refusal of a telephone company to permit a broadcast station to interconnect wire facilities furnished by a telegraph company to such station, with channels furnished by the telephone company.

INTERSTATE TOLL RATES

The Department of Public Service of the State of Washington has filed with this Commission a complaint against the rates, charges, and practices of the Pacific Telephone & Telegraph Co. with respect to the interstate service between points within the State of Washington and points without said state. The matter is now pending before the Commission.

GOVERNMENT RATES

Postal Telegraph-Cable Company, The Western Union Telegraph Co., and Mackay Radio & Telegraph Co. petitioned the Commission for increase in rates charged for domestic telegrams between Government departments and their officers and agents. The Commission has ordered that the presently effective rates for the handling of United States Government telegraph messages, as promulgated by its order

No. 41, effective July 1, 1938, be continued in effect commencing July 1, 1939, pending decision and the further order of the Commission.

EXCHANGE AREAS

During the year the Commission, on its own motion, directed that an investigation be instituted with respect to the enlargement of the Kansas City exchange area served by Southwestern Bell Telephone Co. The question involved is the jurisdiction of this Commission over interstate-interzone message rates in the extended Kansas City exchange area, under the provisions of section 221(b) of the Communications Act. The Kansas and Missouri State Commissions have been invited to participate in the hearing.

UNREASONABLE PRACTICES

A complaint filed with the Commission by Licht & Kaplan, Inc., charged that the Postal Telegraph-Cable Co. has employed practices which are unreasonable and, therefore, illegal, and which caused complainant to suffer damages from failure of the company to deliver a telegram. No award of damages by the Commission was asked for, and the complainant expressly reserved the right to proceed in the courts for the recovery of his damages if and when the Commission makes a finding that the practice complained of is illegal. No decision has yet been rendered by the Commission.

CLASSIFICATION

In 1936 several of the wire and radio carriers filed with the Commission a petition attacking the lawfulness of the "radiomail" classification offered by Globe Wireless, Ltd. Globe Wireless, Ltd., in 1938 filed new tariffs with the Commission canceling the then effective tariffs and establishing classifications, regulations, and practices generally recognized by international convention and comparable to those of the other American telegraph carriers. Whereupon the Commission dismissed this and related proceedings upon motion of the parties, April 24, 1939.

7. EXTENSION OF FACILITIES

The Communications Act provides that the Commission may, in its discretion, grant certificates of public convenience and necessity for the construction, extension, and transfer of wire facilities and the supplementing of existing facilities in connection with the regulation of wire carriers. In addition to the extensions of wire facilities made during the current year, several extensions of radiotelephone and radiotelegraph service were also made.

WIRE TELEPHONE

The applications for extension of lines or facilities from telephone carriers handled during the current year include those for (1) acquisition and construction under section 214; (2) the supplementing of existing facilities under the second proviso clause of section 214 (a); and (3) authority to consolidate under section 221 (a). These applications totaled 49 for the year and the major portion thereof was filed by the Bell System, only four being filed by other companies.

The expenditures in connection with the individual projects ranged from a few thousand dollars to $2,382,000 and totaled $6,960,123.

ACQUISITION UNDER SECTION 214

The application of the Michigan Bell Telephone Co. to acquire certain toll facilities of the American Telephone & Telegraph Co. on the Kalamazoo-Niles toll lines in the State of Michigan was granted.

SUPPLEMENTING OF EXISTING FACILITIES UNDER SECTION 214

The second proviso of section 214 (a) gives the Commission power to authorize the supplementing of existing facilities without regard to the other provisions of the section, requiring hearings, notices, etc. During the year 46 applications were received under this proviso, requesting authority to supplement existing facilities. Forty-five of these were analyzed and approved by the Commission.

This represents an increase over any previous year, both in total expenditure and miles of toll cable constructed. The following table reflects the totals mentioned:

Wire-telephone applications approved by the Commission from July 1, 1934, to June 30, 1939

Period	Number of applications	Estimated construction cost	Miles of cable placed	Miles of open wire
July 1, 1934, to June 30, 1935	7	$1,145,851	[1] 234.3	
July 1, 1935, to June 30, 1936	15	275,625	24	475
July 1, 1936, to June 30, 1937	50	5,551,702	206	17,045
July 1, 1937, to June 30, 1938	45	3,921,000	499	1,212
July 1, 1938, to June 30, 1939	45	6,960,123	[2] 646	1,967
Total	162	17,854,301	1,639.3	20,699

[1] Of which 94.5 miles are coaxial cable containing 2 coaxial units.
[2] Of which 195 miles are coaxial cable containing 4 coaxial units.

PETITIONS FOR AUTHORITY TO CONSOLIDATE UNDER SECTION 221 (A)

Section 221 (a) of the act provides that telephone carriers desiring to consolidate their properties may file with the Commission a petition requesting a certificate to the effect that the proposed consolidation, merger, acquisition or control of the property of one or more telephone companies by another will be of advantage to the persons to whom service is to be rendered, and in the public interest. Such a certificate exempts the carriers from the provisions of the antitrust laws.

WIRE TELEGRAPH

The number of applications for the extension of wire-telegraph facilities filed with the Commission under section 214 of the act continued to be small during the past fiscal year. Nineteen (19) such applications granted authorized the leasing and operation of telegraph wire circuits, none of which involved new construction. A total of 76½ leased circuit miles was authorized for permanent use and 208½ leased circuit miles for temporary operation. There were three applications of this class pending at the close of the fiscal year.

8. TECHNICAL DEVELOPMENTS

TECHNICAL DEVELOPMENTS IN WIRE TELEPHONE

During the past year many technical developments and improvements were effected in wire-telephone communication, a few of the more important of which are as follows:

New York-Philadelphia coaxial system.—A number of experiments and tests were performed over the New York-Philadelphia coaxial cable system. With the 2 megacycle repeater equipment installed at 5 mile intervals, it was found that it was possible to superpose 480 simultaneous two-way telephone channels on this cable. Satisfactory test conversations were held over a circuit 2,100 miles in length built up by looping back and forth through the coaxial system a total of 20 times. The conversation employed channels located in different parts of the frequency band between 100 and 1,900 kilocycles, and passed 20 times through each amplifier.

Stevens Point-Minneapolis coaxial cable.—After the tests on the New York-Philadelphia cable proved to be successful, the American Telephone & Telegraph Co., the Wisconsin Telephone Co., and the Northwestern Bell Telephone Co. obtained authority for the installation of a coaxial cable between Stevens Point, Wis., and Minneapolis, Minn., a distance of 195 miles. This cable is to be a link in the Northern Transcontinental Toll Route. The cable is now being installed and consists of 4 coaxial units together with a small number of wire conductors, which will be used largely for regulation of equipment installed on the cable. The 4 units will provide two paths of transmission in each direction. The two complete paths will permit arrangement of the carrier systems so that, in the event of trouble occurring on one path, the system on that path may be switched to the other, thus affording greater continuity of service.

Carrier systems.—There has been considerable activity in the development of new and the improvement of existing carrier-telephone systems in this country during the past year. This has been particularly true in connection with the type J carrier system which operates on a pair of open wires and also with the type K carrier system which operates on two pair of wires in cable. Both of these systems provide for 12 telephone channels in each direction. In the past year, a number of these systems have been placed in operation in this country. A few of the more important are the installation of the type J system on the Fourth Transcontinental Route between Oklahoma City, Okla., and White Water, Calif.; the installation of the type J system between West Palm Beach, Fla., and Charlotte, N. C.; and the installation of type K system between Charlotte, N. C., and New York.

A single-channel carrier system (type H) has been developed which is capable of economically spanning distances between 50 and 200 miles and operates on either battery or A. C. power supply. The terminal equipment is much more compact that any other single-channel system. Besides reduction in size, it is lower in cost and includes a number of improvements in transmission performance. This system is particularly useful in supplying an additional circuit to care for seasonal or peak loads and is portable enough to be used in case of storms and other emergencies.

Vocoder.—A new device, which does not transmit speech as a telephone or microphone but, after changing it into electrical energy, uses the energy to operate a mechanism that artificially builds up speech, at the same time varying the frequency and intensity to give the desired transmission. While this device may find uses in other fields, the motive of the experimenters is to reduce speech to a monotone which can be transmitted in a band about 25 cycles wide, as contrasted with a speech band of 3,000 cycles, permitting possible simultaneous transmission of a number of telephone messages over a single telephone channel.

Cross-bar switching system.—During the year considerable developments have been made in the dial-telephone central-office switching system employing the cross-bar or coordinator switch. A number of installations of this system have been made in offices capable of serving 10,000 subscriber lines. This system offers important improvements in telephone switching, both in operation and maintenance. Central offices of the cross-bar type can be installed in the same building with existing panel central offices without loss in operating economies in either type of office.

TECHNICAL DEVELOPMENTS IN WIRE TELEGRAPH

The wire-telegraph carriers have continued their engineering work on multiplex, varioplex, and carrier-current circuits, and equipment to increase the number of telegraph channels obtainable from their existing wire plant. Telemeter service has been extended to a number of additional cities by means of varioplex channels.

A dry conducting recording paper which is sensitive to electric currents has been developed for facsimile so that it is possible instantly to record drawings, sketches, or written matter without further processing. Automatic facsimile transmitting equipment has been developed by means of which material in sheet form, when inserted in a slot in the machine, is wrapped around the transmitting drum and transmitted to the receiving office. The receiving machine receives the copy, drops the completed message into a basket ready for delivery and sets itself in readiness for receiving the next transmitted message.

Although facsimile is available to the general public for transmission between certain cities, there has been a very limited demand for this type of service. This method of operation is being used experimentally as a means of pick-up and delivery of regular telegrams between branch offices and the main telegraph office in a city, or between the main office and offices of customers to determine the economies of using facsimile to replace the expensive teleprinters used for this purpose.

A service for the transmission of photographs and facsimile material has been recently established from London to New York over ocean-cable facilities. The system is capable of transmitting a picture six by seven inches in twenty minutes.

9. TELEPHONE DISASTERS

During the past year sleet storms, floods, and hurricanes of almost unprecedented severity occured in sections of the United States. Telephone lines were demolished, central offices were flooded and

service was disrupted. Even under such conditions telephone service was maintained wherever possible; repairs were made and service resumed as soon as practicable.

The New England hurricane of September 1938 was the most severe disaster which has ever confronted the telephone industry; Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine, also New York, and New Jersey were affected. It is estimated that over 600,000 telephones were put out of service and over 241 telephone central offices were cut off from outside service, with a telephone-property damage of about $10,000,000. More than 2,300 telephone workers and 615 automobiles and trucks were called into the area from States as far west as Nebraska and North Dakota, and as far south as Virginia and Arkansas.

Radiotelephone service played an interesting and important part in bridging gaps in telephone service. The permanent radio link between Green Harbor (near Boston) and Provincetown, Mass., afforded the only telephone communication between Cape Cod and the outside areas. Portable short-wave equipment, which had been recently developed, the use of which had been authorized by this Commission, was used to furnish service between Block Island and Newport, R. I., between Gardner, Mass., and Keene, N. H. Additional use of this equipment was made at Westerly, R. I., and small isolated points in Massachusetts.

Three days after the storm telephone toll traffic had increased to 116.5 percent at the toll boards at Boston, while in New York City traffic was 77 percent above normal for that day.

10. LITIGATION

ROCHESTER CASE

In the case of Rochester Telephone Corp. *v.* U. S., 307 U. S., 125, decided April 17, 1939, a bill in equity had been filed to set aside an order of the Commission classifying the Rochester Telephone Corporation as one subject to all the provisions of the act applicable to wire-telephone carriers and one not entitled to exemption under section 2 (b) (2). On appeal to the Supreme Court of the United States, the decree of the United States District Court for the Western District of New York upholding the decision of the Commission was affirmed in an opinion important both from the point of view of communications regulation, and of the principles of law involved in the so-called "negative orders" doctrine.

DRISCOLL V. EDISON POWER & LIGHT CO.

The Commission joined the Department of Justice and the Federal Power Commission in an amicus curiae brief filed in the Supreme Court of the United States in the case of *Driscoll, et al* v. *Edison Power & Light Company*, 307 U. S. 104.

CHAPTER IV

Regulation of Broadcast Service

1. INTRODUCTION

During the year there were received in the Commission 7,334 applications for various types of authorizations for stations in the broadcast services. Of these, 1,652 were formal applications for new or increased facilities or for modification of existing authorizations, 2,290 for renewals of existing authorizations. The remaining 3,392 were informal or routine requests for authorizations for use of broadcast facilities in emergencies, for temporary use of facilities beyond the terms of existing licenses, for experimental authorizations giving promise of substantial contribution to the advancement of the radio-broadcast art, and for other miscellaneous authorizations. There are included in the appendixes, detailed statistics covering the various classes of applications handled.

The continuing growth of the broadcast industry is reflected in the number of applications granted for new broadcast stations, and for increases in the facilities of existing stations. On July 1, 1938, there were 743 standard and 4 special broadcast stations, and during the year 39 new stations were authorized and 8 deleted, so that at the close of the fiscal year, the total number of standard and special broadcast stations licensed by the Commission was 778. Seventy-six applications for standard broadcast facilities were denied after public hearings. The expansion in the remaining classes of broadcast services, which include among others, television, international broadcast, and the recently developed high-frequency and noncommercial educational broadcast services, is reflected in the statistical tables mentioned.

TOTAL NUMBER OF STATIONS

The following compilation shows the number of new stations authorized, the number of stations deleted, and the total number of stations as of June 30, 1939:

Class of station	New stations authorized	Stations deleted	Total number of stations, June 30, 1939
Broadcast	39	8	774
Special broadcast	0	0	4
Relay (low frequency) broadcast	64	8	199
Relay (high frequency) broadcast	47	38	275
High-frequency broadcast	6	8	46
Television broadcast	7	3	23
International broadcast	2	1	14
Facsimile broadcast	7	1	12
Developmental broadcast	3	5	12
Noncommercial educational broadcast	1	0	2
Total	176	72	1,361

The more important developments in connection with the various broadcast services, including a review of the revisions made in the rules and regulations relating to them, and matters arising out of hearings, are reflected in the following sections of this report.

2. STANDARD BROADCAST SERVICE

ALLOCATION PLAN

The basic plan of allocation of broadcast facilities in the band between 550 and 1600 kilocycles has continued unchanged insofar as the general plan of allocation of stations by frequency, power, and hours of operation is concerned. However, under date of June 23, 1939, the Commission adopted new Rules and Regulations Governing Standard Broadcast Stations (the new Rules define a broadcast station in the band 550 to 1600 kilocycles as a standard broadcast station), and the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, effective August 1, 1939, which are discussed in detail in a later section of this report. It is expected that the application of those Rules and Standards will have far reaching effect on the allocation of broadcast facilities, and will materially improve and extend the standard broadcast service to the public.

DISTRIBUTION OF BROADCAST FACILITIES

Appendix F of the Fourth Annual Report gave the results of a study made as of May 1, 1938, of the distribution of broadcast facilities within the United States. This study has been continued, particularly with respect to the distribution of facilities among the several States and cities of various sizes. While the increase from 738 stations, which were in existence at the time of this study, to the present 778 has made some changes in the service within the United States, the conditions as set forth in the Fourth Annual Report were, in general, the same as at the present time. While application of the new Rules and Standards is expected to materially improve these conditions, the minimum desirable service [1] to the population of the United States cannot be realized due to a number of factors which cannot be controlled, such as the limited assignments available as compared to the demand therefor, the economic factors arising from the distribution of the population, particularly in the sparsely settled areas, and the present state of technical development of broadcasting. The distribution of standard broadcast facilities throughout the United States on the basis of authorized hours of operation as of July 1, 1939, is shown below:

	Clear	Regional	Local	Total
Unlimited time	33	229	272	534
Limited time	25			25
Daytime	23	37	38	98
Sharing time	16	36	21	73
Specified time	5	17	26	48
Total stations	102	319	357	778

DIRECTIONAL ANTENNAS

The following table shows the number of directional antenna systems in use or authorized to be installed at the close of each fiscal year from 1932 to 1939. As was pointed out in previous reports,

[1] As will be noted in the attached appendixes, it is considered that each person in the United States, regardless of his location, is entitled to a choice between at least two programs at any time during the regular broadcast day.

this type of antenna has proven very useful in reducing interference and directing the signals to desired areas, thus improving service. The new Rules and Regulations and Standards of Good Engineering Practice contemplate still more extended use of this type of antenna on regional and clear-channel frequencies. It is not considered feasible from an economic or allocation standpoint to use directional antennas in connection with local channel stations (class IV stations under the new classification). In addition to the new directional antennas indicated by the table, a number of those already installed have been readjusted, redesigned, or rebuilt in order to improve the operation or to provide for changes in conditions affecting their operation.

Number of directional antennas in use or authorized for use fiscal year ended June 30, 1939

	1932	1933	1934	1935	1936	1937	1938	1939
Stations on clear channels	0	2	4	7	8	9	11	14
Stations on regional channels	2	4	11	20	25	39	53	68
Total	2	6	15	27	33	48	64	82

NEW STATIONS

The following table shows the class and hours of operation of the 39 new broadcast stations which were authorized during the fiscal year:

Class of station	Hours of operation	Number
Local channel	Unlimited	24
Do	Daytime, sharing and specified hours	8
Regional channel	Unlimited	1
Do	Daytime	6
Clear channel	Unlimited	0
Do	Daytime	0
Total		39

NEW RULES AND REGULATIONS AND STANDARDS OF GOOD ENGINEERING PRACTICE

In the last annual report there was discussed at considerable length the proposed new and modified Rules and Regulations Governing Standard Broadcast Stations on which a hearing was held from June 6 to June 30, 1938, inclusive, at which hearing the testimony adduced extended to 2,170 pages in addition to several hundred exhibits being introduced and being made a part of the record. The testimony and exhibits were carefully studied and analyzed, and a report made thereon by the committee of Commissioners conducting the hearing to the full Commission on June 1, 1939. Oral argument was held on these rules, except with respect to the more technical ones which were considered at an engineering conference on June 5 and 6, 1939, in conjunction with the Standards of Good Engineering Practice which will be discussed later in this report. The final rules were adopted June 23, 1939, effective August 1, 1939. Several of

these rules were not operative until later dates, in order to permit licensees of existing stations sufficient time within which to comply with the new rules.

ENLARGED SCOPE OF NEW RULES

In a considerable portion of the rules no new principles were involved and only changes were made which were considered as necessary for clarity or to bring the rules in accordance with the present state of development of the broadcast art. However, there were also a number of new principles set out in order that the plan of allocation of broadcast stations within the United States would not be in conflict with the principles set out by the North American Regional Broadcasting Agreement, as well as certain other changes deemed advisable as a result of the studies of problems which have arisen during the administration of the Communications Act of 1934. The principal changes involved are:

(*a*) *Classes of standard broadcast channels.*—As under the former rules, the three classes of channels are clear, regional, and local. However, the new definitions establishing these classes of channels clarify the purpose of each class of channel and, in general, establish the protection provided for stations operating on these channels.

(*b*) *Classes of standard broadcast stations.*—The four general classes of stations established by these rules are I, II, III, and IV which are discussed in their respective order herewith.

(1) A *class I station* is defined as a dominant station operating on a clear channel and designed to render primary and secondary service over an extended area and at relatively long distances. Its primary service area is free from objectionable interference. The power of the class I station is specified as 50 kilowatts and no other stations will be assigned to these frequencies except for limited time or daytime operation only. With few exceptions, the class I stations assigned to these frequencies are those located west of the Appalachian and east of the Rocky Mountains in order to make the fullest use of the secondary service areas of these stations. On channels on which more than one class I station may be assigned, the operating powers of such stations shall be not less than 10 kilowatts nor more than 50 kilowatts. On these frequencies unlimited time stations (Class II stations hereinafter discussed) may be assigned in accordance with the principles set forth in the Rules and the Standards of Good Engineering Practice.

However, provisions are made for the protection of the secondary service areas from interference on the same channel within the limits of the United States to only the 500 uv/m. 50 percent skywave contour which is considered approximately the average field intensity required for good rural service. These stations are, in general, those located on the east and west coasts which give sufficient mileage separation for simultaneous operation with powers not in excess of 50 kilowatts. By the use of directional antennas, mutual interference may be readily controlled and the energy normally directed over the ocean directed inland to materially enlarge and better the service area of such stations. There are allocated 26 channels on which no nighttime duplication is permitted and 18 channels on which duplication is permitted. It is considered that this allocation of frequencies will permit a maximum usage of clear channels both for the benefit

of the remote rural areas as well as for general coverage throughout the particular section in which the stations are located. Stations formerly designated as high power regional stations are included in this group.

(2) A *class II station* is defined as a secondary station which operates on a clear channel and is designed to render service over a primary service area which is limited by and subject to such interference as may be received from class I stations. A station of this class may operate with power not less than 0.25 kilowatts nor more than 50 kilowatts. Whenever necessary a class II station is required to use a directional antenna or other means to avoid interference with class I stations and with other class II stations, in accordance with Engineering Standards of Allocation set forth in the Standards of Good Engineering Practice. Included in this classification are the daytime and limited stations assigned to clear channels, also unlimited time stations on clear channels on which duplicate nighttime operation is permitted. Although class I stations are not required to protect class II stations, it is normally recommended that class II stations be so allocated as not to receive interference during daytime within the 500 uv/m. ground wave contour and during nighttime within the 2,500 uv/m. ground wave contour.

(3) A *class III station* is defined as a station which operates on a regional channel and renders service primarily to a metropolitan district and the rural area contiguous thereto. Class III stations are subdivided into two classes:

A class III–A station is one which operates on a regional channel with a power not less than 1 kilowatt nor more than 5 kilowatts. Provision is made for protection of the daytime service area to the 500 uv/m. contour and of the nighttime service area to the 2,500 uv/m. contour in accordance with the Standards of Good Engineering Practice.

A class III–B station is a station which operates on a regional channel with a power not less than 0.5 kilowatt nor more than 1 kilowatt night and 5 kilowatts daytime. Provision is made for protection of the daytime service area to the 500 uv/m. contour and of the nighttime service area to the 4,000 uv/m. contour. It is not proposed to allocate class III channels exclusively for class III–A or III–B stations. The classification of these stations depends upon the conditions surrounding the particular station. However, it is considered that, on a large percentage of the regional channels, by cooperation of all or part of the stations on a class III channel, the installation of proper directional antennas may so modify the mutual interference as to permit their classification as class III–A stations, otherwise class III–B classification would be necessary.

(4) A *class IV station* is defined as a station operating on a local channel and designed to render service primarily to a city or town and the suburban and rural areas contiguous thereto. The power of a station of this class is limited to not less than 0.1 kilowatt nor more than 0.25 kilowatt, and provision is made for the protection to the 500 uv/m. contour daytime and the 4000 uv/m. contour nighttime. On local channels the separation required for the daytime protection shall also determine the nighttime separation. In addition, class IV stations may be assigned to regional channels on the condition that interference will not be caused to any class III station in accordance

with the above and the Standards of Good Engineering Practice and that the regional channel is fully used for class III stations. In such cases the class III stations are not required to protect the class IV stations. However, it is recommended that the class IV stations be so located that the interference received will not be greater than to the 4000 uv/m. ground wave contour nighttime and the 500 uv/m. contour daytime.

(*c*) *Extension of the broadcast band from 1500 to 1600 kilocycles.*—Although the broadcast band is extended to 1600 kilocycles no allocation of stations is proposed in the band 1500 to 1600 kilocycles except on the frequencies 1530 and 1550 kilocycles to which special broadcast stations are at present assigned. These stations are to be classified as class III broadcast stations instead of special broadcast stations. No other assignments are proposed in this band for the reason that such allocation would conflict with the North American Regional Broadcast Agreement and materially complicate placing this agreement into effect.

(*d*) *Increased normal license period.*—Under former rules the license of a standard broadcast station was limited to 6 months. In view of the evidence submitted at the hearing and other information available, it appeared that the broadcast industry had reached a point making it advisable to increase the license period to 1 year which is the period specified by the new rules. Under the Communications Act of 1934 the maximum license period which can be authorized is 3 years. It is believed that the issuance of 1-year licenses will assist to stabilize the broadcast industry without reducing the necessary control of the Commission over the licenses.

(*e*) *Increased power of stations where needed and where technically feasible.*—As previously discussed, the rules provide for increase in power of class II, III, and IV stations where such increase in power is needed to overcome electrical noise and static, where technically feasible.

There is no doubt, from an engineering standpoint, that the use of power in excess of 50 kilowatts constitutes one method whereby additional service can be provided throughout the remote sparsely populated sections of the United States and to many small urban centers which now lack facilities or where it is not economically practical to support local or regional channel stations. However, for social and economic reasons the rules do not contemplate the use of power greater than 50 kilowatts at this time.

(*f*) *Making regulations flexible.*—Every effort has been made to make the proposed rules and Standards of Good Engineering Practice as flexible as possible, as it is believed that by this means the fullest use can be made of the broadcast facilities and at the same time provide for the future needs as advancements are made in the art.

(*g*) *Requirements for applicants.*—For the first time the rules set forth the showing which applicants for new standard broadcast stations or increased facilities of existing stations must make before the Commission. Previously there has been no guide for such applicants.

While the necessary showing varies considerably with individual cases, the general principles set out provide a guide which is valuable to applicants.

(*h*) *Experimental authorizations.*—The new rules specifically provide for special experimental authorizations in the broadcast band. This will encourage experimentation in the use of broadcast frequencies and at the same time maintain the desired control over such authorizations and prevent commercial operation from interfering with experimentation.

(*i*) *Power of all stations determined by direct method.*—In order to provide for uniformity in determining the operating power of stations employing different types and makes of equipment, the new rules require that each new broadcast station authorized after August 1, 1939, and that every broadcast station after July 1, 1940, determine the operating power by the direct method, that is, from the resistance and current in the antenna system. The existing stations will be permitted to continue determining the operating power by the indirect method (from the plate input power to the last radio stage) until July 1, 1940, and for temporary periods after that date subject to certain conditions.

SCOPE OF STANDARDS OF GOOD ENGINEERING PRACTICE

As stated, the Standards of Good Engineering Practice were the subject of a formal hearing before a committee of Commissioners in conjunction with the rules and regulations from June 6 to June 30, 1938, and the informal engineering conference on June 5 and 6, 1939. Some 45 representatives of broadcast equipment manufacturers, networks, broadcast associations, and consulting engineers were present. The majority of those present were in agreement with the standards as finally approved by the Commission.

Necessity for the standards arises by reason of the fact that all of the technical principles of allocation, and use of facilities cannot be incorporated in the rules and regulations, because of the rapid changes taking place. The rules and regulations cover only the basic and more general principles. To obtain uniformity in presenting technical data on all applications concerning standard broadcast stations, it is necessary that the Commission enunciate the manner and method in which the data shall be presented. This provides a distinct advantage in the administration of the technical regulations, greatly improves the uniformity of action on formal applications, and serves as a guide to engineers. Many of the standards set out certain methods of compiling and submitting data.

The provisions of the Standards may be divided into three classes, as follows:

(1) Those provisions which are incorporated by reference in the rules and regulations and which have substantially the same meaning and effect as the rules and regulations.

(2) Those provisions which go beyond the rules and regulations so as to disclose policies and principles of allocation and regulation.

(3) Those provisions which are included primarily as a guide to applicants and licensees.

The various subjects dealt with in these standards are—

1. Engineering Standards of Allocation.
2. Field Intensity Measurements in Allocation.
3. Data Required with Applications Involving Directional Antenna Systems.
4. Locations of Transmitters of Standard Broadcast Stations.
5. Minimum Antenna Heights or Field Intensity Requirements.
6. Standard Lamps and Paints.
7. Further Requirements for Direct Measurements of Power.
8. Power Rating of Vacuum Tubes.
9. Requirements for the Approval of the Power Rating of Vacuum Tubes.
10. Plate Efficiency of Last Radio Stage.
11. Operating Power Tolerance.
12. Construction, General Operation and Safety of Life Requirements.
13. Indicating Instruments Pursuant to Section 3.58.
14. Requirements for Approval of Broadcast Transmitters and Automatic Frequency Control Equipments.
15. Requirements for Approval of Frequency Monitors.
16. Requirements for Approval of Modulation Monitors.
17. Use of Low Temperature Coefficient Crystals by Broadcast Stations.
18. Money Required to Construct and Complete Electrical Tests of Stations of Different Classes and Powers.
19. Use of Common Antenna by Standard Broadcast Stations or Another Radio Station.
20. Use of Frequency and Modulation Monitors at Auxiliary Transmitter.
21. Approved Frequency Monitors.
22. Approved Modulation Monitors.
23. Approved Equipment.
24. Standard Broadcast Application Forms.
25. Field Offices of the Commission.
26. Average Sunset Time.

HEARINGS ON APPLICATIONS

Where the Commission, upon the examination of a particular application, is unable to reach the requisite statutory determination that a grant thereof would serve public interest, convenience, and necessity, it is designated for formal hearing upon specific issues, and all persons having an interest in the matter are given an opportunity to become parties and to participate in the hearing. During the first 4 months of the fiscal year, a vast majority of the hearings were held before members of the examining department, which was abolished by Commission action on November 9, 1938. Thereafter, the Commission's Rules of Practice and Procedure were amended, providing for, among other things, the holding of hearings before a presiding officer appointed by the Commission for a specific case. During the last 8 months of the year, practically all of the hearings on broadcast applications were held in this manner. Under the new procedure,[2] after a hearing has been held the parties thereto are permitted 20 days from the date that the transcript of record is filed within which to file proposed findings of fact and conclusions. The Commission then issues its proposed findings of fact and conclusions and the parties are allowed 20 days thereafter within which to file exceptions thereto and to request oral argument thereon before a final decision is rendered. In the event no exceptions or requests for oral argument are filed, the Commission issues an order adopting and giving final effect to its proposed decision. Under the new procedure, the Commission is able, where a proceeding proves to be noncontroversial, to decide

[2] The Commission's Rules of Practice and Procedure were partially amended effective November 14, 1938, and new Rules of Practice and Procedure were adopted by the Commission effective January 1, 1939, which was subsequently amended, effective August 1, 1939.

docket cases by issuing its final order in lieu of a proposed decision. This practice is followed whenever it is practicable to do so.

Formal hearings were held on 140 applications involving requests for new stations and for changes in broadcast station facilities, 46 of which were decided and 94 were still pending at the close of the year. Hearings were held on 25 applications involving assignment of licenses and transfer of control of licensee corporations, 11 of which were decided and the remainder were still pending at the close of the year. The majority of such applications were acted upon without the necessity of formal hearings. Hearings were also held on 18 renewal of license applications, 5 of which were decided. During the year the Commission heard oral argument in more than 100 broadcast cases, and it adopted formal decisions in more than 200 cases.

STATIONS DELETED

During the year there were five authorizations for standard broadcast stations which were canceled by the Commission; one Commission order authorizing a new station was vacated; and two stations which had been in operation were deleted. To review these cases:

A construction permit for a new broadcast station, issued to the Democrat News Company, Inc., (KDNC), Lewiston, Mont., expired on December 3, 1938, and was canceled by the Commission on January 24, 1939.

An authorization granted to Clarence A. Berger and Saul S. Freeman (KGCI), Coeur d'Alene, Idaho, was canceled when the permittees' application for modification of construction permit was denied as in default by the Commission.

An authorization for a new station granted to Hunt Broadcasting Association, Fred Horton, President (KGVL), Greenville, Tex., was canceled when its application for modification of construction permit was dismissed by the Commission after the permittee association was dissolved.

The construction permits for new stations granted to Lincoln Memorial University (WLMU), Middlesboro, Ky., and P. W. Spencer (WRKL), Rock Hill, S. C., were canceled by the Commission after having been surrendered.

The Commission's order of February 9, 1937, granting a construction permit for a new station to Harold F. Gross and Edmund C. Shields (WHAL), was vacated on November 28, 1938, following a decision by United States Court of Appeals for the District of Columbia.

Station WFAB, New York City, licensed to Debs Memorial Radio Fund, Inc., was deleted on November 7, 1938, and its time was surrendered to Station WEVD for the purpose of effecting a consolidation of the two stations.

The application for renewal of license of Attala Broadcasting Corporation (WHEF), Kosciusko, Miss., was denied as in default and the station was deleted.

PETITIONS FOR REHEARING

By reason of interpretations placed on a decision of the Court of Appeals in the *Red River Broadcasting Co. case* (Fourth Annual Report, p. 232) that in order to exhaust administrative remedies petitions for rehearing must be filed and disposed of before the Com-

mission prior to taking an appeal, there was a very substantial increase in the number of such petitions the Commission was required to consider.

During the year 71 petitions for rehearing were filed, 63 of which were denied, 4 granted, 1 granted in part, and 1 dismissed when the Commission ordered further proceedings on its own motion. Three petitions were dismissed at the request of the parties filing same.

ACCOUNTING, FINANCIAL, AND OTHER STATISTICAL DATA

Financial and statistical data from all standard broadcast stations were obtained for the year 1938 in the form of an annual report, in accordance with the Rules of Practice and Procedure issued by the Commission. In addition to being corrected and preserved as information for the Commission, the data contained in these reports were tabulated for all stations and were published without disclosing the identity or affairs of particular stations.

Voluminous data were assembled and were introduced in evidence in the hearing held on chain broadcasting (docket 5060). These data related to chain broadcast companies, stations owned or otherwise operated by or for them, the results of their contracts with stations independently owned, and a number of economic factors contributing to the welfare of the stations and the chain broadcast companies. Data were presented, also, on the matter of ownership of standard broadcast stations, showing the actual ownership of the stations and the community of interest among the several stations.

Financial and operating data.—Of the 674 standard broadcast stations in the continental United States operating on a commercial basis, statistics were compiled relating to 660, reports from the remaining 14 stations not being included because they were incomplete or not satisfactory otherwise. Considerable statistical data are shown in appendixes to this report. In the following table are shown a few salient items of financial and operating data with respect to the 3 major networks and the 660 stations.

For the calendar year 1938

Revenue from sale of time	$100, 892, 259
Miscellaneous broadcast revenues	10, 466, 119
Total broadcast revenues	111, 358, 378
Broadcast expenses (including taxes, depreciation, compensation, and other expenses of conducting broadcast activities	92, 503, 594
Broadcast income	18, 854, 784
Investment in broadcast assets (at cost) at the end of the year 1938	72, 961, 659
Less: Accumulated depreciation and amortization	26, 183, 672
Net amount of broadcast assets	46, 777, 987
Number of officers and employees at the end of the year 1938	23, 060
Total compensation to officers and employees for the year 1938	$45, 663, 757

Applications for construction permits, transfers of control, and assignments of license required the preparation and consideration during the fiscal year of 232 accounting reports dealing with the financial aspects of such applications. Accounting reports prepared from the records of hearings in 107 broadcast docket cases were also considered.

3. TELEVISION

During the past year increased interest was shown in television development. A number of applications were received during the year requesting the use of television frequencies with experimentation directed toward the use of television as a public service which is in direct contrast to previous authorizations which were primarily directed toward the development of television equipment, standards, and systems of transmission. In view of this trend, the Commission designated a committee of three Commissioners comprising T. A. M. Craven, chairman; Norman S. Case; and Thad H. Brown to study the various aspects of television and to recommend to the entire Commission a policy which may serve as a guide to the industry. As a result of their study, there was issued the first television report which is briefly summarized as follows:

The first question studied by the Television Committee was necessitated by the request of the Radio Manufacturers' Association for approval of the technical standards for television, as proposed by that association. The second problem confronting the committee involves the disposition to be made of the various applications for construction permits to erect new television stations and, in particular, the applications requesting television facilities with the ultimate purpose of providing television to the public on a service basis.

The committee was of the opinion that any jurisdiction which the Commission may lawfully have in the matter of television standards is solely that arising from its specification of external-performance requirements for transmitting stations which the Commission may license in the future.

The committee was not unmindful, however, of the complex ramifications of the television problem, relative to the engineering, economic, and sociological expectations of this budding industry. With this point in mind, the committee and representatives of the staff make various trips into the field to secure a first-hand picture of the state of the art, as well as to secure an index of possible future trends, as may be reflected in the thoughts of the present leaders of the industry.

Television appears to have thoroughly definite stages of development: First, a period of technical research, which includes fundamental research, initial development of manufacturing processes, designing of all equipment, and the adoption of a procedure for continuing improvements in accordance with the demands of the public; and, secondly, experimental operation, which includes the initial testing of television as a service to the public on a limited scale, and the ascertaining of the requirements of the public for types of programs and character of service, as well as securing experience in the production of such service. Along this line is also included the securing of information relative to propagation, characterizations, and allocation information from transmitters operating under service conditions. Included also in this phase of the development is the commencement of construction of facilities to insure an efficient distribution for a program service on a regional scale. The third stage of television development will be marked by the construction of transmitting stations throughout the Nation and the operation of television as a service to the public on a sound, economic basis. In this stage the public will be expected to purchase receivers with the expectancy of a stable television service of good technical quality, without too rapid an obsolescense of the instruments it has purchased.

Considerable credit should be given to the engineers in the industry for the present high state of technical development, and it is entirely possible that the technical quality of television produced in accordance with the proposed R. M. A. standards may be accepted by the public as a practical beginning, provided the public is also informed that improvements in quality and reduction in cost of equipment are possible as a result of future progress in scientific and engineering research. In view of this fact, it appears that rigid adoption of standards at this state of the art may either "freeze" the television industry, and thus retard future development, or may result in a high rate of obsolescence of equipment purchased by the public, which may not be able to receive signals from a station that may have different standards from those now in use, or from stations employing standards which may be considerably better than those now in use or proposed to be used, and at the present state of the art are not now generally recognized or known. As a result of these two factors, considerable patience, caution, and understanding

must be used at this time. Careful, coordinated planning is essential, not only by various elements of the industry but also between the industry as a whole and the Federal Communications Commission.

The extreme limitation of a number of available television channels presents a serious problem, particularly in the early stages of television service, inasmuch as there are by now only seven channels developed from a technical standpoint. This scarcity of channels is a result of the fact that one television station requires a 6000-kilocycle band, and in order to proportionately conserve the available radio spectrum, it is, of course, necessary to restrict the number of these channels.

In addition to the scarcity of channels, the operation of a television station is a costly project, and at the present time without return from the sale of advertising or from sponsorship, due, first, to the fact that these stations are licensed only on an experimental basis, and, secondly, because the technical development has not reached the stage where it can be standardized in essential details for uniformity. From these points it appears highly essential that the industry be encouraged to undertake further practical research leading toward the development of methods which will permit more stations to be accommodated in the limited space in the radio frequency spectrum, as well as facilitating lower costs in the production of good quality program service to the public.

The Television Committee is preparing a second television report which will serve to determine policies relative to existing stations and action on the pending applications requesting television authorizations to operate stations as a service to the public.

4. BROADCAST SERVICES OTHER THAN STANDARD

There has been rapid growth and development in broadcast services other than standard. Besides television this includes relay, international, facsimile, high frequency, noncommercial educational, and developmental services. Several policies have been changed which have necessitated revision of the Commission's rules and regulations. New allocations were provided for services operating on frequencies from 30000 to 300000 kilocycles. These allocations meant a frequency reassignment for high frequency relay, television, facsimile, high frequency broadcast, and some developmental broadcast stations.

The class of station previously known as an experimental broadcast station was redesignated as "developmental broadcast station" in order to eliminate confusion with reference to general experimental and special experimental stations.

The rules and regulations governing noncommercial educational broadcast stations were expanded and clarified in order to maintain this class of station for the strict educational purpose for which it was originally established and intended.

Considerable interest has been shown in the use of frequency modulation for high frequency broadcasting, and much research and development has been carried on along this line. Technical interest has been reflected by the large number of applications submitted to the Commission for frequency modulation facilities.

While 12 experimental authorizations were issued to standard broadcast stations to broadcast facsimile signals on their assigned frequencies during the experimental period at 12 midnight to 6 a. m. during the last fiscal year, the present year finds that 4 of these stations

voluntarily withdrew their authorizations and that but 1 new station requested and was granted such authorization.

A tabulation of the applications received concerning broadcast services other than standard is contained in the appendixes.

INTERNATIONAL BROADCAST STATIONS

There was also a high degree of interest in international broadcasting during the past year. A major change in policy occurred with the adoption of the new rules and regulations governing this service, which provide for commercial operation of this class of station. In addition, the rules provide that all international broadcast stations shall, after July 1, 1940, operate with power of not less than 50 kilowatts and with antenna so designed that the signal toward the specific foreign country or countries to be served shall be at least 3.16 times the average effective signal from the station. During the past year one licensee started operation with 100 kilowatts power, while another was granted a construction permit to increase power to 50 kilowatts.

Two hearings were held relative to the request for international facilities during the past year, namely, the Pillar of Fire, Zarepath, N. J., requesting 5 kilowatts power, A3 emission, and the frequencies 6080, 11830 and 17780 kilocycles (facilities of W9XAA); and the Chicago Federation of Labor, requesting assignment of license of W9XAA to the Radio Service Corporation of Utah (licensee of Station KSL), heard jointly with the application of the Radio Service Corporation of Utah for a construction permit to move W9XAA to Salt Lake City, Utah, and increase power to 10 kilowatts. The application of the Pillar of Fire was denied, while to date no action has been announced on the application of the Chicago Federation of Labor and the Radio Service Corporation of Utah.

Pursuant to the Cairo Radio Regulations, 10 new frequencies, namely, 6170, 6190, 9650, 9670, 17830, 21570, 21590, 21610, 21630, and 21650, were made available for international broadcast stations in this country. Of these, all but one frequency have been requested and assigned.

The new rules also specify a more rigid frequency tolerance for international broadcast stations, requiring this class of station, after January 1, 1941, to maintain frequency within plus or minus 0.005 percent of the assigned frequency.

The "Pan-American" frequencies are now in regular use under temporary restrictions at General Electric Co. Station, W2XED San Francisco, assigned the frequencies 9550 and 21500 kilocycles, and at World Wide Broadcasting Corporation stations, W1XAL and W1XAR, Boston, assigned the frequencies 11730 and 15130 kilocycles.

One new international broadcasting station was authorized during the past year, namely, W1XAR, assigned to World Wide Broadcasting Corporation, Boston. It is pointed out, however, that in reality this provides an extension of the facilities now asigned W1XAL.

During the past year W6XBE, assigned to the General Electric Co., Belmont, Calif., started operation at its temporary location at Treasure Island, San Francisco Bay. Of particular interest was the fact that numerous letters have been received from Alaska requesting the extension of the hours of operation of this station.

Transmissions of various international broadcast stations were rebroadcast over standard broadcast stations located in both Puerto Rico and Cuba.

RELAY BROADCAST SERVICE

Relay broadcast stations provide an adjunct service to broadcast stations by relaying programs from remote localities or places where wire lines are not available or accessible. Under the new rules and regulations, high frequency relay broadcast stations (except those operating on frequencies above 300000 kilocycles were changed from an experimental status to regular licenses.

Recognition has also been given to the possibilities of frequency modulation, and accordingly, four frequencies in the band 133030–138630 kilocycles were provided for relay broadcast stations using this type of emission. Another group of frequencies in the same general range were provided for relay broadcast stations employing amplitude modulation. In almost every event of national interest and importance relay broadcast services have been utilized, particularly national emergencies, such as the New England hurricane and flood in September 1938, forest fires in 1939, inauguration of the trans-Atlantic Air Service, the Seattle-Alaska Air Mail Service, etc.

FACSIMILE

There are two types of facsimile authorizations. Regular licenses may be issued to facsimile broadcasting stations intended for research, design, development, and service testing of facsimile and facsimile equipment. This class of facsimile station is assigned frequencies in the bands 25025–25050, 43540–43940, and 116110–116470 kilocycles. Reception of such facsimile signals necessitates the use of special high-frequency receivers or the use of an all-wave broadcast receiver in conjunction with the facsimile recorder equipment. General practice, however, has indicated that the average receiver designed to pick-up aural broadcasting does not possess a sufficiently "flat" automatic volume control system for satisfactory reproduction and therefore facsimile equipment manufacturers are generally recommending the use of specially designed receivers to be used with their facsimile recorders.

Special experimental facsimile authorizations may be issued to standard broadcast stations for the purpose of transmitting facsimile signals on their regularly licensed frequencies during the experimental period (12 p. m. to 6 a. m., local standard time).

Considerable research and experimentation has been carried on relative to the reporting style, format, and type best suited for the transmission of facsimile. There has been an increase in the interest in high frequency facsimile broadcast stations, five new applications having been granted during the past year.

HIGH FREQUENCY

High frequency broadcast stations are classified into two general groups depending upon the type of modulation used.

The system of modulation known as amplitude modulation is a system in most general use for speech and music transmission by radio. It was the first system developed and has long been used by

standard broadcast stations. Amplitude modulation involves a system of varying the amplitude of the carrier current in accordance with the audio frequency electrical current resulting from the conversion of sound energy into electrical energy.

The other system of modulation, known as frequency modulation, is a system whereby the frequency of the carrier current is varied in accordance with an audio frequency electrical current resulting from the conversion of sound energy into electrical energy. This system of modulation has been the subject of considerable research and experimentation and is known to possess characteristics especially favorable in discriminating against noise and interference. For high fidelity operation, this system has been operated with a frequency band of emission approximating 200 kilocycles when operating on frequencies around 40000 kilocycles.

The licensees of the various high frequency broadcast stations operating on an experimental basis have been required to actively prosecute a program of research and experimentation during the present license period. When applications for renewal of license were received by the Commission, careful study was made of the work the licensee had carried on during the past license period and the work it proposed to carry on during the next license period. If the licensee had failed to actively prosecute a program of research and experimentation compatible with the Commission's rules and regulations and did not indicate that it would prosecute such a program during the ensuing license period, the application for renewal of license was designated for hearing. When the licensee indicated that he had done some work and would continue to do so, the Commission requested prior to the granting of renewal of license, a specific commitment be made relative to the appropriation and the personnel the licensee would provide during the next license period in order to prosecute such a program of research and experimentation. When a licensee had actively prosecuted a program of research and experimentation, the renewal was granted in the usual manner.

It is expected that the experimental reports submitted at the end of the present license period will contain a large amount of valuable information relative to the propagation characteristics and coverage possibilities of these frequencies and provide a contrast between the two systems of modulation, as well as serve as an index to the allocation problem of frequency modulated stations.

EDUCATIONAL BROADCAST

The term "noncommercial educational" broadcast station is used to identify a high-frequency broadcast station licensed to an organized nonprofit educational agency for the advancement of its educational work and for the transmission of educational and entertainment programs to the general public. Stations of this class will be licensed only to an organized nonprofit educational agency and upon a showing that the station will be used for the advancement of the agency's educational program. In particular, the applicant for this class of station must show that the transmissions will be directed to specific schools in a system, or for use in connection with regular courses, as well as routine and administrative material pertaining to a school system.

During the past year two such stations were licensed, namely: WBOE, Board of Education, Cleveland, Ohio, and WCNY, Board of Education, city of New York. Considerable interest in this class of station among the educational institutions in the country is indicated by the large amount of correspondence and the number of inquiries received by the Commission since the announcement of the establishment of this class of station and service in January 1938.

The Federal Radio Education Committee has operated since its organization under grants made in 1935 by the National Advisory Council on Radio in Education, and by the National Association of Broadcasters, with supplementary grants from the Rockefeller Foundation and the General Education Board. The grant of the National Association of Broadcasters for studies being conducted by the Office of Education, expires on June 30, 1940. The original grant made by the Rockefeller Foundation to Princeton University for carrying on a Committee study has been extended to May 30, 1940. The Committee study which has been under way at Ohio State University for the past 2 years, and which was financed by the General Education Board, has been extended for another 3-year period. The newest grant by the National Advisory Council on Radio in Education is supporting a study in New York City which was begun during the spring of 1939, and is expected to be completed within the current year. The combined funds that have been provided by various agencies and organizations to underwrite the several research studies derived from the study program of the Federal Radio Education Committee, at the present time, total approximately $500,000.

5. USE OF BROADCAST FACILITIES IN EMERGENCIES

During the fiscal year ending June 30, 1939, the only major catastrophe was the New England hurricane and flood during September 1938. The general loss of power greatly handicapped both radio transmission and reception facilities but in spite of this, invaluable service was rendered by stations inside and outside the affected area where power facilities were repaired or emergency equipment was employed. Fifteen special authorizations to operate with temporary equipment or at a temporary location were issued. In addition, numerous authorizations were issued for operation beyond the normally licensed operations and a release was made calling the attention of licensees of both broadcast and amateur stations to the additional operation during the emergency.

Due to the suddenness and nature of this catastrophe, the effect on broadcast stations was greater than that during the Ohio flood in 1937. However, it is believed that as in the case of the Ohio flood, the service rendered by broadcast stations, as well as other stations, would have been much more effective had the various units been previously organized for coordinated emergency service. To this end a great deal of study and work has been done during the fiscal year and it is hoped that in the near future a definite program for full coordination of communication facilities with other emergency services may be adopted.

6. COMPLAINTS AND INVESTIGATIONS

General nature of complaints.—The majority of the investigations conducted with regard to complaints received concerning the program service of broadcast stations did not necessitate the holding of hearings. Other complaints involving possible violations of the act and of the rules and regulations of the Commission, including the broadcasting of lotteries, medical programs, and fortune-telling programs, and the illegal assignments of licenses and transfers of the control of licensee corporations, have been investigated, and appropriate action has followed either by way of adjustment or by the designation for hearing of applications for renewal of license.

The Commission maintains complete records of the names and addresses of all officers, directors, and stockholders, of the amount and kind of stock held, and of all contracts affecting the conduct or the control of all licensees of standard broadcast stations. This information is designed to show the citizenship of officers, directors, and stockholders, the ultimate control of a licensee corporation, and the relationship of managerial contracts, leases, and agreements for the sale of time to the actual operation of the station.

All applications for standard broadcast facilities, including those for the regular renewal of a broadcast station license, are compared with these records to determine whether a change in ownership or a transfer of the control of a licensee corporation has occurred and also to determine what interests the licensees or stockholders may have in other stations.

MONOPOLY INVESTIGATION

The Commission on March 18, 1938, by Order No. 37, authorized an investigation to determine what special regulations applicable to radio stations engaged in chain or other broadcasting are required in the public interest, convenience, or necessity. The Commission's order directed that hearings be held in connection with the investigation and that it include among other matters inquiry into the contractual relationships between network and stations, the extent of control over programs and advertising contracts exercised in practice by stations engaged in chain broadcasting, duplication of network programs in the same areas, exclusive contracts restricting stations to one chain service and chain services to one station in a given area, extent to which single chains have exclusive coverage, policies of networks with respect to character of programs, diversification, and accommodation to requirements of areas served, the number of stations in each network together with hours controlled and hours used by networks, rights and obligations of stations in relation to advertisers having network contracts, service rendered by stations licensed to network, competitive practices of chain stations, effect of chain broadcasting upon stations not engaged in chain broadcasting, practices or agreements in restraint of trade or furthering monopoly in connection with chain broadcasting, and extent and effect of concentration of control of stations locally, regionally, and nationally.

The Committee appointed by the Commission on April 6, 1938, to supervise the investigation, comprised Chairman McNinch and Commissioners Walker, Sykes,[1] and Brown, and began hearings November

[1] Commissioner Sykes was succeeded in April, 1939, by Commissioner Thompson.

14, 1938, pursuant to public notice that the Commission would hear any person or organization desiring to present evidence on the matters included for investigation in Commission Order No. 37.

The Committee called upon the national networks, regional networks, licensees of a number of stations, and representatives of transcription and recording companies to present evidence. It also requested information through questionnaire from licensees of stations, and holders of stock in licensee corporations. A number of organizations filed appearances, requesting an opportunity to be heard.

The hearing was adjourned on May 19, 1939, subject to the call of the Committee, after 73 days of hearing sessions at which there were heard 94 witnesses from whom there were 8,713 pages of testimony adduced and with respect to whose testimony there were 674 exhibits admitted. The witnesses heard included the presidents of the large chain broadcast companies, their technical, administrative, and other managerial representatives, as well as representatives of the smaller networks, certain stations, transcription companies, labor union representatives, and others interested.

NUMBER OF INVESTIGATIONS

There were 65 broadcast stations under investigation at the beginning of the fiscal year, and during the year investigations were instituted against 257 other stations. Investigations against 265 stations were handled and completed in an informal manner, and those against 15 stations were closed after formal hearings were held. At the close of the year, investigations were still pending against 42 stations, 17 of which were on the hearing docket.

FIELD INSPECTIONS, EXAMINATIONS, AND INVESTIGATIONS

For the purpose of administration and the enforcement of radio laws, treaties, and regulations, the Commission maintains 22 radio district offices scattered throughout the United States and its possessions. In addition, the Commission has seven monitoring stations, located at Boston, Mass.; Baltimore, Md.; Atlanta, Ga.; San Pedro, Calif.; Portland, Oreg.; Great Lakes, Ill., and Grand Island, Nebr.

The monitoring stations, in general, do not participate in investigation of unlicensed stations or stations otherwise violating the law other than to report their operation and to intercept and record their signals as proof of such illegal operation.

Most of the investigating is done by the field stations. Each field station is administered by an inspector in charge who has on his staff additional inspectors and other assistants. The 115 inspectors of the Field Division are radio engineers and, in addition, are radio operators, many of whom have had previous experience in the maritime, aeronautical, and other services.

Besides locating private stations, these inspectors are required to check all classes of radio stations, such as broadcast, police, ship and aircraft (including foreign craft which touch our shores); television, amateur, and point-to-point service; and to monitor radio transmissions for adherence to frequency, quality of emission, and compliance with prescribed procedure; investigate complaints of interference to radio reception, and conduct examinations for various classes of operators licenses.

At each radio district headquarters, inspection cars are provided for more detailed field inquiry. Some of these cars are equipped with all-wave communication receivers which may be operated, if necessary, while the car is in motion, from the car's 6-volt battery. The receivers are so constructed that they may be removed from the car and worked from a 110-volt alternating-current power supply such as is available in a residence, tourist cabin or such other place that may be chosen by an inspector as a base of operation. The mobile units are also equipped with special antennas.

Additional units to this type of equipment are urgently needed by the Commission, particularly because of new demands for regional investigations. The mobile equipment is also used by field offices to transport examination equipment to various points in the United States where applicants for various classes of commercial and amateur operator licenses are examined. . In addition, technical equipment necessary for use in connection with inspection of all classes of radio stations is so transported.

At certain field offices, portable field strength measuring equipment is necessary. This is used primarily to determine the efficiency of broadcast station antennas. From the data thus accumulated, the Commission's engineers are able to ascertain whether a station is making appropriate use of its facilities.

Monitoring stations are very useful in determining if licensed stations are transmitting beyond their allotted sphere and, further, if interference is caused to established service.

Detailed tables reflecting the volume and nature of the field-inspection work are contained in the appendixes.

7. LITIGATION

The conduct of litigation in the courts was one of the Commission's most important activities during the year. Issues arose in several cases, the final determination of which will affect, in a far-reaching and fundamental way, the future conduct of the Commission's proceedings in broadcast cases, and will also determine in an important degree the extent and scope of the jurisdiction of the Court of Appeals of the District of Columbia over Commission action. A brief summary of the facts and holdings of the court in the decisions handed down during the year is included in the appendixes.

At the beginning of the fiscal year the following litigation relating to radio broadcasting was pending in which the Commission was a party litigant: 10 cases in the United States Court of Appeals for the District of Columbia in which appellants were seeking a review of a decision of the Commission granting or denying a broadcast application; one case was pending in the Court of Appeals on appeal from a decision of the District Court for the District of Columbia; and one petition for writ of certiorari was pending in the Supreme Court seeking a review of a decision of the Court of Appeals for the District of Columbia.

During the fiscal year 23 appeals were taken to the Court of Appeals for the District of Columbia seeking a review of Commission decisions in broadcast matters; 3 original proceedings were commenced in the Court of Appeals seeking writs of mandamus and prohibition directed to the Commission; 1 injunction suit was instituted in the

District Court; and 1 petition for writ of certiorari was filed in a case which had been disposed of by the Court of Appeals during the preceding fiscal year.

The following tabulation shows the total number of cases pending during the fiscal year:

Thirty-three cases involving appeals to the Court of Appeals for the District of Columbia from decisions of the Commission;
Three original proceedings instituted in the Court of Appeals;
Two suits instituted in the District Court for the District of Columbia;
Two petitions for writs of certiorari in the Supreme Court.

Of the 33 direct appeals to the Court of Appeals for the District of Columbia from orders of the Commission, 14 were dismissed,[3] 2 of the Commission's decisions were reversed [4] and 2 were affirmed, leaving 15 cases [5] pending in the court at the end of the fiscal year.

Of the three original proceedings instituted in the Court of Appeals during the fiscal year, only one had been decided at the end of the fiscal year and in this case the writs of prohibition and mandamus requested were granted.[6] The other two proceedings were still pending at the end of the fiscal year.[7]

Of the two cases instituted in the District Court for the District of Columbia in which injunctions were sought, in one case the District Court refused to grant the injunction, which decision was affirmed by the United States Court of Appeals for the District of Columbia, and in this case certiorari was denied by the Supreme Court. In the other District Court case an injunction was granted but on appeal to the Court of Appeals for the District of Columbia the District Court was reversed.

The petition for writ of certiorari which was pending at the beginning of the fiscal year as well as the petition for writ of certiorari which was filed during the fiscal year in a case which had been disposed of by the Court of Appeals during the preceding fiscal year were both denied by the Supreme Court.

The following tabulation shows the disposition at the end of the fiscal year of all the cases pending at the beginning of the year and instituted during the fiscal year:

Nature of case	Number	Decision for Commission	Decision against Commission	Pending end of fiscal year
Direct appeals to the Court of Appeals	33	16	2	15
Original suits in District Court	2	2		
Original suits in Court of Appeals	3		1	2
Petitions for certiorari	2	2		
	40	[1] 20	[2] 3	17

[1] In 1 of these cases a petition for writ of certiorari was denied by the Supreme Court.
[2] In 2 of these cases writs of certiorari had been granted by the Supreme Court, and were pending in the Supreme Court when this report went to the printer.

[3] In two of these cases the appellants filed petitions for certiorari in the Supreme Court; both petitions were denied.
[4] In one case the Commission filed a petition for writ of certiorari in the Supreme Court which was granted and the case was in the Supreme Court when this report was sent to the printer.
[5] Of these, 8 were subsequently dismissed, and in 1, the Commission's decision was affirmed, leaving 6 of such cases pending and undecided in the Court of Appeals when this report went to the printer.
[6] The Commission's petition for writ of certiorari from the Supreme Court in this case has been granted and the case was awaiting oral argument when this report was sent to the printer.
[7] In one of these the Court subsequently granted the writs of mandamus and prohibition and the Commission's petition for writ of certiorari in the Supreme Court was granted and the case awaiting argument in the Supreme Court when this report was sent to the printer.

A list of broadcast cases in litigation during the year, together with a detailed statement of the facts and principles of law involved, will be found in the appendixes.

Specific mention should be made here of three of these cases:

In *Sanders Brothers Radio Station* v. *Federal Communications Commission*, No. 7087, the Commission had entered an order granting authority to construct a new radiobroadcast station at Dubuque, Iowa, and had simultaneously granted the licensee of Station WKBB authority to move its station from East Dubuque to Dubuque, Iowa. The licensee of Station WKBB appealed from that part of the decision authorizing the new station to be constructed at Dubuque, the ground for its appeal being that the Commission had failed to dispose of the question of whether there was adequate economic support in the community for both stations. The Commission moved to dismiss on the ground that the appellant had no appealable interest, since the only damage which it alleged as its "aggrievement" was prospective financial loss resulting from competition with the new station, which the Commission contended was "damnum absque injuria." The Commission contended that the congressional policy as expressed in the Communications Act of 1934, as amended, contemplated that licensees of radiobroadcast stations would be subject to and not protected from competition from other licensees. The court set aside the Commission's order, overruling the Commission's contention that if damage had resulted to the station taking the appeal, such damage did not constitute legal injury and was not a proper basis for an appeal under the statute. The court held that it was the Commission's duty to receive evidence and make findings on the economic issue and that as the Commission had not made such findings "the administrative task has not been completed and there is no proper basis for judicial review."

The decision of the court of appeals is of outstanding significance in its sweeping interpretation of the jurisdiction of the Commission over licensees of broadcast stations. The court construed the Communications Act of 1934, as amended, as conferring upon the Commission the duty of determining the competitive effect upon existing licensees of the grant of an application for new broadcast facilities. The court also held, in effect, that a license for a broadcast station conferred upon the holder thereof a right to question the validity of a similar license issued to a competitive broadcast station.

In holding that the Commission was required to make findings in granting an application for construction permit for a radio station, the court placed an interpretation upon the statute which may impose a heavy administrative burden upon the Commission. The Commission's contention in the case was that the Commission is not required under section 319 (a) or 309 (a) of the statute to make findings when it grants an application for construction permit or for a radio-station license.[1]

The case of *The Pottsville Broadcasting Company* v. *Federal Communications Commission*, No. 7016, involves questions relating to the jurisdiction of the court of appeals to control the procedure of the Commission on a broadcast application which has been remanded to the Commission after a reversal by the court of a decision denying such application. The court of appeals in a case decided during the last fiscal year reversed a decision of the Commission which had denied the application of Pottsville Broadcasting Co. for a construction permit to erect a new radiobroadcast station in Pottsville, Pa.

After the remand, the Commission set the Pottsville Co.'s application for oral argument together with two other conflicting applications, which had been filed and heard before an examiner after the Pottsville application, but which were then ready for final action. The Commission order stated that it would consider the three applications individually on a comparative basis, although not in a consolidated proceeding and would grant the application which in the judgment of the Commission would best serve the public interest.

The Pottsville Broadcasting Co. applied to the court of appeals for the issuance of a writ of prohibition to prevent the Commission from taking any procedural steps relating to the granting of an application for construction permit for a new station in Pottsville, Pa., until it had first acted upon the petitioner's application and for a writ of mandamus to compel the Commission to render a decision on the petitioner's application within a time fixed by the court. The Commission

[1] The Commission's petition for writ of certiorari from the Supreme Court to review the decision of the Court of Appeals in this case was granted and the case was pending in the Supreme Court when this report went to the printer.

opposed the granting of the writs on the ground that the court was without power to control the administrative proceedings by the Commission on the petitioner's application as requested. The court directed the issuance of a writ commanding the Commission to set aside its order relating to the petitioner's application having the effect of designating such application for hearing on a comparative basis with other pending applications and commanding the Commission to hear and consider the petitioner's application on the basis of the record originally made on such application.[2]

The third case which involves principally a question of statutory construction, is *The Crosley Corporation* v. *Federal Communications Commission*. This case involved an appeal to the Court of Appeals for the District of Columbia from a decision of the Commission which denied the application of the Crosley Corporation for an extension of its special experimental authorization to operate Station WLW with 500 kilowatts power, unlimited hours, for the purpose of carrying on a program of experimentation. The special experimental authorization was originally issued in 1934 and had been extended from time to time. The Commission's rules fixing the maximum power for stations operating on the frequency assigned to WLW was 50 kilowatts. The primary purpose of permitting Station WLW to operate with 500 kilowatts, unlimited time, was to permit experimentation to be undertaken to demonstrate the feasibility of operation with "super power." The station's request for an extension of this experimental authorization, filed in December 1938, was designated for hearing by the Commission before a committee consisting of three Commissioners. This committee recommended that the request for extension be denied and after the applicant was permitted to file exceptions and to make oral argument on the committee's report, the Commission denied the application for extension on the ground that the applicant had failed to show that the use of 500 kilowatts power, unlimited hours, was necessary in order to carry on the program of experimentation proposed.

Station WLW appealed to the Court of Appeals for the District of Columbia seeking a review of the Commission's decision. The Commission moved to dismiss the appeal on the grounds that the special authorization was not a radio station license within the purview of the appeal section of the statute and, therefore, the Commission's order denying the request for extension of the authorization did not constitute the denial of an application for renewal or modification of radio station license. The appellant contended that the experimental authorization was a station license within the meaning of the appeal section of the statute. The court granted the Commission's motion and dismissed the appeal.[3]

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[2] The Commission applied to the Supreme Court for a writ of certiorari which was granted. The case was awaiting oral argument before the Supreme Court when this report went to the printer.

[3] A petition for writ of certiorari filed by Station WLW was denied by the Supreme Court on November 6, 1939.

CHAPTER V

Promotion of Safety of Life and Property

1. INTRODUCTION

The Communications Act of 1934, as amended, has, as one of its purposes, the promotion of safety of life and property through the use of wire and radio communication. The act contains a number of provisions under which the Commission functions in this connection. Title III, part 2 of the act, contains specific provisions with respect to the employment of radio for the promotion of safety at sea, and the duty of enforcing the radio provisions of the International Convention for the Safety of Life at Sea, London, 1929, adds to the Commission's responsibility in this field. The greater part of the activities of the Commission, with respect to promotion of safety, has to do with the maritime services.

The employment of radio for safety purposes, outside of the marine field, has also engaged a considerable part of the Commission's attention. National and international conferences have been held in connection with the use of radio in aviation. The emergency services including police, forestry, and other classes of stations are devoted to protection of life and property, aiding law enforcement, fire prevention, and similar safety missions, and these services are of constantly increasing importance.

The types of stations which the Commission considers to be primarily devoted to promoting safety of life and property are classified as rendering marine services, aviation services, and emergency services. Under the latter category are included municipal and State police, marine, fire, forestry, and special emergency stations. These services, except for marine service, are of comparatively recent origin, and are continuing to show a rapid expansion.

With respect to many of the emergency stations, there has been a tendency on the part of licensees not to fully appreciate the responsibility of operating the station in full compliance with Federal regulation. In many instances this was due to the divided authority inherent in municipal governments. There has been, however, an increased realization of the necessity for conducting the stations in strict accordance with technical requirements and regulations governing the manner of operation, in order that the best results may be obtained from the necessarily complex system. The improved situation is in no small measure due to the study of the subject by certain police and other officers who have realized the possibilities and have insisted on having trained personnel in charge of the equipment.

In addition to these services, the Commission receives many applications for special stations which are intended to be useful in promoting safety under circumstances in which normal communication facilities are inadequate. Such applications have received, and will continue to receive, careful consideration. However, the limitations in the use of available frequencies make it necessary to exclude all but those services which are most needed by the greatest number of people.

2. GREAT LAKES AND INLAND WATERS SURVEY

The special study of the radio requirements necessary or desirable for safety purposes for ships navigating the Great Lakes and inland waters of the United States, which the Congress directed the Federal Communications Commission to make and report its recommendations and reasons therefor to the Congress not later than December 31, 1939, is being conducted under the direction of Commissioner Thad H. Brown.

During the past year open formal public hearings were held at Cleveland, from July 18 to July 22, 1938, from August 1 to August 5, 1938, from March 6 to March 17, 1939, and from April 5 to April 6, 1939; at Detroit from August 16 to August 18, 1938; and at Washington, from May 23 to May 26, 1939. Members of the Great Lakes and Inland Waters Survey research and engineering staff presented testimony based upon investigations conducted by the Survey in these hearings. Testimony was presented by representatives of commercial shipping companies, shipmasters' associations, communication companies, labor organizations, yachting associations, and governmental agencies with respect to vessel operating conditions and the use of radio communications.

The engineering group for the Great Lakes and Inland Waters Survey, utilizing the services of some of the personnel of the Commission and one additional engineer employed specifically for the purpose, continued to carry out its experimental test projects designed to determine the relative effectiveness of radiotelegraphy and radiotelephony for safety-communication purposes under practical operating conditions on the Great Lakes, and to ascertain the reliable communication ranges which could be obtained using a type of radio transmitting installation comparable to equipment of average cost and design available on the open market. This equipment at various times was installed and operated for these tests on board Government and commercial vessels navigated over the steamship lanes on Lakes Huron, Michigan, and Superior. Suitable radio receiving and measuring equipment was set up and operated on the shores of these lakes and on board two Government vessels. These tests during the summer season of highest atmospheric interference to radio communication were carried out on Lakes Huron and Superior during July and August 1938, and on Lake Michigan during the more favorable radio receiving conditions of the fall season.

Two commercial type auto-alarms, modified for operation on the Great Lakes distress frequency 410 kc., were also subjected to tests under practical operating conditions on Lake Superior, utilizing the radio station on board a Coast Guard cutter and a commercial cargo vessel as transmitting ship stations for this purpose.

Communication tests were conducted with regularity during the periods mentioned, generally at sunrise, noon, sunset, and late evening of each day. Each test involved attempted complete reception at the official receiving points of both radiotelegraph and radiotelephone test messages transmitted under equivalent conditions on at least six frequencies distributed throughout the radio spectrum. Considerable resultant engineering data of a comparative nature was developed and prepared in the form of exhibits. These exhibits, together with considerable oral description of this experimental

emergency work, were made a part of the record of hearings conducted at Cleveland, Ohio, during the month of March.

The factual studies of the physiographic features, volume and nature of commerce, types of vessels, operating conditions, navigation facilities and conditions, navigation and other casualties, weather conditions, radio communication facilities and services of the Great Lakes, commenced in December 1937 have been completed.

Following the first informal conference with representatives of the Department of Transport, Dominion of Canada, held in New York May 12, 1938, a second informal conference was held with these representatives at Ottawa, on October 17, 1938, in order to facilitate the studies, to arrange for the transmission of data with respect to Canadian vessel operation, radio facilities and services, and to consider suggestions for further cooperation between the representatives of the radio regulatory bodies of the United States and Canada.

Since the inauguration of the Survey there has been a material increase of voluntary installations of radiotelephone facilities on vessels of the Great Lakes. As of May 1, 1938, there were 109 vessels on the Great Lakes equipped with radiotelephone, 65 of the United States registry and 44 of Canadian registry. As of July 24, 1939, there were 146 American vessels equipped with radiotelephone and 50 vessels of Canadian registry.

Conferences between representatives of United States and Canadian vessel owners of the Great Lakes were held in Toronto on October 5, 1938, and January 9, 1939. Resolutions were addressed jointly to the Commissioner-in-Charge, Federal Communications Commission, and to the Minister of Transport, Dominion of Canada, in connection with these conferences which expressed the opinion of these operators that radiotelephone has been demonstrated to be a prompt and reliable instrumentality for communication between ships and between ship and shore, and requesting the Governments of the United States and Canada to immediately endeavor to reach an agreement and to make frequency allocations at least on a temporary basis for a uniform radiotelephone communication service with respect to all of the Great Lakes.

Through the cooperation of the State Department, the Federal Communications Commission and the Department of Transport of the Dominion of Canada established a temporary arrangement for uniform radiotelephone communication upon the same fundamental basis as that used for radiotelegraphy, thereby affording the proper opportunity for the demonstration by United States and Canadian vessel owners of the practicability of radiotelephony for safety purposes on the Great Lakes. This system is being used, insofar as practicable, by vessels of United States and Canadian registry during the season of 1939. The results of this temporary arrangement, the operation of which is being observed by members of the Engineering staff of the Commission, are expected to be of material service to the Commission and to the Canadian Department of Transport in the development of various proposals and recommendations for a uniform system of radio communication on the Great Lakes. As a result of such consultation between these representatives and members of the staff of the Great Lakes and Inland Waters Survey, the study of radio communication requirements necessary or desirable for ships navigated on inland waters of the United States

was limited to passenger-carrying vessels of 100 gross registered tons or over, and freight vessels of 1,000 gross registered tons or over engaged in operation on bays and sounds or on other larger bodies of inland waters, excluding those which confine their operations to rivers.

3. MARINE SERVICES

EXEMPTION FROM COMPLIANCE WITH TITLE III, PART II

The Commission is authorized by the International Convention for the Safety of Life at Sea, London, 1929, and Public Law No. 97, to grant exemptions from the radio requirements prescribed therein when the vessels are navigated within certain specified limits, provided the Commission considers that the route and conditions of the voyage, or other circumstances, are such as to render compliance therewith as unnecessary or unreasonable for the purposes of the act and treaty.

Few applications were filed during the past fiscal year for exemption of vessels from the requirements of Public, No. 97, May 20, 1937, amending the Communications Act of 1934, in comparison to the number received in the preceding fiscal year.

As of June 30, 1939, numerous small pleasure passenger vessels below 100 gross tons were operating in an exempted status and subject to certain restrictions and specified distance limitations from shore in restricted areas. The general exemption previously granted by the Commission May 17, 1938, to small pleasure passenger vessels as a class up to and including 15 gross tons was renewed by the Commission May 16, 1939, for a period of 1 year.

Exemption was granted for a period of 1 year to certain individual vessels in excess of 100 gross tons for various operations. Exemption of a temporary nature for periods varying from 10 days to 3 months has in the past fiscal year also been granted in seven cases.

A large number of the vessels to which exemption has been granted during the past fiscal year are equipped with low power radiotelephone or radiotelegraph equipment which is available for communication with Coast Guard, coastal-harbor radiotelephone and ship stations, and consequently are not without some form of communication in case of emergency.

VIOLATIONS AND DEFICIENCY REPORTS

The enforcement of the operation and maintenance of marine radio equipment required by the Act and specific rules promulgated by the Commission on the basis thereof resulted in the serving of some 4,100 deficiency reports in contrast to 3,000 served during the preceding fiscal year, the additional number being attributable to the assignment of additional inspector personnel, which permitted the performance of 16,431 ship inspections, and represented an increase of 2,482 inspections over the number of inspections conducted during the preceding fiscal year.

An apparent increase in familiarity with the law and its application and the cooperative attitude shown in general by those responsible for compliance therewith has resulted in expeditious correction of the reported deficiencies with few exceptions. In one instance, however, it became necessary to notify the owner of a vessel of United States

registry that such vessel had become subject to a forfeiture for violation of the Communications Act of 1934. At the end of the year the Department of Justice was taking the necessary steps to collect the forfeiture.

COASTAL TELEPHONE

There has been no change in the number of coastal telephone stations operated as reported in the previous fiscal year. There are 6 American trans-Atlantic and trans-Pacific passenger vessels licensed to handle public telephone communications with this class of station, and there are also a total of 23 foreign ocean-going ships which normally communicate with these stations.

COASTAL HARBOR STATIONS

During the past year licenses were granted for new public coastal harbor telephone stations at Duluth, Minn., Port Washington, Wis., Memphis, Tenn., and San Juan, P. R. Construction of a station of this class was authorized at Port Sulphur, La. An application is pending for additional coastal harbor facilities at Lake Bluff, Ill., on Lake Michigan. Hearings were held on this application and on an application for a new coastal harbor station at Galveston, Tex. As of June 30, 1939, there were 14 coastal harbor telephone stations in the United States and Puerto Rico licensed to provide public radiotelephone service. Applications also are pending for new coastal harbor stations at Rogers City, Mich.; Caseville, Mich.; Sturgeon Bay, Wis.; West Dover, Ohio; Buffalo, N. Y.; Charleston, S. C.; Tampa, Fla.; Wilmington, Del.; and Cape Girardeau, Mo. An application to construct a public coastal harbor station at Seattle, Wash., was denied after formal hearing.

SHIP TELEPHONE

As of June 30, 1938, there were 765 ship telephone stations licensed by the Commission to communicate with coastal harbor stations. On June 30, 1939, this number had increased to 1,561. Of this number, 141 ship telephone stations were licensed for service on the Great Lakes.

EQUIPMENT

In order to insure compliance with section 354 (d) of the Communications Act of 1934, as amended, the Commission, on January 18, 1938, amended the Ship Radiotelegraph Safety Rules, modifying paragraphs 12 (c) and 12 (e) of these rules with respect to the standards for intermediate frequency, radiotelegraph, transmitting equipment installed on board vessels subject to title III, part II of the act.

This modification met with objection from certain shipowners, the main point at issue being the provision of the modified paragraph 12 (c) with respect to power required to be developed by new and existing transmitters with particular reference to the provision of subparagraph (3), requiring the replacement of existing radio equipment of a power less than the rules specified with new or modified equipment by October 1, 1938.

Having failed to reach an agreement satisfactory to the shipowners and the Commission at an informal conference held in the offices of the Commission at Washington, on April 21, 1938, the matter of

investigation of power requirements for ship radio transmitters was, on the Commission's own motion, designated for a formal hearing scheduled for November 14, 1938; and, on June 9, 1938, the Commission postponed the effective date of the subparagraph (3) of paragraph 12 (c) until further order of the Commission.

A preliminary study revealed that three main technical factors were involved in the determination of the minimum power required of a ship transmitter to satisfy the provisions of section 354 (d) of the act, namely:

(*a*) Intensity of the prevailing atmospheric noise level.
(*b*) Performance characteristics of ship transmitters, receivers, and antennas.
(*c*) Signal-to-noise ratio required for safety service.

In the absence of published data on the intensity of the atmospheric noise level to be encountered in different parts of the world, an investigation of this and other factors as well, was undertaken. In this connection, four United States ships were fitted with apparatus capable of continuously recording the intensity of the atmospheric noise level. Commission engineers operated this equipment while these vessels were engaged on their normal voyages, traversing different trade routes on the Atlantic and Pacific Oceans and in the Gulf of Mexico. Data on transmitter and antenna performance characteristics for over 100 representative United States ships were obtained by field personnel. Performance data on receivers in common use on United States vessels were also compiled. Tests were also conducted to determine the signal-to-noise ratio required for a grade of service consistent with safety of life and property at sea and, in addition, data were recorded on sound records for reproduction and demonstration.

All these data, when correlated, formed a basis on which an engineering estimate was formulated of the power necessary to be developed into an average ship antenna, by an average ship main transmitter, to provide a safety radiotelegraphic communication service between ships at sea over the prescribed distance of 200 nautical miles by day under normal conditions and circumstances, when maintaining a watch on the international distress frequency of 500 kilocycles.

On November 8, 1938, the Commission designated Commissioner T. A. M. Craven to conduct the hearing theretofore ordered; and the hearing was held in the offices on November 14–18, 1938, in which shipowners, radio communication companies, and radio operators' unions participated. The resultant report substantiated the Commission's rule as modified on January 18, 1938, with the exception that a proposed further modification of subparagraph (3) of paragraph 12 (c) was set forth and recommended for consideration.

This proposed further modification, if adopted as an amendment to the rules, would provide for the continued use of existing equipment not capable of meeting the applicable requirements of the rules with respect to power output and installed on board subject vessels, as temporary main transmitters until January 1, 1940. It would further provide for the approval of a specific electron-tube transmitter installed on board a subject vessel, if it is demonstrated that all the applicable requirements of the rule other than the power output requirement are capable of being met and if it is further demonstrated that the involved transmitter, as installed, is capable of producing

certain prescribed field intensities at a distance of 1 nautical mile over sea water.

Exceptions to the report were filed and the status of the matter as of June 30, 1939, was that oral argument before the full Commission was scheduled for July 13, 1939; and final action is to be taken after consideration of the points covered in the oral argument.

As a result of the amendment of the Ship Radiotelegraph Safety Rules on January 18, 1938, modifying paragraphs 12 (c) and 12 (e) of these rules, several new types of marine radiotelegraph transmitters, reflecting recent advancements in the radio art, have been developed. Also certain types of transmitters in common use on vessels of the United States have been modified to conform with the less stringent requirements of the amended rules, contained in subparagraph 12 (c) (2) thereof. In line with the Commission's policy to approve types of equipment, after satisfactory demonstration, as capable of meeting the requirements of the rules governing a specific service, tests have been conducted in the presence of engineering representatives of the Commission. Twenty-two types of transmitters made by four leading manufacturers of marine radio equipment have been approved as capable of meeting the applicable requirements of paragraph 12 (c) of the amended rules.

The approval of specific types of radio receivers, radio direction finders, and radio equipment for lifeboats, for use on vessels required by law to be equipped with apparatus of these classifications, has been held in abeyance pending the promulgation of Standards of Good Engineering Practice for Ship Stations which will furnish a basis for consideration of type approval.

Studies have been made and are being continued with the view of ascertaining the needs of the maritime mobile service with reference to safety of life and property at sea. These studies have been classified as follows: First, engineering standards considered necessary to adequately protect life and property, to be applied to all vessels subject to title III, part II of the act; and second, standards consistent with the advancement of the radio art, to be applied only to new vessels under construction and vessels on which new equipment is installed in the future. In this connection, conferences with other Government agencies and departments for the purpose of obtaining the benefits of the experiences of their engineering staffs have been held. Careful consideration has been given to the standards of the leading professional engineering societies. The results of these studies are reflected in some measure in the Rules and Regulations of the Commission, now undergoing revision and codification and they will be further reflected in the Standards of Good Engineering Practice for ship stations in process of preparation.

AUTOMATIC ALARMS

There are now 1,150 automatic alarms of tentatively approved types installed on vessels of the United States registry, 29 of this number having been reported as installed during the past year. A study of the operation of these devices under service conditions aboard vessels of the United States and in certain field monitoring stations of the Commission has been in progress during the past 2 years and will be continued for at least the greater part of the next year.

The performance of the automatic alarms on board vessels has been discussed with the manufacturers of such equipment and certain modifications of the tentatively approved types have been proposed by representatives of the Commission as being highly desirable in the light of the results of the studies made as a result of which further research and design work has been undertaken by the respective manufacturers of the two types of automatic alarms tentatively approved.

The Commission, on November 9, 1938, ordered that tentative approval of the two types of automatic alarms designated as Radio Corporation of America, model AR–8600, auto alarm, and Mackay Radio & Telegraph Co. auto alarm, type 101–A, manufactured by Federal Telegraph Co., until December 31, 1938, be extended until March 31, 1939, in order that further study and analyzation of the data already accumulated may be completed before consideration of these devices for final approval. On February 7, 1939, the Commission ordered a further extension of the period of tentative approval of these automatic alarm devices to March 31, 1940, for the purpose of further studies of the equipment under service conditions.

The further research and design work undertaken by one manufacturer has resulted in the development of an improved model which, by order of the Commission on March 20, 1939, was tentatively approved.

RECORD OF SEA DISASTERS

Twenty-nine safety communications studies have been made of distress cases involving the use of radio distress signals during the 12-month period covered by this report for the purpose of investigating all phases of the safety problem to obtain the maximum effectiveness from the use of radio and wire communications in connection with safety of life and property. A master record of each study is maintained by the Commission. The investigations and studies have disclosed certain methods by which improvements can be made to increase the effectiveness of the use of radio in connection with safety of life and property. Conferences with other departments of the Government whose duties concern the safety of life and property at sea and with representatives of the major licensees of ship radio stations have been held for the purpose of correcting and improving distress procedure disclosed as a result of the Commission's studies of these cases. A number of new rules have been promulgated to reduce interference and increase safety in the maritime mobile service. In general these rules establish priority of communications for both ship telegraph and telephone services on any frequency based upon international regulations and provide for the transmission and repetition of distress and auto-alarm signals. Certain facts disclosed by these studies which involve ship stations and stations of foreign countries have been brought to the attention of representatives of the foreign governments involved. The interest and cooperation received has been most gratifying. The communication studies have also brought out important subjects for discussion at future radio conferences for the drafting of international rules and regulations for the safety of life and property at sea.

There were several disasters at sea wherein the lives of persons were saved by American vessels as a result of the transmission and response to distress signals. The outstanding case occurred on January 21, 1939, when the British Imperial airplane *Cavalier*, while approx-

imately half-way between New York and Bermuda, encountered conditions which caused a forced landing at sea. Distress signals were transmitted from the plane and relayed to a New York coastal telegraph station which transmitted the autoalarm signal. Auto alarms on 53 American vessels responded to these signals and as a result of the response of the autoalarm installed on the American tanker steamship *Esso Baytown*, 10 of the 13 persons aboard the plane were rescued.

The effectiveness of the transmission of the alarm signal by a ship was demonstrated when the American tanker steamship *Bullock* caught on fire after an explosion while this vessel was in the Gulf of Mexico on October 6, 1938. The explosion rendered the radio inoperative and the fire which followed the explosion spread so rapidly that the men were forced to abandon ship immediately. The steamship *Bernuth* was within sight of the burning ship and transmitted the alarm signal which caused autoalarms on 15 vessels within the immediate vicinity to respond. The steamship *Bernuth* rescued all the crew, except one man who had been killed by the explosion, but other vessels on which autoalarms had responded were in a position to have rendered assistance if it had been necessary.

Special marine safety radio watches are established in the field offices of the Commission at Baltimore, Md., and Portland, Oreg., for the purpose of securing information in the marine radio service. These stations are manned on a 24-hour basis by trained experts and are equipped with special marine receivers, autoalarms, and frequency-measuring apparatus. The personnel of the stations is charged with the duty of observing the conditions prevailing in the marine radio service, particularly during the periods when ships are in distress, whether or not any undue interference is caused by other stations that prevents the speedy handling of the distress calls or the messages relating thereto, interference to hydrographic, medico, or other urgent messages, occupancy of the various ship-frequency bands, the measurement of the exact frequency used, performance of autoalarms, and general adherence to the international procedure in the marine service. The special marine safety watch established at Baltimore, Md., has in one instance been able to secure phonographic recordings of the transmissions made during a period of one distress case. Accurate data of the transmissions made during all the distress cases within range of both the marine monitoring stations were made. These data were used in corroboration with the information abstracted from the original ship radio logs received from vessels within the vicinity of the distressed vessel to complete the studies.

ENFORCEMENT

In regard to enforcement of the requirements for merchant ships, the Commission has found that its policy of leniency until such time as vessel owners and masters become familiar with the various aspects of the law was fully justified. We have noted a desire to cooperate in meeting all requirements, and an increased interest and responsibility on the part of the masters in seeing that their radio stations are properly maintained and operated. Nevertheless, two cases were pending at the end of the year which seemed to warrant proceedings to collect forfeitures.

4. AVIATION SERVICES

The increasing use of radio communication in the field of aviation, the many outstanding improvements in radio facilities contributing materially to air navigation and orderly operation of aircraft, and an increase of more than 30 percent in the number of aircraft radio-equipments licensed by the Commission, were among the most significant developments in the entire field of communications during the year. The growth of the service made necessary the revision of the radio regulations governing aviation communication. New frequencies have been made available to the aviation service, and technical advancements in the art have justified licensing on a regular basis classes of aviation stations heretofore authorized for experimental purposes only. Some of the problems with which the Commission was confronted in the revision of its rules to meet the changing conditions and increased demand arose in connection with—

(1) Air navigation aids such as instrument landing systems and radio marker beacons.
(2) Transpolar intercontinental flights.
(3) Transoceanic flights.
(4) Public correspondence from transport planes in flight.
(5) Instructional services and motorless flights.

Each had the customary frequency allocation problem in an already overcrowded radio spectrum. The important task of revision of the regulations required the united effort of several groups for the formulation of provisions to meet present needs and to anticipate future requirements. Numerous conferences with the Civil Aeronautics Authority were held in a spirit of closest cooperation and harmony. Conferences were also held with representatives of the aircraft industry and operators.

One of the complex problems present in the aviation communication services is the change from the present airport control frequency, 278 kilocycles, to a more suitable ultra-high frequency. Because the characteristics of radiocommunications over that part of the radio spectrum embodying frequencies above 100000 kilocycles (less than 3 meters) are unusually favorable for the purpose, equipment used in connection with instrument landing systems, airport control, and public correspondence should operate in that range. The more obvious and important features are—

(1) The signals between aircraft and ground stations are more reliable over an appropriate distance range on the ultra-high frequencies.
(2) The signals have the ability to penetrate clearly through bursts of static during severe thunderstorms unaffected by such conditions that ordinarily render radiocommunications impossible on 278 kilocycles.
(3) The signals follow the general line-of-sight range which is also favorable for repeated assignments of the same frequency and reduces the number of channels and complication required in designs of aircraft transmitters.
(4) The dimensions of ultra-high frequency equipment are generally small and the units compact and conducive to lightweight construction which again is favorable for aircraft.

(5) Ultra-high frequencies will be kept clear of interference from other assignments on the same and adjacent channels which is not the case on 278 kilocycles.

The frequencies immediately above 129000 kilocycles have been allocated to aviation, as appropriate for the needs described; but the equipment required for operation on these frequencies is not fully developed and is not therefore in general use on aircraft. The problem is further complicated by the development of the frequency modulation system which, from present indications, bids fair to render more dependable service, if applied to instrument landing units.

It is apparent that the economic problem in connection with changing from existing equipment operating on the airport frequency 278 kilocycles to new ultra-high equipment will require time. The formulation of a safe and fair plan agreeable to all concerned was not easy. The solution finally decided upon is set forth in the regulations wherein it is required that after January 1, 1941, applicants for renewal of airport control station licenses must specify an ultra-high frequency in addition to 278 kilocycles and continue to provide service on 278 kilocycles until an ultra-high frequency is designated as a substitute for 278 kilocycles. For the time being, stations using either frequency or amplitude modulation may be authorized on any of the ultra-high frequencies listed, until sufficient information is available to enable the approval of a system for universal use. It is expected, at the writing of this report, that ultra-high frequencies for airport control and instrument landings can be specified and additional frequencies can be made available by January 1, 1940.

INTERCONTINENTAL FLIGHTS

The picture of intercontinental flights during the fiscal year is a varied one resulting from many years of intensive development and international competition. The 20,000-mile shake-down flight of the *China Clipper* across the Pacific, and return, was successful after the establishment of a complete radiocommunication system along the route. Trans-Pacific scheduled flights have been established on a regular basis.

Similarly, before attempting the shake-down flight over the Atlantic, a coordinated communicating system was set up between operating bases in the Azores, Portugal, France, England, and Iceland. The big four-motored seventy-four passenger *Yankee Clipper* departed May 20, 1939, on the first successful airmail flight to Europe. Then on June 17, the *Atlantic Clipper* inaugurated the first scheduled passenger and mail trans-Atlantic flights.

Much remains to be worked out on the extensive subject of public correspondence between planes in flight and a ground system of stations placed at regular intervals along the route. To facilitate the regulation of this proposed service, two new types of stations were found necessary: (1) Public-service aircraft stations, and (2) public-service aeronautical stations. The former serves to handle the two-way conversation of a passenger on board the plane in flight, and the latter may be a series of ground stations feeding the radio signals into the telephone-wire system at points nearest the plane

along the flight path. In this manner, the passenger in flight across the United States may talk direct with his family at home. This public correspondence service is a reality in some foreign countries. The ultra-high frequencies are believed to be more appropriate for the development of a domestic public aviation radiotelephone service.

Public service aircraft stations on transport planes engaged in intercontinental service may be authorized to operate on frequencies available to shiptelephone and shiptelegraph stations for the handling of public correspondence in the same manner that they are available to ships of the United States. Communication facilities available for aircraft flying transoceanic air routes are therefore in the same category as those of oceangoing vessels.

There has been a very insistent and increasing demand for instructional facilities and radio equipment for motorless flight activities. Therefore, in the last revision of the rules and regulations, provision was made for this new type of service under the heading, "Flying School Station." Students in flight may now carry on two-way communication with the instructor on the ground or in another ship. If the student activities are in the vicinity of an airport having an airport control station, the airport control operator is given direct break-in microphone connections on the flying school station frequency to order the students in flight to clear the air prior to the arrival of commercial aircraft. Traffic on the national aircraft calling frequency 3105 kilocycles is generally congested and, especially at busy airports, the importance of complete supervision by the airport control operator cannot be overemphasized. Student communication on 3105 is therefore prohibited. Ultra-high frequencies appropriate for such needs have been made available for this service.

5. EMERGENCY SERVICES

At the beginning of the past fiscal year the Commission was engaged in bringing into the emergency services a large number of stations devoted to the promotion of safety of life and property which theretofore had been licensed on an experimental basis.

The adoption of the new emergency service rules shortly before the beginning of the year brought about marked increases in the number of stations operating in this service, i. e., State, municipal, zone, and interzone police stations, marine, fire, forestry, and special emergency stations. An added factor in this development has been the recognition by the Commission of the value of the ultra-high frequencies for providing reliable short distance communication between low power mobile units, and extended and cooperative use of the ultra-high frequencies has permitted rapid growth. During the year there have been 557 new police stations and 247 new forestry stations licensed, and it should be noted that "station" as used under the new emergency service rules means not only a fixed transmitter but may also include a large number of mobile units operated in conjunction with the fixed station as a coordinated emergency communication system.

POLICE STATIONS

The new frequencies have been of particular utility to municipal police departments and for this reason the Commission allocated 25 such frequencies for use by these agencies. The reassignment of

municipal police equipment from the four overcrowded experimental frequencies to the new allocations permitted a large number of cities to have a frequency separate from those used by other municipalities in the same geographical area. The resulting freedom from interference has allowed an increase in the number of installations to include most of the police cars and trucks. Several cities are now operating close to 100 mobile transmitters.

The ultra-high frequency police equipment had previously been operating under experimental authorizations, and the Commission on July 1, 1938, started accepting applications for regular municipal police licenses covering these units. By October 1, the expiration date of the experimental licenses, most of the 2,500 experimental stations had been regularly relicensed. The number of authorizations issued for these units was considerably reduced by including in the fixed station license all of the mobile transmitters operated by one licensee.

The growth in the number of new municipal police stations authorized in the past year has been particularly noticeable in the case of small communities. This is especially true of towns adjacent to large cities where efficient intercommunication by radio had led to more effective policing of these areas and closer cooperation between the law enforcement agencies involved.

As a result of the experience gained in the administration of the emergency service rules, the Commission on February 27, 1939, approved certain modifications. One such change provided for the licensing of low-power portable pack transmitters as part of a coordinated system. This means that licensees may by authorization from the Commission keep several battery-operated sets on hand to be used by men on foot during emergencies such as riots, or organized searches for escaped criminals. The provisions of the new rules permit these units to be licensed on the same frequency as the car transmitters. Thus, the individual will be in constant communication with the whole communication system and may summon immediate assistance whenever necessary.

FORESTRY STATIONS

While various forest protection agencies have previously applied radio to the solution of their communication problems, it was not until this year that stations were authorized on a regular basis for this purpose. Previously only experimental authorizations were issued for the operation of radio equipment by these organizations. However, with the availability of 10 ultra-high frequencies for forestry stations, as contained in the new emergency service rules, it was not long before several States made application for their use. A few such States have at the present time outstanding authorizations to construct considerably more than 100 forestry stations.

The Commission on January 16, 1939, allocated three frequencies in the 2,000 to 3,000 kilocycle band for use by forestry stations. These facilities were made available as a result of a conference held with forestry officials on June 29, 1938. It now appears that these frequencies are successfully supplementing the ultra-high channels in providing communication facilities for the protection of forest areas. This is particularly evident in mountainous areas where the ultra-high frequencies have very limited application.

SPECIAL EMERGENCY STATIONS

In addition to the classes of emergency stations authorized for use by instrumentalities of Government, special emergency stations have proved of great value in maintaining communication during periods of stress. Authorizations in this class are issued only to (*a*) organizations established for relief purposes in emergencies and which have a disaster communication plan; (*b*) persons having establishments in remote locations which cannot be reached by other means of communication; and (*c*) public utilities. Their purpose is to maintain communication in emergencies during which normal means of communication are interrupted or are inadequate.

The widespread interest in the past year by power and communication companies in the use of special emergency stations has undoubtedly been due to the fact that public utilities were definitely included in the emergency service rules among those eligible to receive authorization for such stations. Such companies have heretofore made use of two channels in the medium frequency band, but it remained for the assignment of the 10 ultra-high frequencies to permit needed expansion of their operations. These facilities permitted the public utilities to request their use for handling communications from mobile repair units. Generally speaking, immediate communication with such units is of vital important in those cases involving broken power, telephone, and telegraph lines as well as disasters involving widespread areas.

CHAPTER VI

Licensing

1. INTRODUCTION

In addition to the licensing functions of the Commission which have already been discussed, growth has been equally rapid in the common carrier, experimental, Alaskan, amateur, and miscellaneous radio services. The increased availability and use of the ultra-high frequencies and technical advances have created a substantial increase in the applications presented to the Commission and have required unusual attention. The past year has witnessed numerous reallocations of the frequencies in these services and a revision of the rules governing them. Certain classes of stations heretofore authorized on an experimental basis are now regularly licensed in other services.

The discussion of the common carrier services contained in this part relates solely to the licensing functions of the Commission, and the regulation of these stations as common carriers is considered elsewhere in this report.

Since the Territory of Alaska is geographically separated from the rest of the United States and since its communication problems are peculiar to it, for convenience the discussion of all classes of stations in Alaska, other than broadcast and amateur, is included in this section of the report.

2. COMMON CARRIERS

The licensees in the fixed public radiotelephone and radiotelegraph services are engaged as common carriers of radio communications. As such the Commission has the duty, in addition to the licensing function, of regulating their rates, practices, classifications of services, and tariffs, and of supervising their accounts. The following discussion, however, is concerned only with their status as licensees of radio facilities.

The fact that this service is highly competitive, and yet is necessarily limited both by the state of the radio art and by economic demands, requires that the Commission have before it full information prior to its determination upon any application. Consequently, many applications for authorizations in these services, other than those requesting renewal of licenses or technical changes in existing stations, can be finally acted upon only after extensive hearings.

All of the licensees operating radiotelegraph or radiotelephone stations in the public or fixed radio services (with the exception of Alaskan stations and one licensee in the agriculture service in the United States) are engaged in radio communication offering a general message service to the public principally in the international field. At the close of the fiscal year, there were 15 radiotelegraph companies operating in the continental United States, Hawaii, and Puerto Rico, 7 of which offer direct circuits to 56 foreign points of communication, 4 radiotelephone companies with direct circuits to 30 foreign points, and 1 company in the fixed public press service offering a limited press communication service to 40 foreign points and 98 domestic points. As a practical matter, American radio common carriers in general

offer a communication service to practically every point throughout the world through their own facilities (either direct or indirect circuits) or through the facilities of associated or connecting carriers.

On June 30, 1939, there were licensed a total of 371 point-to-point radiotelegraph stations (an increase of 23 new stations during the last year), 68 point-to-point radiotelephone stations (an increase of five new stations during the last year), and 69 point-to-point radiotelegraph press stations (an increase of 8 new stations during the last year). Within the period covered by this report there were no new common carriers licensed to engage in the transmission of public communications nor did any of the existing companies retire from business as some did the previous year. The number of applications for instruments of authorization for point-to-point telegraph stations received and acted upon was 1,200 as compared with 853 for the previous year or an increase of approximately 40.7 percent. As a result of such applications the Commission issued a total of 974 instruments of authorization. In the point-to-point radiotelephone service a total of 416 applications were received and 357 instruments of authorization were issued as compared with 336 applications and 313 instruments of authorization for the year 1938.

During the fiscal year several important changes were effected in the rules and regulations governing the public radio services. As the consequence of a petition filed by Press Wireless, Inc., the sole licensee in the fixed public press service, the Commission on December 20, 1938, held an informal conference on a proposed revision of rule 241 (a) which governed the transmission of multiple-address press service. This service is used largely by broadcast stations and newspapers both in the domestic and foreign field and has expanded rapidly since its inception in April 1936, until, at the time of the conference, approximately 70 percent of the total paid press traffic handled by this company was in the multiple-address classification. It was proposed by Press Wireless, Inc., that the transmission of multiple-address press messages be authorized on a primary basis instead of on a secondary basis as contained in the existing rule. As a result of the facts presented, the Commission on February 20, 1939, adopted a revision of this rule which placed the transmission of such traffic on an equal footing with point-to-point messages destined for primary points of communication.

On May 8, 1939, the Commission revised its rules and regulations governing fixed services. The new rules became effective June 9, 1939. They incorporate many previous policies and practices with respect to licensing and operating, point-to-point telegraph and telephone stations which heretofore were not set forth in specific rules. Among the noteworthy changes is the requirement that all licenses hereafter shall specify not only the point of communication but the name of the organization, agency, or person operating the receiving end of the circuit. The effect of the adoption of this rule gives the Commission more information concerning radio circuits to foreign countries, particularly those circuits which may be inactive or where a change has occurred in the organization operating the receiving end of the circuit or where a change has occurred in the effective control of such organization.

Commencing July 1, 1939, all licensees will be required to submit quarterly reports setting forth the estimated volume of paid message

traffic transmitted during the previous quarter on each frequency licensed for public message traffic. A complete analysis of the use of all frequencies for each common carrier will be made from the reports submitted. Such analysis will be valuable in determining future requirements for additional frequency assignments which heretofore has not been available. In addition, it will furnish the Commission with information as to the propagation characteristics and the usefulness of frequencies over long distances during the various seasons of the year and different hours of the day.

Additional frequencies above 30000 kilocycles were made available to the fixed services by the Commission in rendering its decision on March 13, 1939, in connection with the protests to Commission order No. 19 by the licensees of certain experimental stations. This decision further amended order No. 19 insofar as it allocated frequencies above 30000 kilocycles and became effective April 13, 1939. It is anticipated that many more applications for facilities will be received by the Commission as technical developments in the radio art progress, particularly in the frequency bands above 300 megacycles.

FIXED PUBLIC RADIOTELEGRAPH SERVICES

Although the majority of the point-to-point radiotelegraph stations in the fixed public and fixed public press service are licensed for, and operate principally in, the international and overseas service, several common carriers operate domestic radiotelegraph circuits between 11 principal cities of the United States. In addition, point-to-point radiotelegraph circuits are operated by certain companies between 13 cities on the Great Lakes which are used principally in connection with the shipping industry during the navigation season from April until November each year. All of the stations serving the Great Lakes are licensed to operate on frequencies below 200 kilocycles. In the southwestern portion of the United States public radio communication service is available between 6 cities. However, these cities are located in or in the proximity of oil producing and distribution centers and the traffic principally relates to activities in the industry. With the exception of 1 licensee in the agricultural service, a limited radio communication service for the transmission of agricultural market news only in the State of California.

All licensees except the agriculture service may transmit only public correspondence pursuant to tariffs on file with the Commission and service messages which are incidental and necessary to the expeditious movement of this traffic. Included among the various classes of traffic handled as public correspondence in conformity with established tariffs are addressed program material to and from overseas points for rebroadcast by broadcast stations, facsimile and photograph service and addressed press service to one or more fixed points for reception principally by newspapers and broadcast stations.

During the year the Globe Wireless, Ltd., circuit between Honolulu and Shanghai, China, was opened for the first time for general message traffic. Heretofore due to its contract with the Chinese Government, only traffic relating to the Robert Dollar Steamship Line could be handled between these points by Globe Wireless, Ltd.

All licensees have continued their efforts to modernize and improve their transmitting and receiving equipment so as to keep abreast of

the latest developments in the radio art, meet the demands of traffic conditions, and provide a highly efficient service to the public. These improvements have consisted mainly in constructing additional facilities, replacing obsolete equipment with that of modern design and capabilities, and reconstructing transmitters which have been in service a number of years.

FIXED PUBLIC RADIOTELEPHONE SERVICES

Radiotelephone service from the continental United States is rendered to practically all points throughout the world through the facilities of the American Telephone and Telegraph Co. located at three primary distribution centers, namely, New York, Miami, and San Francisco. Telephone service to points in Europe, Africa, South America (except Venezuela and Colombia), and the Near East is handled via New York while that for Asia and Oceania is routed through the facilities at San Francisco. Messages destined for Central America and northern South America are transmitted from Miami.

In Puerto Rico service is rendered by the Radio Corporation of Porto Rico at San Juan and in Hawaii by the joint facilities of the Mutual Telephone Co. and the RCA Communications, Inc.

Since its inception in 1927, the transoceanic radiotelephone traffic has grown rapidly. During the year of 1927 the number of paid telephone calls in both directions was only 2,296. In 1930, the number of messages had increased to 14,639, in 1937 to 34,938, and during the calendar year of 1938 to a peak of 51,389 radiotelephone calls. During the first 6 months of 1939, approximately 27,966 messages had been transmitted.

Additional facilities have been made available during the past year in order that the increase in traffic loads might be expediently handled. Of primary importance is the development of twin single side band transmission on the trans-Atlantic circuits. This development has provided two voice channels where only one existed heretofore. As advances in the art have made possible the practical use of twin single side band transmission, it appears likely that additional channels will become available in the future, thereby utilizing the frequency space now occupied to its fullest extent. In addition, the establishment of a new short wave receiving radiotelephone station at Manahawkin (N. J.) has been completed. This station employs the newly developed multiple unit steerable antenna which is expected to improve the quality and efficiency of the radio circuits.

Pursuant to authority of the Commission granted June 28, 1938, the Radio Corporation of Puerto Rico has opened to public communications a new direct radiotelephone circuit between San Juan, P. R., and Port-au-Prince, Haiti.

On December 20, 1938, a direct circuit between the United States and Australia was placed on commercial service. Prior to this time, radiotelephone calls destined to Australia were transmitted via the New York-London circuit. The establishment of the direct circuit from San Francisco resulted in a reduction in cost of the radiotelephone calls and a more efficient and expeditious service to the user.

On June 1, 1939, radiotelephone service via Bandoeng was extended to Malaya. This service had also been previously rendered via the New York-London circuit and connecting carriers from there on.

New direct circuits to Berlin (Germany), Rome (Italy), and Berne (Switzerland), have not yet been commercially established.

3. EXPERIMENTAL SERVICES

The past fiscal year witnessed the transition into other services of a number of stations theretofore authorized on an experimental basis. This group includes, among others, the police and forestry stations which now operate in the emergency service on a regular basis.

The rules and regulations governing the experimental service have been substantially revised and broadened with a view to encouraging scientific research. The new rules became effective for all new experimental stations on May 23, 1939, the old rules remaining in effect for existing licensees of general and special experimental stations (other than experimental stations in the broadcast service) until October 1, 1939. The experimental service is a service conducted by stations engaged in research and experimentation for the advancement of the radio art.

The new rules, effective May 23, 1939, insofar as they apply to new authorizations, eliminate the former general and special experimental licenses and provide for three classes of experimental stations. Class 1 experimental stations are licensed for general or specific research or experimentation for the advancement of the radio art along lines which are not specifically directed to any proposed or established radio service. Class 2 stations are authorized to conduct research and experimentation in radio directed toward the development of a new or proposed radio service or some phase of an established radio service. Class 3 stations are licensed to individuals interested in radio technique solely with a personal aim to conduct an experimental program on their own behalf, requiring the use of radio for a limited time.

Classes 1 and 2 are now differentiated on the basis of the experimental program contemplated, whereas the former classifications of general and special experimental stations were based on the frequencies employed. Class 3 stations are granted to individuals for a limited period to permit actual tests of specific ideas with respect to some phase of the radio art. These authorizations will not normally be renewable and will be issued only under such limitations and restrictions as are found necessary to avoid interference and commercial exploitations.

During the past year the Commission has issued approximately 1,000 authorizations permitting experimentation in various phases of the radio art. These authorizations included such research programs as developing, testing, and calibrating radio equipment; fundamental research in connection with scientific theories; and the development or extension of such important services as aviation, meteorological, coastal and ship harbor, police, forestry, geophysical, and the fixed point-to-point services.

The experimental program of research being conducted by the Department of Forests and Waters of the Commonwealth of Pennsylvania furnishes a typical example of the efforts being made to improve existing service. The present plans provide for the installation of a number of experimental stations, seven of which were authorized by the Commission on March 6, 1939. The final objective of the experimental program of research in this instance is the develop-

ment of a State-wide emergency communication network for flood control and forestry protection. The present plan contemplates the installation of a number of unattended stations at strategic points within the State. These stations will serve as relay or repeater stations and will be actuated by small manually operated sets licensed as forestry stations and located in the immediate vicinity. Information relative to weather conditions such as precipitation, stream heights, dike and dam control can be collected and correlated. It is anticipated that such information will be vital in the prediction of flood crests and will be an important factor in the safety of life and property particularly with respect to communities in the areas adjacent to the main rivers which have been subject to considerable loss of life and property during recent floods.

An important instrument being developed for the aviation service is the radio altimeter. As this instrument operates on frequencies above 300000 kilocycles, the practical application has been delayed pending the development of vacuum tubes having sufficient power output to render the system feasible. With the recent advances in the vacuum tube technique, the problem of obtaining a reliable altimeter appears to be rapidly nearing a solution.

In addition to the development of equipment for the needs of specific services and the application of such equipment in the service, continuous observations have been made in the physical phenomena directly affecting propagation of radio waves. There are a number of stations actively engaged in the measurement of the height and intensity of ionization of the Kennely-Heaviside layer. A comprehensive knowledge of the manner in which the ionization changes over long periods will no doubt aid materially in future radio regulations and the adjustment of the services to conform to the optimum conditions for each service.

4. ALASKAN STATIONS

The licensing function of the Commission in respect to radio communication in Alaska presents a problem entirely different from that of the continental United States. Due to the difficulty of transportation, the remote location of many communities, and the inaccessibility of wire lines to many persons, radio provides the only means of communication throughout much of the Alaskan territory.

There are approximately 300 point-to-point telegraph and telephone radio stations in Alaska, many of which operate without charge and without filing tariffs with the Commission. There are also more than 150 coastal stations for communication with ships in Alaskan waters.

Pursuant to the new rules of the Commission governing radio stations in Alaska (other than amateur and broadcast), which were adopted by the Commission on December 5, 1938, any station in Alaska, regardless of the class in which it is licensed, is permitted to transmit messages concerning matters relating to the safety of life and property where there is no other established means of communication, and provided the service is rendered without charge.

The mountainous terrain combined with the heavy snows and long winters has emphasized the importance of radio communication in the Territory in connection with air travel. On a per capita basis, the

air passenger traffic in Alaska is in excess of sixteen and one-half times greater than in the United States.

The importance of radio communication for aviation had not been fully realized in the Territory until about the beginning of the fiscal year. Extensive freight, express, and passenger traffic to the various portions of the Territory has been handled principally on a non-scheduled basis by a number of independent aircraft operators. Many remote mining areas are served by aircraft and radio that could not be reached by any other means. Such keen competition has developed among the operators, that it has seemed impossible for them to organize among themselves the coordinated communications system so necessary for successful airways operation in the Territory. Such a system is made necessary by the increasing demand for the limited supply of frequencies in the radio spectrum. Unfortunately, the frequencies available are not adequate for present demands and the individual assignments desired by each operator, therefore, cannot be made. There are approximately 70 aeronautical point-to-point stations now operating in the Alaska aviation service.

With a coordinated communications system similar to that in successful operation in the aviation service over the entire United States, complete and impartial communications could be furnished promptly to all on a nonprofit pro rata basis. In an effort to bring about an understanding of this important problem, a general hearing on Alaskan aviation communications has been called for the fall of 1939.

The fiscal year witnessed the expansion of the communications system in connection with extended lanes of passenger and mail services generally on weekly flight basis. Plans for regular mail and passenger service between Seattle, Wash., Juneau and Fairbanks, Alaska, have been formulated. Likewise tentative plans have been considered for transpolar flights from Alaska to Europe. Channels for transpolar communications have been designated by international agreement.

The Commission through its established office in Alaska functions to a large extent in conjunction with the Alaska Communications System, a division of the Signal Corps of the Army, which has for a number of years operated the communications system in Alaska. All applications for service in Alaska are submitted to the Alaska Communications System for its recommendations prior to action by the Commission thereon.

5. COMMERCIAL RADIO OPERATORS

During the past year the Commission completed its study of the Rules Governing Commercial Radio Operators. An informal hearing held before the Chief Engineer of the Commission on July 11 and 12, and September 14 and 15 afforded all parties interested in the subject of radio operators an opportunity to participate with respect to proposed rules then under consideration for adoption by the Commission. Under the revised regulations, six classes of commercial operator licenses have been established. An operator is permitted to hold separately a radiotelephone and radiotelegraph class license. Previous regulations required endorsement of radiotelegraph class license to indicate granting of radiotelephone privilege, thus making it necessary to issue as many as 18 different license combinations. By elimination

of license endorsements an improvement in licensing procedure will be obtained.

Of major importance to the aviation, police, and ship-harbor service is the establishment of the restricted radiotelephone operator permit which greatly simplifies the licensing requirements for operators in these services. Because of the nontechnical nature of the examination for this permit, the operator is prohibited from making any adjustments that may result in improper transmitter operation and any required maintenance or servicing of the equipment is performed by a radiotelegraph or radiotelephone first- or second-class operator. Under this policy a large number of stations employing personnel having specialized knowledge pertinent to a particular class of service are provided with licensed operators as required by law without in any way impairing the technical operation of the station. To facilitate examining members of police and other governmental agencies where absence of the applicants from their post of duty would jeopardize the safety of life and property, provision has been made to conduct by mail the examination for the restricted radiotelephone operator permit.

The adoption of a new type of examination for commercial operators and specific rules respecting procedure and qualifications is probably the most outstanding change in the operator regulations. The new examination procedure will enable an applicant to complete the examination in much less time than formerly and reduce the time required in grading papers, thus permitting the Commission's inspectors to devote additional time to other duties.

Provision has been made whereby renewal of operator licenses and permits may be obtained on the basis of employment as radio operators during the license term as a substitute for reexamination. Credit for service has been extended to operators employed on vessels and stations of the United States Government as well as to operators engaged in the maintenance and servicing of radio transmitters. Under the new regulations, the license term has been extended from 3 to 5 years.

During the past year there were received a total of 17,626 commercial applications consisting of 17,566 applications for radio facilities, and 60 applications for either telephone or telegraph wire certificates. A total of 15,208 authorizations for radio facilities and 57 wire certificates were issued.

For comparative purposes there is tabulated below the number of commercial applications received and authorizations issued for the preceding 5 years.

	1935	1936	1937	1938	1939	Percent increase 1939–35
Applications received	8,221	9,751	12,192	16,578	17,626	114
Authorizations granted	7,772	8,427	11,834	14,463	15,265	96

The Radio Service Bulletin has been prepared semimonthly for official notification by the United States to the Bureau of the International Telecommunication Union at Berne, Switzerland, of all commercial and government radio stations, and registration of radio

frequencies to be included in the international radio lists published in accordance with the International Telecommunications Convention, Cairo, 1938.

6. AMATEUR RADIO OPERATORS

A very liberal policy has continued in licensing radio amateurs and their transmitters. During the fiscal year the Commission issued nearly 50,000 licenses for amateur stations or their operators. The number of individuals holding such licenses grew at increased pace to a total exceeding 53,000 and their applications for new licenses, renewals, or changes exceeded a hundred per day.

Such figures illustrate an attitude toward the radio amateur characteristic of democracy. In some countries the amateur is prohibited, in many curtailed by various fees, taxes, or other special restraints that are strange to the American amateur and experimenter. In all other countries combined the number of authorized radio amateurs is less than half those licensed by this Commission.

Holders of the Commission's amateur license are scattered throughout the States, Territories, and possessions from Alaska to Puerto Rico and from Maine to American Samoa. Some of the first air clippers over the Pacific carried radiomen to man new island posts, licensed amateurs taking with them their amateur equipment that enabled them to continue their experiments and keep in touch with licensed amateurs in the States. Wherever the flag flies are likely to be found radio amateurs maintaining communication that may become vital in time of emergency or local disaster.

The liberal policy toward the radio amateur extends to the nature of his privilege. The licensed amateur may use one or more transmitters at the location fixed in his license or may operate temporarily at other locations. He may use his portable equipment at other points or take it to and from moving vehicles for operation in motion. Under general limitations he may alter or replace his equipment, leaving maximum freedom for his initiative and invention. He may use radiotelegraphy, radiotelephony, or experiment with other types of emission. In short, he has considerable latitude in choosing or changing his location, equipment, schedule, frequency, power, or emission, subject to the limitations or general provisions of treaty, statute, and regulations.

These provisions limit the amateur radio privilege to citizens of the United States and the amateur may not locate his station on premises controlled by aliens. He may in general communicate only with other amateur stations and if with such stations in other countries that permit, the communication must be in plain language and of unimportant nature. At all times he must select and maintain his operating frequency and power within assigned limits and comply with other requirements in the Commission's regulations. The portion of these regulations governing amateurs was revised during the year, mainly for improved technical standards.

Since the licensed amateur is authorized to place a radio transmitter on the air largely on his own resources, with opportunity to cause undue interference to other radio services if he is not properly prepared, it is important that he have a measure of special qualification. The United States has agreed by treaty to qualify all its amateurs in the International Morse Code and the tests of applicants in

sending and receiving code are supplemented by written examinations to prove their familiarity with the governing provisions of treaty, statute, and regulation, as well as their knowledge on the technical side. During the past year such examinations, given at many points throughout the United States and outlying areas, exceeded a thousand monthly. More than a third of the applicants failed on first appearance, many returning and passing the tests after better preparation.

The control and regulation of the operating amateur is further accomplished by means of monitoring, inspection, and occasional action of other special nature. While numerous amateurs are cited for infractions of technical standards it has been comparatively rare that the Commission has found it necessary to revoke or suspend an amateur's license, there were only seven such instances during the year.

The Commission completed a special study of the amateur service during the fiscal year, resulting in revised rules becoming effective December 1, 1938.

7. MISCELLANEOUS RADIO SERVICES

In line with the general revision of all Commission rules and regulations which have taken place during the period embraced by this report, the Commission on December 12, 1938, adopted chapter XI, Rules Governing Miscellaneous Radio Services. This group is composed of certain services, which while providing safety communications, are mainly established for use during limited periods under certain specific conditions. The stations which may be authorized include geological, mobile press, relay press, motion picture, and provisional stations.

Geological stations operating in the Geophysical Service are used primarily in the investigation of physical characteristics of the surface and subsurface strata of the earth. Mobile press and relay press stations are authorized in the Special Press Service, a limited radio communications service for the transmission of news items and related material between fixed and mobile stations. The Intermittent Service now contains two classes of stations, motion picture and provisional, for use during limited periods of time or at irregular intervals where other facilities are unavailable or their use impracticable.

Licensees in the Miscellaneous Services must coordinate operation with other licensees in order to avoid interference and make the most effective use of allocated frequencies, none of which are assigned exclusively to any station or applicant. There were 300 stations operating in these services on June 30, 1939.

Included in the new rules are provisions relating to the authorization and use of relay press stations. Such stations may be assigned a total of 11 ultra-high frequencies usable for the transmission of news or inquiries concerning news to or from points where other communication facilities are not available. Inasmuch as this is very recent development only a few stations have been established and, therefore, little can be said concerning the results of their operation.

Provisional stations are of particular interest since this is a new type of station heretofore not authorized except on an experimental basis. A definite need for this authorization has been recognized by the Commission. As a result nine ultra-high frequencies were made

available for use during limited periods in connection with projects affecting public welfare in situations involving safety or where radio communication is of practical necessity. Several stations of this nature have been authorized in conjunction with a large bridge being built in the northwest part of the country.

8. PROSECUTION OF UNLICENSED ACTIVITIES

Many cases of alleged unlicensed operation of radio stations were investigated during the year. Because of the apparent necessity, in criminal cases, of affirmatively proving the interstate characteristics of the transmissions, the investigation of these cases frequently presents a most difficult problem. There were some 20 cases, however, in which the proof was satisfactory and in which the other circumstances seemed to warrant reference of the case to the Department of Justice. A conviction or plea of guilty was obtained in 7 of the cases, although probation was granted in each instance. Indictment was refused in 2 cases. The remainder are pending.

CHAPTER VII

Recommendations to Congress

RECOMMENDATIONS TO CONGRESS

A serious handicap to the Commission in its efforts to obtain adequate and reliable hearing records has been its inability to hold hearings in the field due to lack of personnel and travel appropriations. All too frequently it has been compelled to make findings based on deposition evidence, in the taking of which it has not been possible for the Commission to participate. Such depositions often constitute mere unsubstantiated ex parte statements.

Also, the Commission is without adequate means of developing facts through field investigations bearing on issues involved in hearings, unlicensed activities, and violations of law and regulations. Its experience has been that at least a small staff of trained investigators, supplemented by the placing of attorneys in key field offices, is necessary if the Commission is to carry out in any effective way the enforcement and regulatory responsibilities with which it is charged under the statute.

It has not been possible with the staff available to do more than scratch the surface of regulating the vast telephone industry. The Commission invited the special consideration of Congress to this situation in a request for deficiency appropriations made during the year.

In order to keep abreast of its work—constantly increasing in difficulty, variety and volume—hours of overtime by the staff have been unavoidable and excessive, with resulting loss of efficiency. The Commission reported 2,062 days of overtime for the fiscal year ended June 30, 1938, and the daily figures continued to mount higher in the past year during which a total of 5,115 days was accumulated in Washington and in the field.

Reorganization of staff units and simplification of procedure have been among the steps taken to remedy this situation arising from understaffing and overload, but these measures alone cannot be a complete solution. Among the inescapable additions to the already heavy overburdening of the staff has been the increasing importance and volume of litigation conducted in the courts, which was one of the Commission's outstanding activities during the year. Issues arose in several cases, the final determination of which will affect, in a far reaching and fundamental way, the future conduct of the Commission's proceedings in broadcast cases. The 42 appeals and other proceedings pending before the courts during the year were substantially in excess of any previous total.

These proceedings were complex in character and required substantial additions to the work assignments of the staff. In addition, flowing from this litigation, there was a very substantial increase in the number of petitions and procedural steps which had to be passed upon within the Commission.

REPORT OF THE SECRETARY

For the fiscal year ending June 30, 1939, there was appropriated $1,745,000. This sum is accounted for as follows:

Personal services, District of Columbia	$1, 103, 093. 28
Personal services, field	454, 680. 89
Supplies and materials	37, 485. 64
Gasoline and oil	3, 988. 52
Storage and care of vehicles	5, 378. 50
Communication service	15, 786. 60
Travel expenses	21, 279. 52
Car fare	1, 187. 50
Transportation of things	3, 417. 59
Stenographic reporting	1, 630. 20
Heat, light, power, and water	4, 083. 28
Rents	12, 454. 78
Repairs and alterations	3, 635. 55
Special and miscellaneous	1, 334. 42
Furniture, fixtures, and equipment	25, 300. 72
Reserve	5, 263. 01
Total	1, 700, 000. 00

	Allotments	Expended and obligated
Printing and binding	$25, 000. 00	$21, 200. 28
Study of radio requirements, ship navigation, inland waters	20, 000. 00	19, 879. 20

At the close of the fiscal year, the Commission had 421 employees in Washington, and 193 in the field.

Appendixes

APPENDIX A

LEGISLATION

At the request of various Congressional committees, the Commission commented on the following listed bills and resolutions during the fiscal year:

H. R. 234. To provide an adequate method to obtain data to determine the social and economic effects of power in excess of 50 kilowatts for broadcast stations, etc.

H. R. 7188. To remove certain restrictions on the character of international broadcasts and, specifically, to nullify the provisions of section 42.03 (a) of the Commission's Rules.

H. R. 6695–H. R. 5791. To amend the Communications Act of 1934 so as to prohibit and penalize the unauthorized mechanical reproduction of music and other wire and radio-program material.

S. 2611–H. R. 5756. To authorize the Federal Communications Commission to purchase a site and erect a building in the State of Massachusetts for use as a radio-monitoring station, and other purposes.

S. 2466–H. R. 5508. To amend the Communications Act of 1934 so as to prevent monopolies and to prohibit excessive duplication of broadcast programs in any area.

H. R. 6114. To authorize Postmasters in the Territory of Alaska to administer oaths or affirmations required under acts of Congress, and for other purposes.

S. 517. To amend the Communications Act of 1934 by prohibiting the advertising of alcoholic beverages over the radio, etc.

H. R. 4684. To amend section 307 (d) and (e) of the Communications Act of 1934 so as to provide an increased term for broadcast station licenses, and for other purposes.

S. 1970. To eliminate certain oppressive labor practices affecting interstate and foreign commerce, and for other purposes.

S. 2058. Relating to promotion contests carried on through the use of the mails or the facilities of interstate or foreign commerce.

H. R. 2536. To prohibit future trading in commodities through the mails or by any means or instruments of interstate commerce.

H. R. 2545. To amend section 13 of the act of March 4, 1915, known as the Merchant Marine Act, so as to provide in part for the exemption of radio operators from the provisions for the issuance of certificates of service by the Bureau of Marine Inspection and Navigation of the Department of Commerce.

S. Res. 95. To authorize an investigation of the telegraph industry in the United States by the Interstate Commerce Committee of the United States Senate.

H. R. 2721. To authorize the Secretary of the Navy to construct and maintain a Government radio broadcasting station, and for other purposes.

S. 94. To authorize the Committee on Interstate Commerce of the Senate, or a subcommittee thereof, to make an investigation of several matters relating to the Commission.

H. R. 4425. To provide for reorganizing agencies of the Government, and for other purposes.

H. R. 4798. To prevent and make unlawful the practice of law before Government Departments, Bureaus, Commissions, and their Agencies by those other than duly licensed attorneys at law.

S. 1520. To amend the Communications Act of 1934, and for other purposes.

H. R. 978. To amend the Rural Electrification Act.

S. 635. To require licensees of broadcast stations to set aside regular and definite periods for uncensored discussions of social, political, and economic problems, and vest in the Commission the power to appoint an advisory committee of disinterested citizens to make recommendations with regard to carrying such provisions into effect, etc.

S. 636. This bill would add new section 315 (a) to the Communications Act, requiring maintenance by licensees of records showing all applications for time, all rejected applications and reasons for rejection, and all additions and changes requested in programs on public, social, political, and economic issues and on educational subjects.

S. 637. This bill would repeal the last sentence of section 326 of the Communications Act.

H. R. 3582. To require informative advertising of imported articles.

H. R. 4224–S. 1268. To amend the Communications Act of 1934 so as to create a Federal Communications and Radio Commission to be administered by a Board composed of three members.

H. J. Res. 127. Would authorize and direct the Federal Trade Commission to make an investigation with respect to alleged efforts of privately owned public utilities unfairly to control public opinion concerning municipal or public ownership of electrical generating or distributing facilities.

S. 1095–H. R. 3752. To amend section 305 of the Communications Act.

H. R. 94. To amend section 317 of the Communications Act, so as to require that personal endorsements of articles by radio be accompanied by a statement that the endorsement is paid for.

S. 550. To amend section 303 of the Communications Act.

S. 2407. Would amend section 303 (e) (intended as an amendment of 303 (l) of the Communications Act.

S. 1352. A bill to amend section 301 (b) of the Merchant Marine Act.

APPENDIX B

LITIGATION AND COURT DECISIONS

Broadcast cases in litigation during fiscal year

DIRECT APPEALS TO UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

Name of case	Status at end of fiscal year
Adirondack Broadcasting Co., Inc., v. *Federal Communications Commission.*	Pending.
Associated Broadcasters, Inc. (KSFO), v. *Federal Communications Commission.*	Do.
Colonial Broadcasters, Inc., v. *Federal Communications Commission*	Commission affirmed.
Columbia Broadcasting System of California, Inc., v. *Federal Communications Commission.*	Pending.
Courier Post Publishing Co., The, v. *Federal Communications Commission.*	Commission reversed.
Crosley Corporation, The (WLW), v. *Federal Communications Commission.*	Appeal dismissed.[1]
El Paso Broadcasting Co. v. *Federal Communications Commission*	Pending.
Evangelical Lutheran Synod of Missouri, Ohio, and Other States, Rev. R. Kretzschmer, Chairman, Board of Control of Concordia Seminary (KFUO) v. *Federal Communications Commission.*	Commission affirmed.
Faske, Arthur, v. *Federal Communications Commission*	Appeal dismissed.
Florida Broadcasting Co. v. *Federal Communications Commission*	Pending.
Gallatin Radio Forum v. *Federal Communications Commission*	Appeal dismissed.
Genesee Radio Corporation v. *Federal Communications Commission*	Pending.[2]
Greater Kampeska Radio Corporation, The, v. *Federal Communications Commission.*	Do.[2]
Jacobs Broadcasting Co., Dr. William States v. *Federal Communications Commission.*	Appeal dismissed.
Liners Broadcasting Station, Inc., v. *Federal Communications Commission.*	Do.
Massachusetts Broadcasting Corporation (WCOP) v. *Federal Communications Commission.*	Pending.[4]
Northside Broadcasting Corporation v. *Federal Communications Commission.*	Do.
Pulitzer Publishing Co. (KSD) v. *Federal Communications Commission.*	Appeal dismissed.
Sanders Brothers Radio Station v. *Federal Communications Commission.*	Commission reversed.[3]
Scripps-Howard Radio, Inc., v. *Federal Communications Commission*	Appeal dismissed.
Southland Industries, Inc., v. *Federal Communications Commission*	Do.
Stuart, W. P. v. *Federal Communications Commission*	Do.
Times-Dispatch Radio Corporation (WRTD) v. *Federal Communications Commission.*	Do.
Tri-City Broadcasting Co., Inc., v. *Federal Communications Commission.*	Pending.[5]
Tri-City Broadcasting Co., Inc., v. *Federal Communications Commission.*	Do.
Tri-State Broadcasting Co., Inc., v. *Federal Communications Commission.*	Do.
Tri-State Broadcasting System, Inc. (KTBS), v. *Federal Communications Commission.*	Appeal dismissed.
United States Broadcasting Corporation v. *Federal Communications Commission.*	Do.
Voice of Brooklyn, Inc., v. *Federal Communications Commission*	Do.
Ward, J. T. (WLAC) v. *Federal Communications Commission*	Pending.
WOKO, Inc., v. *Federal Communications Commission*	Do.
Woodmen of the World Life Insurance Society v. *Federal Communications Commission.*	Appeal dismissed.[7]
Yankee Network, Inc. (WAAB), v. *Federal Communications Commission.*	Pending.[8]

[1] Petition for writ of certiorari pending in Supreme Court when this report went to printer.
[2] Appeal dismissed on Oct. 27, 1939.
[3] Commission affirmed on Oct. 16, 1939.
[4] Dismissed on Oct. 23, 1939.
[5] Petition for writ of certiorari filed in Supreme Court Nov. 2, 1939.
[6] Dismissed on Oct. 14, 1939.
[7] Petition for writ of certiorari denied Oct. 9, 1939.
[8] Dismissed on Aug. 24, 1939.

Broadcast cases in litigation during fiscal year—Continued

ORIGINAL PROCEEDINGS IN UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA

Name of case	Status at end of fiscal year
Courier Post Publishing Co., The, v. *Federal Communications Commission.*	Pending.
Heitmeyer, Paul R., v. *Frank R. McNinch, Norman S. Case, T. A. M. Craven, George Henry Payne, Frederick I. Thompson, Thad H. Brown, and Paul A. Walker*	Do.[9]
Pottsville Broadcasting Co., The, v. *Federal Communications Commission.*	Writs of prohibition and mandamus granted.[10]

CASES INSTITUTED IN THE DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

Black River Valley Broadcasts, Inc., v. *Frank R. McNinch et al, as Federal Communications Commission.*	Supreme Court refused to review decision of Court of Appeals which had affirmed District Court's dismissal of bill for injunction.
Heitmeyer, Paul R. v. *Frank R. McNinch et al, as Federal Communications Commission.*	Court of Appeals reversed decision of District Court granting injunction.

PETITIONS FOR WRIT OF CERTIORARI

Gross, Harold F., and Edmund C. Shields, v. *Saginaw Broadcasting Co.*	Certiorari denied to review judgment of Court of Appeals dismissing appeal.
Red River Broadcasting Co., Inc., v. *Federal Communications Commission.*	Do.

[9] Certiorari granted by Supreme Court on Oct. 16 to review judgment of Court of Appeals entered on July 12 granting writ of mandamus.
[10] Petition of writ of certiorari granted by Supreme Court on Oct. 19, 1939.

COURT DECISIONS

DECISIONS OF THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA IN BROADCAST CASES AND PRINCIPLES ENUNCIATED THEREIN

Black River Valley Broadcasters, Inc., v. *Frank R. McNinch, Eugene O. Sykes, Norman S. Case, et al.*, 101 F. (2d) 235

This was an appeal from a decree of the District Court of the United States for the District of Columbia, dismissing appellant's injunction suit against the Commission. The decree of the lower court was affirmed.

The appellant had applied for a construction permit to establish a new station at Watertown, N. Y. Watertown Broadcasting Co. had also applied to establish a station in that city. The Commission granted appellant's application and the Watertown Broadcasting Co. petitioned for rehearing. The commission granted the petition for rehearing and designated appellant's application for a hearing de novo, together with the application of the Watertown Broadcasting Co. and two other applications which were filed after appellant's application. Appellant thereupon filed a bill of complaint in the district court to enjoin the Commission from holding the de novo hearing (No. 64232, *Black River Valley Broadcasts, Inc.*, v. *McNinch, et al.*). That court dismissed the suit, whereupon Black River appealed to the Court of Appeals of the District of Columbia.

The court of appeals held that Watertown filed its petition for rehearing in conformity with section 405 of the Communications Act of 1934 and that the petition required final action and determination as a matter of right. The court also held that the Commission was fully empowered to order a hearing de novo and to join new parties and determine such issues as will be necessary to make a proper finding of public interest, convenience, and necessity. The court said, referring to the appellant's suit:

"This attempted blockade of the duties of the agency which is entrusted by statute to determine matters of which this is one, shows clearly that plaintiff is not entitled to relief under general equity powers by the issuance of the highly discretionary writ of injunction. It being necessary to receive an administrative determination before the judicial remedy prescribed by statute inures to the benefit of an applicant, it becomes very clear that this cause is entirely uncognizable in equity."

Sanders Brothers Radio Station v. *Federal Communications Commission*, 106 F. (2d) 321

(See discussion on p. 55 of this report.)

The Courier Post Publishing Company v. *Federal Communications Commission*, 104 F. (2d) 213

The Commission denied the application of the Courier Post Publishing Co. to establish a new station at Hannibal, Mo., on the ground that there was no need for the service proposed, and from this order Courier Post appealed, assigning as error the findings that there is not a public need in Hannibal for a local broadcast station. The court took the view that the affirmative evidence in the record was such as to prove that there was need for a local station in Hannibal and that no station presently filled this need. The court held:

"That the appellant has sustained the burden of proof that there is a public need for a local station in Hannibal; that there is no substantial evidence in the record supporting the finding of the Commission that no such public need exists; and, that the finding by the Commission that the public convenience, interest, and necessity would not be served by granting the permit for a local station is in law arbitrary and capricious."

The Pottsville Broadcasting Company v. *Federal Communications Commission*, 105 F. (2d) 36

(See discussion on p. 55 of this report.)

Frank R. McNinch, et al., v. *Paul Heitmeyer*, 105 F. (2d) 41

This case arose in the following manner: In 1935 Heitmeyer applied for a permit to construct a new radiobroadcast station at Cheyenne, Wyo. The application was denied on the ground that Heitmeyer was not financially qualified. He appealed, and in December 1937, the court reversed the Commission (*Heitmeyer* v. *Federal Communications Commission*, 95 F. (2d) 91). The Commission then entered an order directing that the Heitmeyer record be reopened for further hearing and consolidated with a hearing de novo upon the subsequently filed applications of Frontier Broadcasting Co. and Cheyenne Radio Corporation.

Heitmeyer's request for stay of Commission action was on three occasions denied by the court of appeals. Heitmeyer brought suit in the United States district court asking that the Commission be enjoined permanently from granting any construction permit or license to any other applicant for a radio station at Cheyenne until after the Commission had rendered a decision on the record as made at the original hearing (No. 76291, *Heitmeyer* v. *McNinch*, et al). The Commission moved to dismiss the bill of complaint on the ground that the district court had no jurisdiction in the case for the reason that it involved the discretion and judgment of an administrative body authorized by law to act in the premises. The Commission's motion was denied and a special appeal was allowed by the court of appeals. The court of appeals stated that the rule in the *Pottsville case* (see discussion on p. —) was controlling in this case "and that the order of the Commission for a hearing on a new and different record and placing new parties on a parity with appellee is erroneous." The court stated that Heitmeyer could make application "to us for mandamus if—in view of what we have said—such application is necessary for the protection of his rights." Heitmeyer then filed a petition for writ of mandamus in the court of appeals which was pending at the end of the fiscal year.[4]

[4] Subsequently the court of appeals granted the writ of mandamus; the Commission applied for writ of certiorari which was granted and the case was awaiting oral argument in the Supreme Court when this report went to the printer. On October 16, 1939, the Supreme Court granted a petition for certiorari filed on behalf of the Commission in this case.

Woodmen of the World Life Insurance Society v. *Federal Communications Commission*, 105 F. (2d) 75

This case was an appeal from a decision of the Commission granting the application of WKZO, Inc., to operate with 250 watts power, unlimited time, on the frequency 590 kilocycles, using a directional antenna. The appellant was the licensee of Station WOW, located at Omaha, Nebr., which also operates on the frequency 590 kilocycles, using 1 kilowatt power night and 5 kilowatts day.

The court pointed out that the appellant contended it was aggrieved and adversely affected by the action of the Commission in granting the WKZO application and summarized the case as follows:

"We have, therefore, a case in which the Commission after 5 years of study and investigation, and after having twice granted and twice revoked the permit, set the application down for final hearing to be considered on the condition that the applicant would agree that in the event the grant was made the transmitting equipment should be designed and constructed in accordance with the Commission's specifications as required by Commission's new rule 131. These conditions were accepted by WKZO, and appellant was forehanded with knowledge that the grant, if made, would be made on specifications different from those set out in the original application. With notice of the changed specifications, it not only failed to offer any evidence showing interference with its station, but on the cross-examination of its own witnesses objected to evidence showing that under these changed conditions there would be none. The whole course of the hearing indicates that appellant was afforded opportunity to show that interference would result, but preferred instead to rest its case upon a wholly technical objection based on procedure. To approve its position in this respect, would involve denial to the city of Kalamazoo of night radio service on a record which preponderatingly shows that this can be had without resulting in objectionable interference to WOW or any other station."

The court ruled that Station WOW had due notice, but that there was substantial evidence in the record that no damage would ensue and appellant had failed to show the contrary; and consequently the appellant was not a person "aggrieved or whose interests are adversely affected" by the Commission's decision. The appeal was dismissed.[1]

Colonial Broadcasters, Inc. v. *Federal Communications Commission*, 105 F. (2d) 781

The Commission granted the application of Arthur Lucas to establish a new radio-broadcast station at Savannah, Ga. The appellant, who had filed an application after the Lucas application was filed, to establish a new station in the same city, took an appeal from the Commission's order granting the Lucas application. The court said:

"The main question on this appeal is whether the Commission acted unlawfully in failing to consider and decide appellant's application, contemporaneously and on a comparative basis, with the application of Arthur Lucas, which had been filed and set for hearing prior to the filing of appellant's application."

The Commission contended that the appeal should be discussed or the Commission's decision affirmed not because the Lucas application was filed first or designated for hearing before the Colonial application was filed but because the Commission had discretionary power to conduct its proceedings as done in this case.

The court set forth the Commission's rule relating to the fixing of dates for hearings, and said that this rule means no more than that where two applications are filed for the same facilities and neither has been designated for hearing, the applications will be consolidated and heard together; but where by reason of previous filing, one of the applications has been designated for hearing, the application will be heard in turn and not necessarily upon a comparative basis. The court also declared that there is no inconsistency in adhering to this rule and yet permitting the later applicant to intervene in the proceedings on the first application to show proper cause, if he can, why it could not be granted. In affirming the Commission, the court summarized its decision as follows:

"In the instant case Lucas was first in the field. His application was filed and designated for hearing more than a month before appellant's application was even filed. Notwithstanding this, appellant was permitted to intervene and to show cause before both the examiner and the Commission why Lucas' application should be denied. The Commission, upon a fair hearing, reached the conclusion

[1] On October 9, 1939, the Supreme Court denied a petition for certiorari filed on behalf of Station WOW in this case.

that the service was necessary and that Lucas had qualified himself in all respects as capable of furnishing it, and on this basis granted the license."

W. P. Stuart v. *Federal Communications Commission*, 105 F. (2d) 788

Appellant and Southwest Broadcasting Co. each applied to the Commission for permits to construct new broadcast stations at Prescott, Ariz. The Commission granted the application of Southwest Broadcasting Co. and denied that of appellant. The appellant thereupon appealed and the Commission moved to dismiss on the ground that section 402 (c) of the Communications Act requires the reasons for appeal to be stated and that the reasons given in this case were purely argumentative and mere abstract propositions of law, which failed to satisfy the requirements of the act, and accordingly the court lacked jurisdiction to entertain the appeal.

The court said that the statement of reasons for appeal required by the statute serves the purpose of an assignment of errors and must therefore set forth with particularity the errors on which the appeal is based, and held in dismissing the case that "appellant's statement in this case is merely a general assignment without designation of particular errors upon which it is based. Considered from the most liberal standpoint, it wholly fails to meet the test of the rule which we have laid down and to which we intend to adhere." The court discussed the evidence and procedure and ruled that the appellant in any event "has no case on the merits."

The Crosley Corporation v. *Federal Communications Commission, No. 7351*

(Not yet reported. See page 56 of this report.)

Evangelical Luthern Synod v. *Federal Communications Commission* 105 F. (2d) 793

This was an appeal from an order of the Commission denying appellant's application to increase the hours of operation and the power of Station KFUO. Station KFUO) operated by the Evangelical Luthern Synod) and Station KSD (operated by the Pulitzer Publishing Co.) are each located in St. Louis, Mo., and operate on the frequency 550 kilocycles under a time-sharing agreement whereby KSD has about 80 percent and KFUO about 20 percent of the broadcast time. KSD applied for unlimited hours of operation, which would result in the deletion of KFUO. KFUO applied to increase its hours to one-half time, with the consequent partial deletion of KSD, and at the same time applied to increase its power to 1 kilowatt night and 5 kilowatts day. The Commission denied both applications and from this order KFUO appealed.

The court held that "The Commission's decision that the public interest will be served by maintaining the status quo, rather than by switching time from one station to the other, is supported by substantial evidence and is not arbitrary or capricious." The court said that it cannot substitute its judgment for the Commission's as to the relative public importance of the different types of programs offered by KSD and KFUO and that the public interest does not necessarily demand that all stations become commercial or that none be supported by religious bodies.

DECISION OF THE SUPREME COURT OF THE UNITED STATES

Rochester Telephone Corporation v. *United States of America and Federal Communications Commission*, 307 *U. S.* 125

(See page 32 of this report)

APPENDIX C

PUBLICATIONS

The following material has been printed and placed on sale by the Government Printing Office:

Federal Communications Act of 1934 with Amendments and Index Thereto (revised to May 20, 1937).

First Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1935.

Second Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1936.

Third Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1937.

Fourth Annual Report of the Federal Communications Commission to the Congress of the United States, for the Fiscal Year 1938.

Federal Communications Commission Practice and Procedure Promulgated Pursuant to the Communications Act of 1934, effective December 19, 1935.

Federal Communications Commission Reports—Volume 1: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1934 to July 1935.

Federal Communications Commission Reports—Volume 2: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1, 1935, to June 30, 1936.

Federal Communications Commission Reports—Volume 3: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, July 1936 to February 1937.

Federal Communications Commission Reports—Volume 4: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, March 1937 to November 15, 1937.

Federal Communications Commission Reports—Volume 5: Decisions, Reports, and Orders of the Federal Communications Commission of the United States, November 16, 1937, to June 30, 1938.

Proposed Report, Telephone Investigation.

Report, Telephone Investigation.

Uniform System of Accounts for Telephone Companies, Issue of June 19, 1935, Effective January 1, 1937.

Uniform System of Accounts for Telegraph and Cable Companies, Effective January 1, 1914.

Tariff Circular No. 1, Issue of July 31, 1935—Rules Governing the Construction, Filing, and Posting of Tariffs Relating to Interstate and Foreign Wire or Radio Communications, by Carriers Subject to the Communications Act of 1934, Excepting Connecting Carriers as Defined in Section 3 (u) of the Act and Excepting Carriers Operating in Alaska.

Ship Radiotelegraph Safety Rules, Effective May 21, 1937.

Rules Governing Classification of Telephone Employees, Effective July 1, 1917.

Mimeographed material.—The following material has been prepared in mimeographed form and is available at the offices of the Commission:

Rules and regulations of the Federal Communications Commission governing the various radio services.

Periodic reports of broadcast and other applications received.

Reports of action taken by the Commission at its weekly meetings.

Reports of statements of facts and grounds for decision in all formal cases decided by the Commission.

Uniform system of accounts for class C telephone companies, effective January 1, 1939.

Radio station lists, arranged by services (not all services included).

Radio Service Bulletin.

Descriptive list of Berne publications. (World lists of radio stations are published by the Bureau of the International Telecommunications Union, Berne, Switzerland.)

Selected financial and operating data from annual reports of telephone carriers for the year ended December 31, 1937.

Selected financial and operating data from the annual reports of telegraph, cable, and radiotelegraph carriers for the year ended December 31, 1937.

Summary of monthly reports of large telephone carriers in the United States.

Operating data from monthly reports of telegraph carriers.

Salary report of telephone and telegraph carriers, 1937.

Telephone hand set charges and changes since January 1, 1938.

Summary of responses of networks and broadcast stations showing financial and operating data for 1937 and data concerning program service and personnel for week beginning March 6, 1938.

Selected financial data from annual reports of holding companies.

Intercorporate relations of carriers and controlling companies, 1938; and an index to companies.

APPENDIX D

FINANCIAL AND OTHER STATISTICAL DATA RELATING TO TELEPHONE AND TELEGRAPH CARRIERS AND CONTROLLING COMPANIES

The various tables and charts in this appendix containing statistical data pertaining to communication carriers and controlling companies are assembled in the following groups:

(A) Statistics from annual reports of telephone and telegraph carriers and holding companies are shown on pages 102 to 143;
(B) Statistics from monthly reports of telephone and telegraph carriers are shown on pages 144 to 163;
(C) Statistics concerning intercorporate relations are shown on pages 164 to 170.

(A) STATISTICS FROM ANNUAL REPORTS OF TELEPHONE AND TELEGRAPH CARRIERS AND HOLDING COMPANIES

General arrangement.—This section of the appendix contains tables and charts relating to telephone, wire-telegraph, and radiotelegraph carriers and controlling companies, which filed annual reports with the Commission for the year ended December 31, 1938. The statistical data were compiled from returns shown in the annual reports unless otherwise noted. The tables and charts are arranged in the following order: (a) Those pertaining to telephone carriers, (b) those pertaining to telegraph carriers, and (c) those pertaining to both telephone and telegraph carriers. The references to holding companies in this appendix are given only in tables XII, XXIV, and XXXVIII.

Bell System.—Those telephone carriers that report on an annual basis to the Commission and that are subsidiary to the American Telephone & Telegraph Co. in a direct line of control (in a few instances involving intermediate companies) as measured by the holding of a majority of the voting capital stock, are considered in this appendix as Bell System carriers.

Geographical groupings.—For statistical purposes, the United States has been divided into three districts, which have been subdivided into nine regions. All telephone carriers that operate in the United States and file annual reports with the Commission have been assigned to these geographical regions, as indicated in table I. A description of the geographical regions is given following chart 1.

EASTERN DISTRICT

New England region.—This region comprises the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Middle Atlantic region.—This region comprises the following States: Delaware, New Jersey, New York, and Pennsylvania.

Great Lakes region.—This region comprises the following States: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

SOUTHERN DISTRICT

Chesapeake region.—This region comprises the following States and District: District of Columbia, Maryland, Virginia, and West Virginia.

Southeastern region.—This region comprises the following States: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

WESTERN DISTRICT

North Central region.—This region comprises the following States: Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.

South Central region.—This region comprises the following States: Arkansas, Kansas, Missouri, Oklahoma, and Texas (except El Paso County).

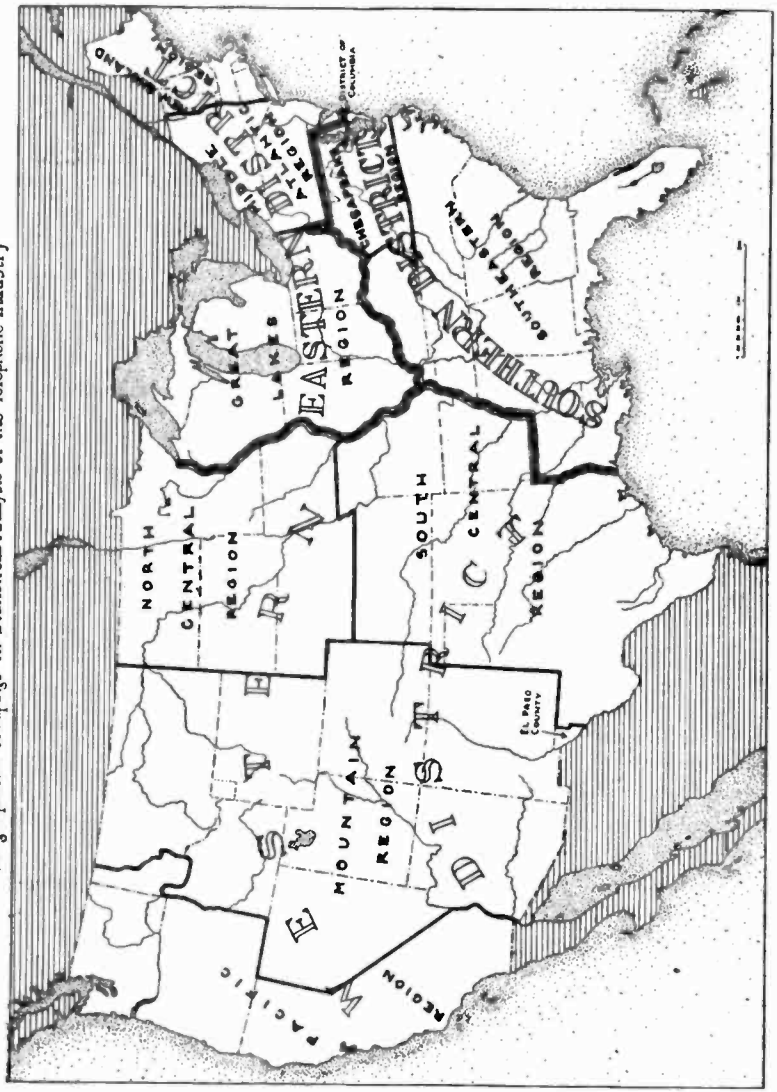
Mountain region.—This region comprises the following States: Arizona, Colorado, Idaho (south of Salmon River), Montana, Nevada, New Mexico, Texas (El Paso County), Utah, and Wyoming.

Pacific region.—This region comprises the following States: California, Idaho (north of Salmon River), Oregon, and Washington.

Names of telephone carriers.—A list of the names of the telephone carriers that filed annual reports for the year ended December 31, 1938, is shown in table I.

CHART 1

Geographical Groupings for Statistical Analysis of the Telephone Industry



There were three telephone carriers which filed reports for the year 1937 but which did not file reports for 1938, as they were notified that under the provisions of section 2 (b) (2) of the Communications Act of 1934 they were subject only to sections 201–5 of the act. Four carriers similarly classified have voluntarily continued to file annual reports for statistical purposes, as indicated in table I. The gross operating revenues of the carriers which filed annual reports for the year 1938 and whose data are included in the following tables and charts constitute

approximately 97 percent of the gross operating revenues of all telephone carriers in the United States.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1938, showing classification and geographical region to which each carrier has been assigned for statistical purposes* [1]

Name of carrier	Class of carrier	Geographical region
American Telephone Co	A	South Central.
*American Telephone & Telegraph Co	A	Middle Atlantic.
†Ashtabula Telephone Co	A	Great Lakes.
*Bell Telephone Co. of Nevada	A	Mountain.
*Bell Telephone Co. of Pennsylvania	A	Middle Atlantic.
Bluefield Telephone Co	A	Chesapeake.
Carolina Telephone & Telegraph Co	A	Southeastern.
Central Kansas Telephone Company, Inc	A	South Central.
Champaign Telephone Co	B	Great Lakes.
*Chesapeake & Potomac Telephone Co	A	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	A	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	A	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	A	Do.
*Christian-Todd Telephone Co	A	Southeastern.
Cincinnati & Suburban Bell Telephone Co	A	Great Lakes.
Colusa County Telephone Co	B	Pacific.
*Crown Point Telephone Co	B	Great Lakes.
Cuban American Telephone & Telegraph Co.[2]	A	Unassigned.
*Dako a Central Telephone Co	A	North Central.
Del Rio & Winter Garden Telephone Co	A	South Central.
*Diamond State Telephone Co	A	Middle Atlantic.
*Eastern Telephone & Telegraph Co. (Maine)	A	New England.
Eastern Telephone & Telegraph Co. (New Jersey)	A	Middle Atlantic.
Greenville Telephone Co	B	South Central.
Home Telephone & Telegraph Co. (Indiana)	A	Great Lakes.
Home Telephone & Telegraph Co. of Virginia	B	Chesapeake.
*Illinois Bell Telephone Co	A	Great Lakes.
Indiana Associated Telephone Corporation	A	Do.
*Indiana Bell Telephone Co	A	Do.
Inter-Mountain Telephone Co	A	Southeastern.
Interstate Telegraph Co	A	Pacific.
Interstate Telephone Co	A	Do.
Kansas State Telephone Co	B	South Central.
Keystone Telephone Co. of Philadelphia	A	Middle Atlantic.
†Kittanning Telephone Co	A	Do.
Lee Telephone Co	A	Chesapeake.
†Lincoln Telephone & Telegraph Co	A	North Central.
Michigan Associated Telephone Co	A	Great Lakes.
*Michigan Bell Telephone Co	A	Do.
Middle States Utilities Co. of Iowa	B	North Central.
Middle States Utilities Co. of Missouri	A	South Central.
*Moosehead Telephone & Telegraph Co	B	New England.
*Mountain States Telephone & Telegraph Co	A	Mountain.
Mutual Telephone Co. (Hawaii)[3]	A	Unassigned.
Nebraska Continental Telephone Co	A	North Central.
Nebraska Continental Telephone Corporation [3]	A	Do.
*New England Telephone & Telegraph Co	A	New England.
*New Jersey Bell Telephone Co	A	Middle Atlantic.
New Jersey Telephone Co	A	Do.
*New York Telephone Co	A	Do.
*Nicollet County Telephone & Telegraph Co	B	North Central.
Norfolk & Carolina Telephone & Telegraph Co	A	Southeastern.
North-West Telephone Co	A	Great Lakes.
North-Western Indiana Telephone Co.[4]	A	Do.
†Northern States Power Co	A	North Central.
*Northwestern Bell Telephone Co	A	Do.
Ohio Associated Telephone Co	A	Great Lakes.
*Ohio Bell Telephone Co	A	Do.
Ohio Telephone Service Co	A	Do.
Oregon-Washington Telephone Co	A	Pacific.
Oxnard Home Telephone Co	B	Do.
Ozark Central Telephone Co	A	South Central.
*Pacific Telephone & Telegraph Co	A	Pacific.
Palestine Telephone Co	B	South Central.
Pennsylvania Telephone Corporation	A	Middle Atlantic.
Platte Valley Telephone Corporation	A	North Central.
Public Utilities California Corporation	A	Pacific.
Rochester Telephone Corporation	A	Middle Atlantic.
San Angelo Telephone Co	A	South Central.
Santa Paula Home Telephone Co	B	Pacific.
Southeast Missouri Telephone Co	A	South Central.
*Southern Bell Telephone & Telegraph Co	A	Southeastern.
*Southern California Telephone Co	A	Pacific.
Southern New England Telephone Co	A	New England.

See footnotes at end of table.

TABLE I.—*List of telephone carriers reporting on an annual basis to the Commission for the year 1938, showing classification and geographical region to which each carrier has been assigned for statistical purposes*—Continued

Name of carrier	Class of carrier	Geographical region
Southwest Telephone Co. (Kansas)	A	South Central.
Southwestern Associated Telephone Co	A	Do.
*Southwestern Bell Telephone Co	A	Do.
Tri-State Associated Telephone Corporation	B	Middle Atlantic.
*Tri-State Telephone & Telegraph Co	A	North Central.
Two States Telephone Co	A	South Central.
Union Telephone Co. (Indiana)	A	Great Lakes.
*United Telephone Co. (Kansas)[9]	A	South Central.
United Telephone Co. (Missouri)	A	Do.
United Telephone Co. (Texas)	B	Do.
United Telephone Companies, Inc	A	Great Lakes.
United Telephone Co. of Pennsylvania	A	Middle Atlantic.
West Coast Telephone Co	A	Pacific.
*Westerly Automatic Telephone Co	A	New England.
Western Arkansas Telephone Co	B	South Central.
*Western New England Telephone Co	B	New England.
*White River Valley Telephone Co	B	Do.
*Wisconsin Telephone Co	A	Great Lakes.

*Represents carriers included in Bell system.

†Represents carriers, subject only to the provisions of sections 201-205 of the Communications Act of 1934, which file reports for statistical purposes.

‡ Telephone carriers filing annual reports are classified as follows: Class A carriers are those having average annual operating revenues exceeding $100,000, Class B carriers are those having average annual operating revenues exceeding $50,000, but not more than $100,000. Telephone carriers having average annual operating revenues not exceeding $50,000 are not required to file annual reports.

‖ Figures not included in United States totals.

[1] Property sold to Nebraska Continental Telephone Co. as of April 1, 1938.

[4] Major portion of telephone property sold to Indiana Associated Telephone Corporation as of December 1, 1937, and balance sold to Illinois Bell Telephone Company as of June 15, 1938.

[9] Merged with Southwestern Bell Telephone Co. as of December 31, 1938.

Telephone financial and operating data by geographical divisions.—The statistical data shown in table II were compiled from annual reports filed by 73 class A and 17 class B (see footnote 1 to table I) telephone carriers operating in the United States, and by 2 class A telephone carriers operating outside of the United States, the latter 2 being the Cuban American Telephone & Telegraph Co. and the Mutual Telephone Co. (Hawaii). Duplications of financial data, owing to intercorporate relations, have not been excluded. This summary includes data for the period of operations for a portion of the year 1938 of 3 class A carriers, as explained in the footnotes accompanying table I.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*

[Year ended Dec. 31, 1938]

No.	Item	All carriers				Unassigned [2]	Bell System carriers			
		United States	Eastern district [1]	Southern district	Western district		United States	Eastern district	Southern district	Western district
	Number of carriers	90	38	12	40	2	33	17	6	10
	Investment in telephone plant:									
1	Telephone plant in service	$4,720,701,070	$3,121,343,363	$433,924,827	$1,165,433,480	$9,501,263	$4,431,523,066	$2,896,624,131	$122,311,104	$1,112,587,831
2	Telephone plant under construction	36,306,932	21,390,025	3,940,581	10,976,326	----------	33,290,932	18,712,203	3,754,202	10,824,527
3	Property held for future telephone use	12,543,931	9,249,117	719,340	2,595,474	----------	12,286,405	9,013,930	719,340	2,553,195
4	Telephone plant acquisition adjustment	19,720,302	5,614,765	4,357,938	9,747,599	----------	15,114,592	4,516,166	4,234,092	6,364,334
5	Total investment in telephone plant	4,789,292,835	3,157,597,270	442,942,686	1,188,752,879	9,501,263	4,492,215,055	2,928,866,430	431,018,738	1,132,329,887
	Investments other than telephone plant:									
6	Investments in affiliated companies	2,410,168,245	2,261,711,581	836,717	147,619,947	----------	2,408,509,906	2,261,229,046	836,717	146,504,143
7	Advances to affiliated companies	178,064,932	144,741,716	----------	33,323,216	----------	175,492,419	142,292,615	----------	33,199,804
8	Miscellaneous investments	103,809,185	83,723,110	3,355,993	16,730,082	73,435	99,768,390	82,772,263	3,308,084	13,688,043
9	Total investments other than telephone plant	2,692,042,362	2,490,176,407	4,192,710	197,673,245	73,435	2,683,830,715	2,486,293,924	4,144,801	193,391,990
10	Cash	92,036,420	83,395,175	3,973,834	11,637,411	172,936	92,211,407	78,469,952	3,862,831	9,878,624
11	Material and supplies	51,301,519	34,967,711	4,069,453	12,267,355	274,808	47,228,016	32,281,365	3,909,184	11,037,467
12	Total current assets	316,308,060	243,796,575	20,106,916	52,404,569	614,764	297,878,705	230,591,911	19,570,900	47,715,894
13	Capital stock	4,287,169,374	3,297,487,206	241,781,500	747,900,668	5,265,000	4,150,932,236	3,192,426,965	230,157,400	722,367,871
14	Funded debt	1,032,572,535	803,570,735	49,813,000	179,188,800	932,000	954,782,035	746,188,035	49,000,000	159,594,000
15	Total long-term debt	1,331,444,639	945,457,151	97,001,610	291,985,878	932,000	1,247,525,633	852,341,016	95,991,205	269,193,412
16	Total current liabilities	98,299,163	63,586,068	11,702,683	22,920,412	092,396	85,872,221	53,328,092	10,977,815	21,566,314
17	Taxes accrued	81,198,455	52,945,071	6,438,501	21,814,883	131,064	77,101,312	49,804,595	6,193,670	21,103,047
18	Unmatured interest, dividends, and rents accrued	56,108,804	51,689,391	556,003	3,863,410	17,087	53,875,550	49,840,140	516,258	3,519,152
19	Depreciation reserve	1,318,152,692	890,593,637	98,075,570	329,483,485	3,305,063	1,250,442,114	838,723,975	94,450,527	317,267,612
20	Amortization reserve	3,532,189	1,440,462	947,357	1,144,370	1,903	3,507,576	1,465,930	917,219	1,124,397
21	Total surplus	363,097,778	318,410,544	14,458,447	30,228,787	342,091	347,301,387	306,317,913	13,433,692	27,549,752
	Operating revenues:									
22	Local service	758,801,944	497,425,476	77,106,120	194,210,348	1,680,016	713,512,758	451,590,846	75,253,411	186,668,501
23	Toll service	324,090,778	218,412,905	28,782,360	77,405,513	494,613	311,849,460	210,307,180	27,579,475	73,962,805
24	Miscellaneous	62,903,499	45,881,306	4,978,899	12,043,234	42,142	60,423,793	43,909,131	4,896,920	11,617,742
25	Uncollectible—Dr	5,320,261	3,621,570	464,811	1,233,880	5,588	5,118,763	3,486,443	448,575	1,183,745
26	Total operating revenues	1,141,075,960	748,128,177	110,402,568	282,485,215	2,211,213	1,080,667,248	702,320,714	107,281,231	271,065,303

	Operating expenses:										
27	Maintenance	219,334,178	147,854,980	18,633,190	52,846,008	444,432	208,097,946	138,861,837	18,192,016	51,044,093	
28	Depreciation and amortization	167,448,423	107,957,990	16,558,828	42,031,005	351,437	157,638,787	100,487,945	16,052,550	41,098,292	
29	Traffic	170,419,201	106,609,258	19,338,824	44,471,179	264,173	161,316,233	99,907,490	18,832,701	42,576,042	
30	Commercial	90,055,331	58,072,330	8,828,786	23,154,478	101,287	85,970,601	54,994,065	8,666,482	22,310,054	
31	General office salaries and expenses	64,501,031	45,986,675	4,550,538	13,963,818	205,948	61,073,412	43,469,570	4,342,466	13,261,376	
32	Other	73,193,194	55,165,124	5,683,648	12,344,422	138,181	70,846,412	53,402,971	5,479,351	11,964,090	
33	Total operating expenses	784,951,681	521,646,357	73,593,814	189,711,510	1,505,458	744,943,391	491,123,878	71,565,566	182,253,947	
34	Operating ratio (percent)	68.79	69.73	66.62	67.16	68.08	68.93	69.93	66.71	67.24	
	Operating taxes:										
35	Other than U. S. Government	$107,071,829	$69,148,698	$10,626,458	$27,296,673	$176,702	$102,889,604	$66,144,079	$10,269,473	$26,476,052	
36	U. S. Government	44,761,630	29,178,883	4,179,553	11,403,194	101,860	42,270,744	27,255,489	4,036,172	10,979,083	
37	Total operating taxes	151,833,459	98,327,581	14,806,011	38,699,867	278,562	145,160,348	93,399,568	14,305,645	37,455,135	
38	Net operating income	204,263,715	128,154,239	22,062,743	54,046,733	427,193	190,564,283	117,797,268	21,410,020	51,356,995	
39	Dividend income	160,976,184	150,420,481	211,444	10,338,259	----------	160,960,104	150,417,283	209,622	10,233,199	
40	Interest income	14,151,822	11,522,367	231,503	2,397,862	5,353	13,827,383	11,235,131	221,578	2,370,674	
41	Miscellaneous other income	1,175,023	937,888	25,510	211,625	29,246	1,064,536	929,077	24,435	111,024	
42	Miscellaneous deductions from income	1,997,338	1,278,511	151,606	567,161	18,015	1,848,550	1,191,523	145,509	511,518	
43	Interest on funded debt	38,980,767	32,042,249	1,693,747	5,274,771	37,280	35,704,224	29,784,883	1,633,957	4,285,384	
44	Other interest deductions	15,241,000	6,821,435	2,839,653	5,579,912	10,500	14,574,662	6,339,164	2,818,196	5,417,302	
45	Miscellaneous fixed charges	741,150	557,548	118,157	65,445	----------	607,117	483,809	116,367	6,941	
46	Net income	323,606,489	250,341,232	17,758,067	55,507,190	395,997	313,581,753	242,579,380	17,151,626	53,850,747	
	Dividends declared:										
47	Common stock	$328,020,500	$265,195,183	$17,475,271	$45,950,136	$342,000	$321,428,040	$258,871,979	$17,031,420	$45,524,641	
48	Rate percent or amount per share	----------	----------	----------	----------	----------	----------	----------	----------	----------	
49	Preferred stock	$9,048,636	$2,614,075	$111,576	$6,922,985	----------	$7,504,090	$1,072,015	$22,500	$5,809,575	
50	Rate percent or amount per share	----------	----------	----------	----------	----------	----------	----------	----------	----------	
	Miles of wire in cable:										
51	Aerial	29,714,244	19,378,722	3,442,003	6,963,519	38,902	28,096,437	18,105,976	3,335,671	6,654,790	
52	Underground	52,376,721	35,829,379	4,236,529	12,310,813	56,221	49,774,831	33,370,484	4,206,600	12,197,747	
53	Buried	863,233	379,727	33,956	449,550	3,287	819,253	360,001	33,843	425,349	
54	Submarine	203,730	132,775	19,944	53,011	421	196,744	124,051	19,881	52,812	
55	Total miles of wire in cable	83,159,928	55,650,603	7,732,432	19,776,893	98,831	78,887,265	51,960,572	7,595,995	19,330,698	
56	Miles of aerial wire	4,318,358	1,888,212	999,784	1,730,362	14,883	3,824,274	1,660,471	656,171	1,507,632	
57	Total miles of wire	87,478,286	57,538,815	8,432,216	21,507,255	113,714	82,711,539	53,621,043	8,252,166	20,838,330	
58	Miles of pole line	497,962	209,375	56,126	232,461	1,455	401,840	169,032	49,811	182,977	
59	Miles of underground conduit (single duct)	126,312	88,573	9,010	28,729	217	118,803	81,626	8,923	28,254	

See footnotes at end of table.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

No.	Item	All carriers				Unassigned [2]	Bell System carriers			
		United States	Eastern district [1]	Southern district	Western district		United States	Eastern district	Southern district	Western district
	Central offices—types of switchboard:									
60	Magneto-manual	3,761	1,220	560	1,981	24	2,855	931	540	1,384
61	Common battery-manual	2,987	1,264	523	1,200	----	2,577	1,085	482	1,010
62	Auto-manual	14	9	----	5	----	6	5	----	1
63	Dial (automatic) system	1,860	966	405	489	7	1,586	839	313	434
64	Total central offices	8,622	3,459	1,488	3,675	31	7,024	2,860	1,335	2,829
65	Company telephones	17,097,766	10,114,082	2,050,165	4,933,519	32,205	15,777,546	9,145,596	1,977,974	4,653,976
66	Service telephones	290,391	45,868	40,475	204,048	777	248,833	38,125	38,528	172,180
67	Private line telephones	82,471	51,914	5,807	24,750	305	79,613	49,380	5,779	24,454
68	Total telephones	17,470,628	10,211,864	2,096,447	5,162,317	33,287	16,105,992	9,233,101	2,022,281	4,850,610
69	Other stations	23,447	15,939	1,732	5,776	5	22,915	15,438	1,732	5,745
	Company telephones by type of switchboard: [3]									
70	Magneto-manual	669,548	317,470	101,896	250,182	6,617	515,769	246,290	98,759	170,720
71	Common battery-manual	7,615,515	4,420,697	1,084,172	2,110,646	----	7,002,065	4,004,687	1,035,627	1,961,751
72	Auto-manual	16,075	12,893	----	3,182	----	4,318	4,282	----	36
73	Dial (automatic) system	8,796,602	5,362,996	864,097	2,569,509	25,588	8,255,368	4,890,311	843,588	2,521,469
	Company telephones by type of customer:									
74	Business	6,617,279	3,973,700	814,912	1,828,667	14,244	6,154,142	3,623,345	788,043	1,742,754
75	Residential	10,480,487	6,140,382	1,235,253	3,104,852	17,961	9,623,404	5,522,251	1,189,931	2,911,222
	Company telephones by class:									
76	Main	12,122,986	7,026,259	1,448,186	3,648,541	23,267	11,112,743	6,315,982	1,390,381	3,406,380
77	P. B. X	3,192,170	2,048,088	364,949	779,133	5,639	3,025,487	1,903,003	359,041	763,443
78	Extension	1,782,610	1,039,735	237,030	505,845	3,299	1,639,316	926,611	228,552	484,153
	Average number of calls originated per month:									
79	Local calls	2,488,963,112	1,259,087,324	307,428,674	832,447,114	5,901,224	2,291,412,367	1,122,368,672	382,671,616	786,372,079
80	Toll calls	73,052,594	50,127,105	5,837,455	17,088,034	139,381	68,014,839	46,470,497	5,501,126	16,043,216
81	Average number of company and service telephones	17,114,212	10,044,134	2,027,062	5,043,016	32,005	15,765,539	9,076,926	1,954,535	4,734,078
	Private-line service revenues: [4]									
	Commercial:									
82	Broadcasting	$7,897,617	$6,962,139	$223,635	$711,843	$3,450	$7,848,496	$6,914,432	$222,986	$711,078
	Miscellaneous:									
83	Telephone	5,591,087	5,436,848	36,598	118,541	27,605	5,520,602	5,368,468	36,193	115,941
84	Morse	4,972,118	4,964,242	3,158	4,718	----	4,968,660	4,960,859	3,158	4,643

85	Teletypewriter	4,391,267	4,070,092	9,344	311,831	2,717	4,387,643	4,066,468	9,344	311,831
86	Other	45,421	36,265	7,723	1,433	----------	35,390	31,783	2,690	917
87	Government	1,250,123	1,214,884	33,090	8,149	----------	1,255,922	1,214,683	33,090	8,149
88	Press	4,078,482	3,932,494	140	145,848	----------	4,078,213	3,932,494	140	145,579
89	Total private-line-service revenues	28,233,015	26,616,964	313,688	1,302,363	33,773	28,094,926	26,489,187	307,601	1,298,138
	Telegraph stations:									
	Private-line Morse:									
90	Number	3,083	2,696	4	383	----------	3,065	2,689	3	373
91	Revenue	$5,492,704	$5,083,510	$89,918	$319,276	----------	$5,458,318	$5,071,033	$87,348	$299,937
	Private-line teletypewriter:									
92	Number	7,170	5,899	255	1,016	13	6,968	5,746	254	968
93	Revenue	$10,755,163	$8,762,644	$242,202	$1,750,317	$1,188	$10,638,323	$8,665,527	$239,009	$1,733,787
	Teletypewriter-exchange service:									
94	Number	13,231	7,333	1,475	4,423	----------	12,882	7,003	1,475	4,404
95	Revenue	$6,824,241	$4,833,547	$405,643	$1,585,051	----------	$6,723,344	$4,738,195	$405,643	$1,579,506
96	Telephotograph-service revenue	$493,810	$383,647	$288	$109,875	----------	$493,810	$383,647	$288	$109,875
97	Other telegraph-service revenue	$396,857	$103,238	$4,666	$288,953	----------	$318,996	$80,877	$802	$267,317
	Radiotelephone service:									
	Total chargeable calls:									
98	Between fixed stations	51,389	51,389	----------	----------	----------	51,389	51,389	----------	----------
99	In mobile service	14,377	10,035	378	3,964	----------	14,377	10,035	378	3,964
100	Land-line charges—continental United States (gross)	$103,069	$101,208	$177	$1,684	----------	$103,069	$101,208	$177	$1,684
101	Radio-link charges (respondent's portion)	$997,007	$991,027	$418	$5,562	----------	$997,007	$991,027	$418	$5,562
102	Number of employees at close of June	280,954	172,176	33,884	80,894	647	267,738	159,184	32,622	75,932
103	Male employees	111,006	69,021	11,872	30,113	440	103,615	63,719	11,426	28,470
104	Female employees	175,948	103,155	22,012	50,781	207	164,123	95,465	21,196	47,462
105	Number of employees at close of year	286,181	171,884	34,300	79,997	659	267,290	159,065	33,071	75,154
106	Male employees	111,197	69,009	12,144	30,044	439	103,826	63,656	11,717	28,453
107	Female employees	174,984	102,875	22,156	49,953	220	163,464	95,409	21,354	46,701
108	Total compensation for year	$502,004,285	$328,561,167	$48,407,019	$125,096,099	$998,330	$476,038,127	$308,288,724	$47,197,008	$120,552,395
109	Compensation chargeable to operating expenses	$428,413,476	$283,280,505	$39,007,395	$106,125,576	$769,887	$407,214,984	$266,866,076	$38,008,164	$102,340,744
	Benefits:									
110	Number of cases handled during year	51,500	33,430	6,660	11,410	----------	48,926	31,207	6,562	11,157
111	Amount paid during year	$7,993,400	$5,370,657	$850,157	$1,772,586	----------	$7,644,171	$5,067,570	$829,345	$1,747,256
	Pensions:									
112	Number of cases being paid at end of year	8,471	5,810	828	1,833	13	7,998	5,395	819	1,784
113	Disbursements from pension fund	$5,957,213	$4,326,173	$449,314	$1,181,726	$9,841	$5,705,340	$4,103,584	$442,602	$1,159,154
114	Relief and pension charges to operating expenses	$20,563,568	$13,568,569	$1,853,531	$5,141,468	$41,552	$19,672,361	$12,822,037	$1,781,806	$5,068,518
115	Balance in pension fund at beginning of year	$183,220,705	$121,685,476	$15,398,407	$43,146,732	$558,801	$176,680,140	$118,921,834	$15,189,090	$42,569,216
116	Balance in pension fund at end of year	$193,374,589	$133,793,996	$16,826,608	$47,753,985	$659,761	$191,319,129	$127,603,033	$16,573,605	$47,142,491

See footnotes at end of table.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region [1]	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
	Number of carriers	7	13	18	7	5	10	18	2	
	Investment in telephone plant:									
1	Telephone plant in service	$407,864,408	$1,822,309,492	$891,169,463	$168,322,169	$265,602,658	$190,612,225	$392,119,118	$112,492,119	$480,220,018
2	Telephone plant under construction	5,316,065	11,824,342	4,249,618	1,023,282	2,317,319	1,044,310	4,143,333	1,181,319	4,607,364
3	Property held for future telephone use	1,071,499	4,021,363	3,256,255	317,619	401,721	93,903	778,673	264,113	1,458,785
4	Telephone plant acquisition adjustment	[2] −83,827	2,945,743	2,757,849	1,536,993	2,820,945	608,274	3,952,137	602,192	4,594,996
5	Total investment in telephone plant	414,163,145	1,842,000,940	901,433,185	171,800,043	271,142,643	192,358,712	390,993,261	114,529,743	490,871,163
	Investments other than telephone plant:									
6	Investments in affiliated companies	961,160	2,260,308,854	501,567	----------	836,717	16,644,147	1,017,274	74,589	120,883,946
7	Advances to affiliated companies	835,243	143,905,573	900	----------	----------	16,403,902	5,902	20,000	16,893,412
8	Miscellaneous investments	4,833,161	69,221,171	9,668,778	278,856	3,077,137	2,533,154	8,931,038	305,802	4,980,088
9	Total investments other than telephone plant	6,569,564	2,473,435,598	10,171,245	278,856	3,913,854	35,581,203	9,954,214	400,392	151,737,446
10	Cash	3,135,195	66,697,921	13,502,059	690,601	3,283,143	1,312,509	5,116,708	3,221,514	1,986,680
11	Material and supplies	3,598,451	21,580,023	9,789,247	1,629,813	2,436,640	2,540,269	3,261,071	1,250,971	5,215,044
12	Total current assets	18,762,218	177,109,918	47,921,439	7,077,303	13,029,613	8,334,026	18,224,509	6,757,595	19,088,139
13	Capital stock	174,325,505	2,584,899,303	538,262,338	96,452,100	145,329,400	118,108,351	182,295,694	52,899,700	394,537,013
14	Funded debt	122,140,300	626,788,735	54,632,700	4,225,000	45,588,000	5,443,000	82,624,300	30,000,000	61,121,500
15	Total long-term debt	137,792,835	716,630,043	91,034,273	30,611,759	60,389,851	48,718,572	97,445,750	30,105,280	115,716,276
16	Total current liabilities	5,549,235	36,215,697	21,821,136	4,758,832	7,003,851	4,246,039	8,533,389	1,837,309	8,303,675
17	Taxes accrued	2,553,168	26,120,644	24,271,259	2,330,163	4,108,338	4,463,382	7,473,903	2,309,349	7,508,249
18	Unmatured interest, dividends, and rents accrued	1,360,850	48,428,173	1,000,359	46,286	509,717	390,490	865,896	936,411	1,643,583
19	Depreciation reserve	111,239,652	542,638,808	236,695,177	34,761,420	63,314,150	55,099,669	105,585,066	32,920,606	135,278,144
20	Amortization reserve	[3] −29,893	209,698	1,260,667	[3] −10,766	958,123	[3] −22,396	920,477	[3] −16,012	262,291
21	Total surplus	10,659,979	262,744,665	45,005,900	10,818,019	3,640,428	4,899,406	18,018,058	975,639	6,305,634
	Operating revenues:									
22	Local service	67,242,970	235,079,216	165,103,290	33,601,902	43,564,158	31,418,201	62,512,306	16,896,903	83,392,818
23	Toll service	22,580,741	152,226,934	43,635,230	8,114,090	20,668,270	11,351,623	27,082,273	7,583,157	31,448,460

24	Miscellaneous	3,417,130	33,783,134	8,681,102	2,014,519	2,964,380	2,325,578	5,039,424	1,091,742	3,586,490
25	Uncollectible—(Dr.)	391,787	2,385,831	843,952	179,068	285,743	173,471	405,968	120,239	534,202
26	Total operating revenues	92,849,054	438,703,453	216,575,670	43,551,503	66,911,005	44,921,991	94,238,095	25,441,563	117,893,566
	Operating expenses:									
27	Maintenance	21,796,831	85,724,193	40,333,956	7,189,760	11,443,430	8,948,566	16,343,646	4,284,118	23,269,678
28	Depreciation and amortization	14,464,911	62,315,023	31,178,056	6,509,364	10,049,464	6,724,105	14,074,835	3,792,232	18,340,433
29	Traffic	16,584,306	55,329,646	34,095,306	8,073,546	11,265,278	7,050,433	14,715,192	4,458,767	18,240,787
30	Commercial	7,264,475	33,312,606	17,495,189	3,936,362	4,892,424	3,616,558	7,505,052	2,340,382	9,602,486
31	General office and salaries and expenses	4,265,253	30,741,642	10,979,780	2,024,760	2,525,778	2,632,130	4,369,565	1,423,089	5,539,034
32	Other	4,761,631	41,608,816	8,794,677	1,977,263	3,706,385	2,147,041	4,197,057	1,148,001	4,852,323
33	Total operating expenses	69,137,407	309,031,986	143,476,964	29,711,055	43,882,759	31,118,833	61,205,347	17,446,589	79,940,741
34	Operating ratio (percent)	74.46	70.44	66.25	68.22	65.58	69.27	64.95	68.58	67.81
	Operating taxes:									
35	Other than U. S. Government	$6,074,620	$40,312,939	$22,761,139	$3,713,334	$6,913,124	$3,948,560	$8,191,836	$2,756,710	$12,399,567
36	U. S. Government	2,590,118	18,502,999	8,085,766	1,661,361	2,518,192	1,627,359	4,242,029	829,680	4,704,126
37	Total operating taxes	8,664,738	58,815,938	30,846,905	5,374,695	9,431,316	5,575,919	12,433,865	3,586,390	17,103,693
38	Net operating income	15,046,909	70,855,529	42,251,801	8,465,753	13,596,990	8,200,115	20,589,183	4,408,493	20,848,942
39	Dividend income	33,213	150,104,454	288,814	20,583	190,856	74,064	427,968	6,449	9,829,778
40	Interest income	325,576	10,692,169	504,622	149,818	81,745	890,698	486,853	102,904	911,407
41	Miscellaneous income	103,766	763,675	70,447	17,400	8,110	30,928	54,278	10,619	115,800
42	Miscellaneous deductions from income	186,797	707,401	324,313	62,078	89,583	144,893	209,959	62,990	149,319
43	Interest on funded debt	5,004,841	25,009,847	2,027,561	180,457	1,483,290	223,008	2,412,781	531,309	2,107,675
44	Other interest deductions	565,508	4,027,385	2,228,542	1,323,734	1,515,919	2,085,976	738,732	578,168	2,177,036
45	Miscellaneous fixed charges	165,598	358,433	33,517	11,288	106,889	12,705	34,201	2,120	10,416
46	Net income	9,586,720	202,252,761	38,501,751	7,076,032	10,682,035	6,735,225	18,162,606	3,353,878	27,255,481
	Dividends declared:									
47	Common stock	10,842,208	218,539,422	35,813,552	7,117,959	10,357,312	5,136,141	15,887,266	3,436,229	21,490,500
48	Rate percent or amount per share									
49	Preferred stock		1,844,568	709,507	19,008	92,508	355,704	1,376,516		5,190,765
50	Rate percent or amount per share									
	Miles of wire in cable:									
51	Aerial	2,732,188	11,307,140	5,269,394	1,085,929	2,350,074	960,198	2,712,071	536,316	2,754,934
52	Underground	4,170,930	19,839,647	11,818,782	1,945,208	2,291,321	1,742,033	4,009,208	840,173	5,719,339
53	Buried	44,214	262,228	73,265	9,071	24,885	100,797	276,520	21,393	50,840
54	Submarine	24,051	79,398	29,326	5,947	13,997	748	2,911		49,352
55	Total miles of wire in cable	6,971,403	31,488,433	17,190,767	3,046,155	4,686,277	2,803,776	7,000,770	1,397,882	8,574,465

See footnotes at end of table.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeak region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
56	Miles of aerial wire	245,392	1,061,359	581,461	151,634	548,150	443,145	635,183	286,918	365,116
57	Total miles of wire	7,216,795	32,549,792	17,772,228	3,197,789	5,234,427	3,246,921	7,635,953	1,684,800	8,939,581
58	Miles of pole line	33,747	82,522	93,106	14,650	41,476	79,315	76,653	40,103	36,390
59	Miles of underground conduit (single duct)	10,682	48,848	29,043	4,187	4,823	4,142	8,499	2,009	14,079
	Central offices—types of switchboard:									
60	Magneto-manual	366	308	546	76	484	518	732	264	467
61	Common battery-manual	249	559	456	171	352	265	449	218	268
62	Auto-manual		1	8				2		3
63	Dial (automatic) system	112	497	357	152	253	123	137	21	208
64	Total central offices	727	1,365	1,367	399	1,089	906	1,320	503	946
65	Company telephones	1,580,325	4,767,174	3,766,583	843,838	1,206,327	911,372	1,608,270	506,263	1,907,614
66	Service telephones	1,601	19,427	24,840	9,425	31,050	62,332	79,140	15,051	47,525
67	Private-line telephones	5,637	30,836	15,441	3,993	1,814	3,235	5,766	1,318	14,431
68	Total telephones	1,587,563	4,817,437	3,806,864	857,256	1,239,191	976,939	1,693,176	522,632	1,969,570
69	Other stations	1,784	9,213	4,942	625	1,107	556	1,537	555	3,128
	Company telephones by type of switchboard: [3]									
70	Magneto-manual	106,554	80,139	130,777	19,906	81,990	76,005	103,659	26,973	43,545
71	Common battery-manual	786,164	1,849,566	1,784,967	443,245	640,927	411,694	659,977	317,759	721,216
72	Auto-manual		89	12,804				450		2,732
73	Dial (automatic) system	687,607	2,837,354	1,838,035	380,687	483,410	423,673	844,184	161,531	1,140,121
	Company telephones by type of customer:									
74	Business	551,274	2,051,320	1,371,106	323,835	491,077	291,361	599,147	198,515	739,644
57	Residential	1,029,051	2,715,854	2,395,477	520,003	715,250	620,011	1,009,123	307,748	1,167,970
	Company telephones by class:									
76	Main	1,175,858	3,106,483	2,743,918	545,850	902,336	714,939	1,210,201	376,249	1,347,152
77	P. B. X	230,944	1,125,717	691,427	188,441	176,508	116,346	225,113	76,155	361,519
78	Extension	173,523	534,974	331,238	109,547	127,483	80,087	172,956	53,859	198,943

	Average number of calls originated per month:									
79	Local calls	204,242,399	566,181,912	488,663,013	119,727,354	277,701,320	150,936,692	329,632,484	78,969,837	272,906,101
80	Toll calls	9,711,416	28,524,527	11,891,162	2,250,303	3,587,152	2,253,104	4,590,833	1,419,746	8,824,351
81	Average number of company and service telephones	1,580,133	4,739,518	3,724,483	828,080	1,198,982	963,402	1,660,126	508,897	1,910,591
	Private line service revenues: [4]									
	Commercial:									
82	Broadcasting	$71,388	$6,616,307	$274,444	$70,545	$153,090	$122,320	$131,015	$58,147	$400,361
	Miscellaneous:									
83	Telephone	170,964	5,011,125	254,759	5,531	31,067	35,271	64,904	9,667	8,699
84	Morse	1,947	4,954,995	7,300		3,158	75		298	4,345
85	Teletypewriter	52,682	3,974,311	43,099	5,667	3,677		17,102	5,098	289,631
86	Other	64	22,189	14,012	2,690		387	744		302
87	Government		1,214,239	645	6,725	26,365	1,248	3,169	3,732	
88	Press		3,932,494			140	269			145,579
89	Total private line service revenues	297,045	25,725,660	594,259	91,158	217,497	159,570	216,934	76,942	848,917
	Telegraph stations:									
	Private line Morse:									
90	Number	132	1,929	635	2	2	25	117	53	188
91	Revenue	$27,189	$4,650,627	$405,694	$31,370	$68,548	$33,951	$80,396	$35,743	$169,186
	Private line teletypewriter:									
92	Number	586	3,971	1,342	138	117	110	204	30	672
93	Revenue	$298,344	$7,358,687	$1,105,613	$94,996	$147,206	$58,543	$247,293	$235,856	$1,208,625
	Teletypewriter exchange service:									
94	Number	1,066	3,313	2,954	485	990	456	1,216	472	2,279
95	Revenue	$255,305	$3,151,181	$1,427,061	$122,168	$283,475	$140,202	$361,045	$124,102	$959,702
96	Telephotograph service revenue	180	370,723	12,744	288			1,396	23,261	85,218
97	Other telegraph service revenue	7,178	64,075	31,985	802	3,864		3,212	10,898	274,843
	Radiotelephone service:									
	Total chargeable calls:									
98	Between fixed stations		51,280							3,964
99	In mobile service	1,244	8,791		378					
100	Land-line charges—continental United States (gross)	$590	$100,618		$177					$1,684
101	Radio link charges (respondent's portion)	1,622	989,405		418					5,562
102	Number of employees at close of June	25,971	89,485	56,720	12,705	21,179	13,969	27,774	8,109	31,042
103	Male employees	9,621	38,237	21,163	4,356	7,516	5,296	9,477	2,911	12,429
104	Female employees	16,350	51,248	35,557	8,349	13,663	8,673	18,297	5,198	18,613
105	Number of employees at close of year	26,163	88,749	56,972	12,684	21,616	13,586	27,973	7,860	30,578
106	Male employees	9,887	38,161	20,961	4,397	7,747	5,179	9,743	2,840	12,282
107	Female employees	16,276	50,588	36,011	8,287	13,869	8,407	18,230	5,020	18,296

See footnotes at end of table.

TABLE II.—*Statistics of telephone carriers, reporting on an annual basis to the Commission, classified by geographical divisions*—Continued

No.	Item	Eastern district			Southern district		Western district			
		New England region	Middle Atlantic region	Great Lakes region	Chesapeake region	Southeastern region	North Central region	South Central region	Mountain region	Pacific region
108	Total compensation for year	$46,470,542	$186,977,139	$95,113,486	$20,683,005	$27,724,014	$20,673,213	$37,945,586	$11,253,576	$55,223,724
109	Compensation chargeable to operating expenses	39,050,354	161,469,814	82,760,337	16,847,314	22,160,081	17,406,348	32,628,834	9,351,380	46,739,014
	Benefits:									
110	Number of cases handled during year	4,997	19,081	9,352	2,008	4,652	2,128	3,501	945	4,836
111	Amount paid during year	$850,653	$3,120,371	$1,399,633	$290,207	$559,950	$283,557	$520,048	$189,139	$779,842
	Pensions:									
112	Number of cases being paid at end of year	1,129	3,197	1,484	299	529	435	588	145	665
113	Disbursements from pension fund	$764,309	$2,633,378	$928,486	$186,523	$262,791	$270,545	$346,833	$90,389	$473,959
114	Relief and pension charges to operating expenses	2,723,318	7,481,093	3,364,158	822,011	1,031,520	725,406	1,287,706	401,624	2,726,732
115	Balance in pension fund at beginning of year	13,828,249	74,648,552	36,213,675	6,254,345	9,134,152	7,994,191	14,323,043	4,094,320	16,735,178
116	Balance in pension fund at end of year	15,667,839	79,386,361	38,739,796	6,982,293	9,844,315	8,519,834	15,663,819	4,368,174	19,202,158

[1] Data concerning the American Telephone & Telegraph Co. have been included in the Middle Atlantic region and the Eastern district inasmuch as only aggregate figures are reported.

[2] 2 carriers located outside the continental limits of the United States. Not included in United States totals.

[3] Excludes 26 telephones of the American Telephone & Telegraph Co. which were not connected with exchange offices.

[4] Represents, except in minor instances, gross revenue billed for interstate services furnished to customers, and includes data for intrastate lines used in interstate communication.

[5] Deficit or other reverse item.

Proportion of the telephone industry covered by annual reports.—A comparison of the data compiled from the annual reports filed with the Commission by class A and class B telephone carriers for the year 1937 with the figures for all telephone systems and lines in the United States (shown in the "Census of Electrical Industries, Telephones, and Telegraphs: 1937") is given in table III. This table also shows a similar comparison of the data for 1938 for the same group (including mergers and consolidations) of carriers reporting to the Commission with the data obtained from the Commission and unofficial sources for all class A and class B carriers. Although the number of telephone carriers reporting annually to the Commission represents less than one-fifth of 1 percent of the total number of systems and lines, it will be observed that they handle practically all of the telephone business in the United States.

TABLE III.—*Comparison of data concerning telephone carriers shown in the report of the Bureau of the Census, and reports filed with the Commission and data secured from unofficial sources*

Item	Census figures, 1937	Federal Communications Commission, 1937		Total classes A and B carriers, 1938 [1]	Federal Communications Commission, 1938	
		Amount	Percent of census figures		Amount	Percent of total
Number of systems and lines	50, 560	93	0.18	240	90	37.50
Investment in telephone plant	$5, 001, 803, 335	$4, 685. 231, 383	93. 67	$4, 983, 294, 102	$4, 789, 292. 835	96. 11
Operating revenues	$1, 180, 028. 372	$1, 139, 534, 334	96. 57	$1, 180, 690. 933	$1, 141, 075. 96C	96. 64
Central offices	18, 957	8, 623	45. 46	10, 647	8, 622	80. 98
Total telephones	19, 453. 401	17, 047, 586	87. 63	18, 614, 330	17, 470, 628	93. 86
Number of employees	325, 943	295, 774	90. 74	(2)	296, 181	-------
Total compensation	$516, 640, 009	$489, 420, 830	94. 73	(2)	$502, 064, 285	-------

[1] Data secured from annual reports filed with the Commission and from unofficial sources.
[2] Data not available.

Development of class A telephone carriers from 1926 to 1938.—Selected data relative to class A telephone carriers for the years 1926 to 1938, inclusive, are shown in table IV and the trends reflected in chart 2. The difference in the number of carriers reporting to the Commission in 1938 in comparison with prior years is caused by mergers and consolidations. The investment in telephone plant increased from $2,973,932,711 in 1926 to $4,783,082,079 in 1938, while the net income during this period increased from $247,371,069 in 1926 to $323,489,437 in 1938.

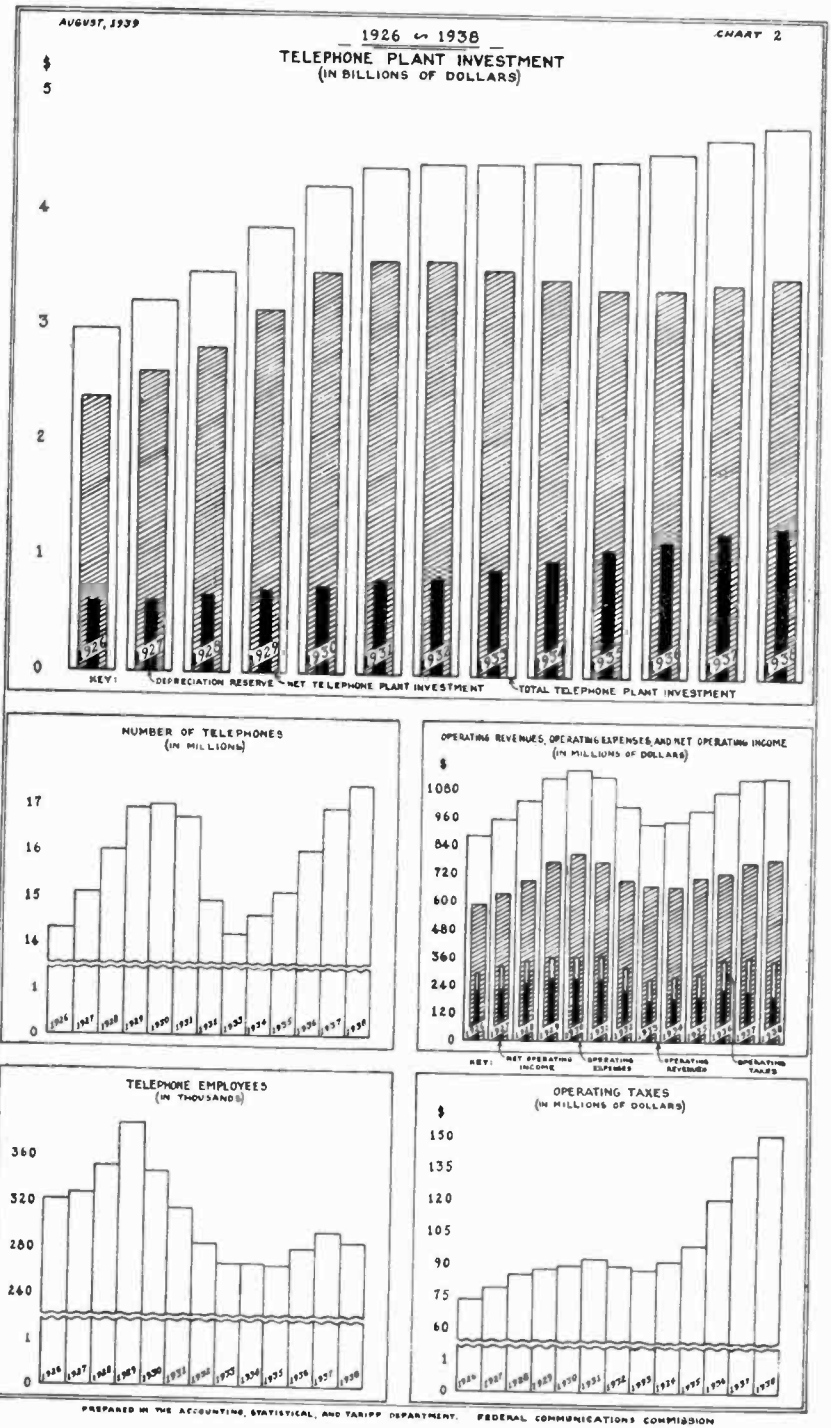

AUGUST, 1939
CHART 2
1926 to 1938
TELEPHONE PLANT INVESTMENT
(IN BILLIONS OF DOLLARS)
$
5
4
3
2
1
0
KEY:
DEPRECIATION RESERVE
NET TELEPHONE PLANT INVESTMENT
TOTAL TELEPHONE PLANT INVESTMENT
NUMBER OF TELEPHONES
(IN MILLIONS)
17
16
15
14
1
0
OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME
(IN MILLIONS OF DOLLARS)
$
1080
960
840
720
600
480
360
240
120
0
KEY:
NET OPERATING INCOME
OPERATING EXPENSES
OPERATING REVENUES
OPERATING TAXES
TELEPHONE EMPLOYEES
(IN THOUSANDS)
360
320
280
240
1
0
OPERATING TAXES
(IN MILLIONS OF DOLLARS)
$
150
135
120
105
90
75
60
1
0
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT. FEDERAL COMMUNICATIONS COMMISSION

TABLE IV.—*Selected data showing the development through the years 1926 to 1938, inclusive, of class A telephone carriers which reported for the year 1938* [1]

Year	Number of carriers	Investment in telephone plant	Depreciation reserve	Ratio of depreciation to investment	Capitalization				Total surplus	Interest on funded debt	Dividends declared
					Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization			
				Percent				*Percent*			
1926	140	$2,973,932,711	$601,481,350	20.23	$2,583,283,669	$988,246,141	$3,571,529,810	27.67	$344,539,547	$49,010,892	$189,752,127
1927	146	3,215,271,753	624,614,255	19.43	2,863,966,791	974,594,895	3,838,561,686	25.39	477,511,166	48,804,397	211,056,375
1928	142	3,481,213,250	674,727,230	19.38	3,181,105,824	973,665,048	4,154,770,872	23.43	545,406,259	48,916,199	234,303,419
1929	139	3,862,241,317	724,413,173	18.76	3,320,379,615	1,143,540,703	4,463,920,318	25.62	631,643,528	52,341,709	258,372,149
1930	136	4,217,710,052	762,345,270	18.07	4,090,105,534	1,094,811,355	5,184,916,889	21.12	638,094,295	57,212,814	293,847,585
1931	109	4,384,958,752	814,241,820	18.57	4,276,926,127	1,021,222,053	5,298,148,180	19.28	639,375,809	54,231,013	333,544,383
1932	91	4,423,855,828	846,151,536	19.13	4,217,783,773	994,714,437	5,212,498,210	19.08	589,495,032	50,229,270	336,005,596
1933 [2]	83	4,433,207,365	929,495,109	20.97	4,254,146,109	987,797,508	5,241,943,617	18.84	522,947,692	49,608,524	321,595,698
1934	84	4,442,414,118	1,007,750,873	22.68	4,273,574,149	984,991,823	5,258,565,972	18.73	459,605,230	49,340,883	308,510,650
1935	83	4,460,066,270	1,102,225,896	24.71	4,273,955,436	1,013,702,525	5,287,657,961	19.17	411,901,270	49,603,662	314,308,414
1936	79	4,536,600,007	1,187,490,944	26.18	4,305,034,326	971,773,400	5,276,807,726	18.42	386,450,880	47,259,881	346,625,791
1937 [2]	73	4,674,627,528	1,261,070,772	26.98	4,275,062,632	939,852,080	5,214,914,712	18.02	389,369,290	38,376,940	350,963,890
1938	73	4,783,082,079	1,316,367,516	27.52	4,284,792,921	1,031,567,735	5,316,360,656	19.40	362,922,201	38,933,819	338,175,841

Year	Local-service revenues	Toll-service revenues	Operating revenues	Operating expense	Operating ratio	Operating taxes	Net operating income	Net income	Miles of wire [3]		
									Cable	Aerial	Total
					Percent						
1926	$598,352,797	$261,547,874	$879,503,186	$589,236,728	67.00	$73,293,571	$211,596,266	$247,371,069	49,493,901	4,944,238	54,438,139
1927	639,452,150	286,628,340	948,205,721	637,159,692	67.20	79,493,783	225,628,392	314,201,683	55,323,855	5,090,946	60,414,801
1928	680,657,029	325,790,281	1,032,113,717	690,998,145	66.95	84,838,233	249,835,341	308,616,856	60,556,041	5,269,692	65,825,733
1929	730,089,175	372,718,236	1,132,732,200	766,062,199	67.63	87,126,337	272,177,500	346,388,980	67,975,087	5,675,618	73,650,705
1930	765,752,625	367,594,963	1,166,447,243	803,857,137	68.92	89,759,879	263,580,358	341,126,045	74,676,564	5,846,637	80,523,201
1931	758,395,087	344,984,781	1,136,464,163	768,117,829	67.59	93,948,255	265,276,505	347,649,908	78,645,817	5,643,127	84,288,944
1932	701,200,352	278,852,510	1,010,513,593	689,776,938	68.26	89,602,772	217,903,208	289,020,367	80,479,859	5,388,249	85,868,108
1933 [2]	642,936,925	250,909,943	932,787,485	666,427,361	71.44	87,836,849	178,422,173	200,745,812	77,706,013	4,495,919	82,202,932
1934	633,509,683	266,284,006	944,172,583	665,188,994	70.45	92,530,845	186,364,115	251,383,681	77,653,905	4,423,711	82,077,616
1935	667,626,265	261,689,597	996,630,598	702,091,043	70.45	98,917,480	195,554,406	278,212,728	78,087,848	4,339,261	82,427,109
1936	700,406,478	318,149,537	1,075,902,427	721,514,563	67.06	121,260,531	233,080,777	362,403,616	78,838,064	4,300,464	83,188,528
1937 [2]	747,157,241	334,428,318	1,137,279,373	773,954,020	68.05	142,067,080	221,258,433	363,582,760	81,123,903	4,321,733	85,455,726
1938	757,841,542	324,344,687	1,139,737,155	783,964,478	68.78	151,692,583	204,052,989	323,489,437	83,101,869	4,293,374	87,395,243

See footnotes at end of table.

TABLE IV.—*Selected data showing the development through the years 1926 to 1938, inclusive, of class A telephone carriers which reported for the year 1938*—Continued

Year	Miles of pole line	Telephones				Average number of calls originated per month		Number of employees at close of year	Total compensation	Average compensation per employee per annum
		Company	Service	Private line	Total	Local	Toll			
1926	514, 419	13, 963, 380	340, 195	68, 347	14, 371, 922	2, 016, 708, 881	76, 236, 937	322, 526	(4)	
1927	535, 736	14, 761, 424	354, 129	75, 481	15, 191, 034	2, 073, 997, 804	82, 630, 153	327, 839	(4)	
1928	551, 967	15, 589, 748	363, 734	82, 116	16, 035, 598	2, 191, 999, 849	90, 656, 284	350, 008	(4)	
1929	576, 989	16, 523, 871	361, 178	93, 541	16, 978, 590	2, 354, 593, 215	98, 532, 631	387, 023	(4)	
1930	585, 927	16, 645, 729	347, 715	95, 397	17, 088, 841	2, 355, 187, 583	88, 967, 215	346, 312	(4)	
1931	592, 699	16, 354, 030	338, 259	99, 495	16, 791, 784	2, 312, 053, 095	82, 070, 752	314, 727	(4)	
1932	586, 963	14, 592, 210	298, 887	88, 505	14, 979, 602	2, 163, 674, 876	66, 983, 473	284, 450	(4)	
1933 [3]	513, 411	13, 913, 185	286, 432	93, 634	14, 293, 251	1, 996, 903, 490	60, 268, 139	267, 129	$369, 139, 229	$1, 382
1934	510, 048	14, 236, 124	285, 070	96, 829	14, 618, 023	2, 047, 545, 412	62, 421, 097	267, 674	385, 755, 421	1, 441
1935	504, 680	14, 726, 245	287, 995	97, 625	15, 111, 865	2, 136, 383, 682	64, 749, 630	264, 873	401, 849, 306	1, 517
1936	497, 292	15, 663, 180	290, 908	83, 534	16, 037, 622	2, 290, 569, 404	72, 616, 128	280, 985	433, 066, 028	1, 541
1937 [3]	496, 378	16, 608, 048	288, 750	84, 907	16. 981, 705	2, 429, 225, 217	73, 947, 702	294, 821	488, 423, 528	1, 657
1938	492, 531	17, 061, 520	287, 363	82, 470	17, 431, 353	2, 483, 731, 922	72, 857, 647	285, 550	501, 504, 752	1, 756

[1] Includes, for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

[2] In comparing data in this table, consideration may be given to the minor effect of the revisions of the uniform system of accounts, first revised issue, and the issue of June 19, 1935, as amended, resulting in certain changes in and rearrangements of both the balance sheet and the income statement.

[3] The decrease reflected in data shown for the year 1933 is due mainly to the fact that prior to that year the total of wire jointly owned with other companies was included, whereas from 1933 on only the respondent's portion of jointly owned wire was included.

[4] Data not reported.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000.

Radiotelephone service.—There are shown in Table V statistical data concerning radiotelephone service during the year 1938. This information was obtained from the annual reports received from the six telephone carriers that hold licenses to operate radiotelephone facilities. A total of 65,766 radiotelephone calls were handled during the year with gross revenues as follows: (*a*) Land-line charges (continental United States), $103,069, and (*b*) radio-link charges (respondent's portion), $997,007. In addition, $37,185 and $13,153 were received from foreign program transmission service and foreign private-line service, respectively, during the year.

TABLE V.—*Radiotelephone service reported by telephone carriers* [1]

[Year ended Dec. 31, 1938]

Class of service	Number of chargeable calls	Gross revenues	
		Land-line charges—continental United States	Radio-link charges—respondents' portion
A. Calls between fixed stations:			
1. In Overseas service:			
Bermuda and trans-Atlantic	35,934	$42,876	$734,557
Central and South American and Caribbean	9,522	27,370	114,416
Trans-Pacific	5,933	26,852	94,497
Other			
Total	51,389	97,098	943,470
2. In other than overseas service:			
Intrastate, interstate, intraterritory, and intra-possession			
Alaska			
Other			
Total			
Total calls between fixed stations	51,389	97,098	943,470
B. Calls in mobile service:			
1. In ship telephone service through land stations located on:			
Atlantic and Gulf of Mexico coasts:			
Dispatching service	866	2	641
Other service	9,497	4,036	46,720
Pacific coast:			
Dispatching service	60		40
Other service	3,945	1,933	6,136
Great Lakes and inland waterways:			
Dispatching service			
Other service			
Other land points:			
Dispatching service			
Other service			
Total	14,377	5,971	53,537
2. In other than ship telephone service			
Total calls in mobile service	14,377	5,971	53,537
Total calls in fixed and mobile service	65,766	103,069	997,007

Revenues from foreign program transmission service	$37,185
Revenues from domestic program transmission service	
Revenues from private line service—foreign	13,153
Vessels with radiotelephone service:	
Number of high-seas vessels	23
Number of other than high-seas vessels	843
Total vessels	866

[1] Six telephone carriers offer radiotelephone service.

Membership dues and contributions.—Data compiled from the annual reports filed by all telephone carriers reporting to the Commission for the year 1938 with reference to membership dues and contributions paid to noncommercial organizations are shown in the following statement. Approximately 75 percent of the total was expended in connection with boards of trade, chambers of commerce, and other businessmen's organizations.

Item	Number		
	Organizations	Memberships	Amount
Boards of trade, chambers of commerce, and other businessmen's organizations	4,724	7,832	$366,047
Social, athletic, and other clubs	392	514	20,087
Associations of telephone companies	96	111	78,458
Professional and scientific organizations	279	414	13,735
Other organizations	133	158	11,925
Total	5,624	9,029	490,252

Names and selected statistics of telegraph carriers.—The names of the 15 wire-telegraph and 19 radio-telegraph carriers that filed annual reports for the year 1938 are given in table VI. Financial and operating data pertaining to these carriers are shown in table VII. Hearst Radio, Inc., discontinued radiotelegraph operations as of December 31, 1937. The Northern Telegraph Co. discontinued filing annual reports with the Commission in 1938, as it was notified that, under the provisions of section 2 (b) (2) of the Communications Act of 1934, it was subject only to sections 201–5 of the act.

TABLE VI.—*List of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission for year 1938*

Name of carrier	Type of carrier
All America Cables and Radio, Inc.[1]	Ocean cable and radiotelegraph.
Canadian Pacific Ry. Co	Land-line telegraph.
Central Idaho Telegraph & Telephone Co	Do.
Central Radio Telegraph Co	Radiotelegraph.
City of Seattle, Harbor Department	Do.
Colorado & Wyoming Telegraph Co	Land-line telegraph.
Commercial Cable Co	Ocean cable.
Commercial Pacific Cable Co	Do.
Continental Telegraph Co	Land-line telegraph.
French Telegraph Cable Co	Ocean cable.
Globe Wireless Ltd	Radiotelegraph.
Great North Western Telegraph Co. of Canada	Land-line telegraph.
Interstate Telephone & Telegraph Co	Do.
Mackay Radio & Telegraph Co. (California)	Radiotelegraph.
Mackay Radio & Telegraph Co. (Delaware)	Do.
Magnolia Radio Corporation	Do.
Mexican Telegraph Co	Ocean cable.
Michigan Wireless Telegraph Co	Radiotelegraph.
Minnesota & Manitoba R. R	Land-line telegraph.
Mountain Telegraph Co	Do.
Olympic Radio Co	Radiotelegraph.
Pere Marquette Radio Corporation	Do.
Postal Telegraph-Cable Co. (land-line system)	Land-line telegraph.
Press Wireless, Inc	Radiotelegraph.
R. C. A. Communications, Inc	Do.
Radiomarine Corporation of America	Do.
South Porto Rico Sugar Co. (of Puerto Rico)	Do.
Southern Radio Corporation [2]	Do.
Tidewater Wireless Telegraph Co	Do.
Tropical Radio Telegraph Co	Do.
United States-Liberia Radio Corporation	Do.
Wabash Radio Corporation	Do.
Western Radio Telegraph Co	Do.
Western Union Telegraph Co	Land-line telegraph and ocean cable.

[1] Formerly All America Cables, Inc.
[2] United States operations ceased May 31, 1938.

TABLE VII.—*Statistics of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission, classified by kinds of carriers*

[Year ended Dec. 31, 1938]

No.	Item	Telegraph carriers	Cable carriers	Radiotelegraph carriers [1]	Total carriers
	Number of carriers	[2] 10	5	19	34
1	Investment in plant and equipment	$416,948,185	$88,301,547	$32,593,840	$537,843,572
2	Other investments	19,261,851	33,761,894	10,131,495	63,155,240
3	Cash	9,240,656	5,534,118	1,656,392	16,431,166
4	Material and supplies	7,537,285	1,171,170	833,765	9,542,220
5	Total current assets	29,992,623	29,643,680	6,118,768	65,755,071
6	Capital stock	104,704,053	52,675,831	7,809,957	165,189,841
7	Unmatured funded debt	89,218,000	20,000,000	1,808,210	111,026,210
8	Total long-term debt	146,151,505	20,270,000	11,608,873	178,030,378
9	Taxes accrued	4,808,041	491,266	459,712	5,759,019
10	Unmatured interest, dividends, and rents accrued	1,331,892	92,636	1,677	1,426,205
11	Total current liabilities	36,912,271	10,068,043	5,357,639	52,338,153
12	Reserve for accrued depreciation	93,830,879	55,322,866	17,398,834	166,552,579
13	Total corporate surplus	57,104,634	7,002,350	3,087,102	67,194,086
	Telegraph operating revenues:				
14	Transmission-telegraph	97,564,514	----------	4,116,634	101,681,148
15	Transmission-cable	6,196,212	10,331,970	5,267,713	21,795,895
16	Nontransmission	10,511,533	115,120	977,536	11,604,189
17	Contract—Dr	1,430,886	----------	----------	1,430,886
18	Total operating revenues	112,841,373	10,447,090	10,361,883	133,650,346
	Telegraph operating expenses:				
19	Depreciation and extraordinary depreciation	10,114,721	880,353	1,418,717	12,413,791
20	All other maintenance	14,493,267	1,842,898	576,096	16,912,261
21	Conducting operations	72,787,518	4,777,344	5,581,962	83,146,824
22	Relief department and pensions	2,649,487	550,630	67,265	3,267,382
23	All other general	2,617,403	509,563	1,210,122	4,337,088
24	Total operating expenses	102,662,396	8,560,788	[3] 8,850,998	[3] 120,074,182
25	Operating ratio (percent)	90.98	81.94	85.42	89.84
26	Other operating revenues	----------	----------	$523,567	$523,567
27	Other operating expenses	----------	----------	606,260	606,260
	Operating taxes:				
28	Other than U. S. Government	$6,010,810	$358,477	248,791	6,618,078
29	U. S. Government	902,777	136,365	298,451	1,337,593
30	Total operating taxes	6,913,587	494,842	547,242	7,955,671
31	Operating income	2,873,113	1,375,160	861,468	5,109,741
32	Dividend income	1,045,208	310,837	28,886	1,384,931
33	Interest income	426,216	98,829	60,371	585,416
34	Other nonoperating income	145,503	74,225	144,079	363,807
35	Interest on funded debt	4,143,377	800,000	51,675	4,995,052
36	Other interest deductions	2,858,889	140,218	559,579	3,558,686
37	Other deductions	3,180,065	649,928	229,202	4,059,195
38	Net income	[4] —5,692,291	268,905	254,348	[4] —5,169,038
	Dividends declared:				
39	Common stock	----------	247,710	294,500	542,210
40	Rate percent or amount per share	----------	----------	----------	----------
41	Preferred stock	----------	----------	----------	----------
42	Rate percent or amount per share	----------	----------	----------	----------
	Miles of wire in cable:				
43	Aerial	118,778	381	----------	119,159
44	Underground	333,540	3,416	----------	336,956
45	Submarine	43,309	72,267	----------	115,576
46	Total miles of wire in cable	495,627	[5] 75,764	----------	[5] 571,391
47	Miles of aerial wire	1,848,664	8,190	----------	1,856,854
48	Total miles of wire	2,344,291	[5] 83,954	----------	[5] 2,428,245

[1] In comparing data shown in this table with prior years, consideration should be given to the effect of certain changes in the reporting requirements embodied in a circular letter dated Jan. 4, 1939.
[2] Includes one telegraph carrier engaged in land-wire and ocean-cable business.
[3] Total reflects discount of $3,164.
[4] Deficit or other reverse item.
[5] Includes 59,380 nautical miles of wire.

TABLE VII.—*Statistics of wire-telegraph and radio-telegraph carriers reporting on an annual basis to the Commission, classified by kinds of carriers*—Continued

No.	Item	Telegraph carriers	Cable carriers	Radiotelegraph carriers	Total carriers
49	Miles of pole line	248,347	2,021		250,368
50	Miles of underground conduit (single duct)	6,114	125		6,239
	Service equipment furnished free to customers:				
	Average number:				
51	Telegraph printers	18,971	107	122	19,200
52	Telegraph printer tie lines	18,692	109	123	18,924
53	Morse tie lines	783	55	29	867
54	Telephones	8,444	249	210	8,903
55	Telephone tie lines	9,448	248	263	9,959
56	Pneumatic tubes	56			56
57	Call boxes	511,688	4	1,501	513,193
58	Automatic transmitting apparatus	17			17
59	Other	2			2
	Leased wire revenues:				
	Commercial:				
60	Broadcasting	$13,896			$13,896
61	Miscellaneous	$907,159		$1,562	$908,721
62	Government	$3,061			$3,061
63	Press	$643,813			$643,813
	Telegraph offices:				
	United States: [1]				
64	Independent	5,704	9	106	5,819
65	Joint	18,810	1	25	18,836
	Foreign:				
66	Independent	45	137	30	212
67	Joint	9	2		11
68	Total offices	24,568	149	161	24,878
	Telegraph revenue messages transmitted:				
	Number of messages:				
69	Domestic	186,491,843	202,276	3,462,972	190,157,091
70	Foreign	4,361,915	5,495,548	4,588,511	14,445,974
71	Mobile			779,587	779,587
72	Total messages	190,853,758	5,697,824	8,831,070	205,382,652
	Number of words:				
73	Foreign	88,570,407	100,609,306	120,638,723	309,818,436
74	Mobile			9,737,891	9,737,891
	Amount of revenue:				
75	Domestic	$99,004,805	$244,409	$1,778,140	$101,027,354
76	Foreign	6,196,233	9,259,393	5,955,740	21,411,366
77	Mobile			835,365	835,365
78	Total revenue	105,201,038	9,503,802	8,569,245	123,274,085
	Number of employees:				
79	Close of June	59,698	3,713	3,161	66,572
80	Close of year	58,936	3,563	3,074	65,573
81	Total compensation for year	$72,847,111	$4,870,150	$5,375,769	$82,793,030
82	Compensation chargeable to operating expenses	$66,129,013	$4,523,424	$4,663,527	$75,315,964
	Pensions:				
83	Relief and pension charges to operating expenses	$2,649,487	$550,630	$67,265	$3,267,382
84	Balance in pension fund at beginning of year	$8,032,263	$2,448,469	$757,258	$11,237,990
85	Balance in pension fund at end of year	$8,034,378	$2,541,468	$822,358	$11,398,204

[1] Includes territories and possessions of the United States except the Philippine Islands and the Canal Zone.

Development of telegraph industry from 1926 to 1938.—Selected data relative to the wire-telegraph carriers for the years 1926 to 1938, inclusive, are shown in table VIII, and similar data applicable to radio-telegraph carriers are given in table IX. One of the larger radiotelegraph carriers included in its gross operating revenues substantial amounts reported as nontransmission revenues covering miscellaneous sales, rentals, service fees, etc.

TABLE VIII.—*Selected data showing development through the years 1926 to 1938, inclusive, of wire-telegraph carriers which reported for the year 1938* [1]

Year	Number of carriers	Investment in plant and equipment	Depreciation reserve	Ratio of depreciation to investment	Capitalization				Total corporate surplus	Operating revenues	Operating expenses	Operating ratio
					Capital stock	Funded debt [2]	Total capitalization	Ratio of debt to total capitalization				
				Percent				*Percent*				*Percent*
1926	15	$393,083,112	$102,507,728	26.08	$175,752,110	$117,058,158	$292,810,268	39.98	$124,227,467	$180,226,580	$145,608,452	80.79
1927	14	412,165,755	108,366,719	26.23	175,922,587	96,637,000	272,559,587	35.46	135,520,299	177,541,362	142,245,364	80.12
1928	15	428,664,940	113,411,262	26.46	178,630,559	97,187,000	275,817,559	35.24	143,570,668	185,113,182	149,146,646	80.57
1929	15	441,184,432	117,019,933	26.52	178,631,327	97,025,000	275,656,327	35.20	141,365,333	196,389,062	160,291,373	81.62
1930	15	485,763,229	107,943,056	22.22	178,633,558	132,005,000	310,638,558	42.49	137,737,762	176,628,107	151,167,961	85.59
1931	14	497,487,500	97,519,319	19.60	170,780,379	128,980,000	299,760,379	43.03	130,547,055	148,492,484	129,732,270	87.37
1932	14	499,673,753	105,950,274	21.20	170,146,310	127,955,000	298,101,310	42.92	108,148,939	114,983,934	103,182,383	89.74
1933	14	500,714,383	106,136,738	21.20	170,265,060	127,916,000	298,181,060	42.90	108,524,605	114,296,918	96,711,979	84.61
1934	14	501,417,245	106,006,555	21.14	166,136,223	126,564,000	292,700,223	43.24	107,055,093	118,904,572	102,758,773	86.36
1935	15	500,803,779	105,603,802	21.09	166,139,708	126,237,036	292,376,744	43.18	105,251,293	122,153,439	102,532,426	83.94
1936	15	501,666,031	106,027,495	21.14	166,087,003	114,250,913	280,337,916	40.75	109,560,023	132,638,598	109,945,703	82.89
1937	15	503,911,584	[3] 144,922,577	28.76	163,863,756	111,161,000	275,024,756	40.42	68,983,785	135,503,816	117,375,505	86.62
1938	15	505,249,732	149,153,745	29.52	157,379,884	109,218,000	266,597,884	40.97	64,106,984	123,288,463	111,223,184	90.21

Year	Operating taxes	Operating income	Total interest deductions	Net income	Dividends declared	Miles of wire		Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum [4]
						In cable	Aerial wire				
1926	$6,963,507	$27,055,956	$3,508,065	$22,964,532	$14,839,095	374,517	1,751,877	199,804,664	87,175	[5]	
1927	7,020,502	27,672,782	4,779,357	23,184,476	14,343,583	393,316	1,855,710	197,114,180	83,627	[5]	
1928	6,818,088	28,009,851	4,817,449	24,028,285	15,015,519	417,352	1,939,492	226,090,133	85,350	[5]	
1929	6,058,548	29,516,762	4,804,649	25,395,002	22,312,498	453,019	1,952,275	213,558,426	95,024	[5]	
1930	5,239,275	19,733,874	7,057,065	13,250,738	23,664,491	471,982	1,954,110	188,776,653	92,658	[5]	
1931	4,507,849	13,829,396	7,452,536	5,518,617	11,652,325	515,718	1,877,878	148,624,462	79,519	[5]	
1932	4,417,730	6,654,011	7,716,658	[6] −2,437,630	4,445,026	526,629	1,853,831	130,404,619	67,089	[5]	
1933	4,431,938	12,247,904	7,789,755	4,033,606	2,800,000	531,260	1,854,717	147,324,549	64,163	[5]	
1934	4,351,890	11,012,044	8,734,576	1,043,058	1,780,742	542,627	1,853,509	160,553,221	68,570	$73,096,228	$1,066
1935	4,384,278	14,417,914	8,801,467	4,240,727	4,800,275	546,893	1,850,830	183,640,589	66,122	72,138,256	1,091
1936	5,235,630	16,805,187	8,470,920	6,914,305	1,837,157	570,335	1,852,657	200,344,531	69,951	78,449,915	1,121
1937	6,946,765	10,718,477	8,070,537	1,203,649	3,082,022	567,711	1,858,127	212,489,846	73,350	85,190,848	1,161
1938	7,408,429	4,248,273	7,942,484	[6] −5,423,386	247,710	571,391	1,856,854	196,551,582	63,411	77,417,261	1,221

[1] Includes for the entire period, carriers consolidated and merged in prior years for which annual report data are available. Intercorporate duplications have not been excluded.

[2] Excludes "long-term advances payable" reported by Postal Telegraph-Cable Co. (land line system) as due affiliated companies.

[3] Includes $38,000,000 transferred to depreciation reserve from surplus as a temporary adjustment necessitated by revaluation.

[4] Represents total compensation for the year divided by the number of employees at the close of June.

[5] Data not reported.

[6] Deficit or other reverse item.

TABLE IX.—*Selected data showing development through the years 1926 to 1938, inclusive, of radiotelegraph carriers which reported for the year 1938*

Year	Number of carriers	Investment in plant and equipment	Capitalization				Total corporate surplus	Operating revenues	Operating expenses	Operating ratio
			Capital stock	Funded debt	Total capitalization	Ratio of debt to total capitalization				
						Percent				*Percent*
1926	4	$15,809,630	[1]	[1]	[1]	[1]	[1]	$5,484,019	$4,462,796	81.38
1927	4	17,160,127	[1]	[1]	[1]	[1]	[1]	6,013,408	4,977,059	82.77
1928	5	19,426,847	[1]	[1]	[1]	[1]	[1]	6,853,624	5,212,277	76.05
1929	9	21,927,678	$14,875,162	$150,000	$15,025,162	1.00	$1,152,265	7,431,426	6,634,118	89.27
1930	15	26,181,619	15,970,512	151,824	16,122,336	.94	1,077,713	7,127,071	7,103,550	99.67
1931	16	27,883,288	15,982,512	228,763	16,211,275	1.41	[2] −85,890	6,631,415	6,498,657	98.00
1932	16	28,322,246	14,007,512	233,514	14,241,026	1.64	1,091,648	6,082,007	6,258,158	102.90
1933	17	28,311,110	6,756,157	204,283	6,960,440	2.93	4,525,853	6,560,135	6,488,911	98.91
1934	19	30,708,155	7,464,857	3,664,000	11,128,857	32.92	4,661,465	7,926,419	7,377,487	93.07
1935	19	31,182,737	7,665,757	3,649,457	11,315,214	32.25	2,829,345	8,450,256	8,083,718	95.66
1936	19	31,004,814	7,694,757	898,127	8,592,884	10.45	3,189,755	9,384,233	8,428,685	89.82
1937	19	32,254,211	7,784,457	3,519,737	11,304,194	31.14	2,536,077	10,719,708	8,898,611	83.01
1938 [3]	19	32,593,840	7,809,957	1,808,210	9,618,167	18.80	3,087,102	10,361,883	8,850,998	85.42

Year	Operating taxes	Operating income	Total interest deductions	Net income	Dividends declared	Number of revenue messages transmitted	Number of employees at close of June	Total compensation	Average compensation per employee per annum
1926	[1]	$1,009,045	[1]	[1]	[1]	3,585,758	1,270	[4]	----
1927	[1]	1,014,604	[1]	[1]	[1]	3,792,295	1,468	[4]	----
1928	[1]	1,568,073	[1]	[1]	[1]	4,364,806	1,583	[4]	----
1929	$242,779	715,338	$8,622	$875,014	$375,000	5,099,492	1,883	[4]	----
1930	185,328	[2] −6,121	130,695	160,345	----	5,182,795	2,147	[4]	----
1931	181,638	72,207	278,499	9,009	300,000	4,922,366	1,838	[4]	----
1932	158,961	[2] −289,260	428,012	[2] −594,371	300,000	4,543,956	1,876	[4]	----
1933	245,971	[2] −128,535	551,259	[2] −325,536	3,600,000	4,984,530	1,869	[4]	----
1934	274,798	233,720	770,995	[2] −72,741	300,000	5,083,409	2,362	$3,710,985	$1,571
1935	211,181	56,251	795,244	[2] −991,192	1,400,000	6,718,804	2,803	4,163,988	1,486
1936	380,596	513,447	702,391	199,113	542,637	7,959,971	2,984	4,499,570	1,508
1937	639,765	1,132,005	680,058	1,245,596	1,399,792	9,545,943	3,116	5,133,645	1,648
1938 [3]	547,242	861,468	611,254	254,348	291,500	8,831,070	3,161	5,375,769	1,701

[1] Data not available, as radiotelegraph figures, in some instances, cannot be segregated from those applicable to other business activities.
[2] Deficit or other reverse item.
[3] In comparing data shown in this table for the year 1938 with prior years, consideration should be given to the effect of certain changes in the reporting requirements embodied in a circular letter dated Jan. 4, 1939.
[4] Data not available.

Revenue messages handled by telegraph carriers.—A tabulation of data relating to revenue messages handled by wire-telegraph and radiotelegraph carriers compiled from annual reports for the year 1938 is given in table X. The message data are segregated into the following major groups: (*a*) Domestic—telegraph; (*b*) foreign—cable and radiotelegraph; and (*c*) mobile—including marine. The average revenue per message for transmitting "full-rate messages" in the domestic group during 1938 was $0.54; "full rate ordinary messages" in the foreign group, $2.18; and "full-rate messages" in the mobile group, $1.31.

TABLE X.—*Revenue messages transmitted, showing number of messages, number of words, and amount of revenues, by classes, as reported by wire-telegraph and radiotelegraph carriers*

[Year ended Dec. 31, 1938]

Class of messages	Land-wire telegraph carriers			Ocean cable carriers [1]			Radiotelegraph carriers			Total all carriers				
												Message revenue		
	Number of words [2]	Number of messages	Amount of revenue	Number of words [2]	Number of messages	Amount of revenue	Number of words [2]	Number of messages	Amount of revenue	Number of words [2]	Number of messages	Amount	Average per word	Average per message
Domestic—telegraph: [1]														
Commercial messages:														
Full-rate messages		85, 260, 616	$46, 697, 000		85, 155	$111, 117		1, 131, 783	$607, 360		86, 477, 554	$47, 415, 477		$0. 54
Night messages		33, 389	18, 185		24, 178	17, 109		2, 074	811		59, 641	36, 105		. 61
Day letters		18, 598, 639	16, 571, 343		26, 030	44, 025		308, 996	270, 421		18, 933, 665	16, 885, 789		. 89
Night letters		19, 634, 232	9, 128, 176		50, 558	56, 753		240, 703	113, 936		19, 925, 493	9, 298, 865		. 47
Serial service (sections)		8, 556, 657	4, 159, 845					682, 436	274, 711		9, 239, 093	4, 434, 556		. 48
Timed wire service		2, 900, 840	2, 856, 408					21, 624	19, 182		2, 922, 464	2, 875, 590		. 98
Mobile messages (domestic haul)		488, 047	189, 381		815	931		199, 784	21, 296		688, 646	211, 608		. 31
Foreign messages (domestic haul)		5, 178, 483	3, 114, 133					686, 262	378, 720		5, 864, 745	3, 492, 853		. 60
Money-order messages		4, 003, 191	2, 551, 672		1, 973	2, 553					4, 005, 164	2, 554, 225		. 64
Greeting messages		16, 363, 169	4, 708, 112		1, 878	1, 088		3	1		16, 365, 050	4, 709, 201		. 29
Miscellaneous messages		725, 610	697, 746					22, 873	12, 679		748, 483	710, 425		. 95
Stock and commercial news messages		4, 333, 974	4, 456, 606								4, 333, 974	4, 456, 606		1. 03
U. S. Government messages:														
Ordinary messages		2, 682, 795	1, 233, 010		1, 235	2, 655		46, 685	17, 915		2, 730, 715	1, 253, 580		. 46
Weather reports		5, 942, 777	376, 877					503			5, 943, 280	376, 877		. 06
Press messages		11, 789, 424	2, 245, 618		10, 454	8, 178		119, 246	61, 108		11, 919, 124	2, 314, 904		. 19
Total domestic		[3] 186, 491, 843	[3] 99, 004, 805		202, 276	244, 409		3, 462, 972	1, 778, 140		[3] 190, 157, 091	[3] 101, 027, 354		. 53
Foreign—cable and radiotelegraph: [1]														
Commercial messages:														
Full-rate urgent messages	80, 480	5, 360	27, 248	109, 691	7, 890	41, 429	155, 517	8, 139	39, 574	345, 688	21, 389	108, 251	$0. 31	5. 06
Full-rate ordinary messages	2, 931, 449	201, 551	444, 409	2, 407, 173	171, 191	429, 030	3, 315, 524	206, 019	386, 771	8, 654, 146	578, 761	1, 260, 210	. 15	2. 18
CDE urgent messages	1, 661, 465	273, 218	374, 466	1, 039, 459	166, 304	200, 229	451, 873	69, 772	63, 287	3, 152, 797	508, 294	638, 076	. 20	1. 26
CDE ordinary messages	14, 773, 067	1, 321, 012	1, 440, 761	25, 880, 391	2, 264, 378	3, 476, 385	18, 271, 902	1, 549, 564	1, 723, 586	58, 925, 360	5, 134, 954	6, 640, 732	. 11	1. 29

Deferred messages	20,049,034	1,302,971	1,484,770	22,607,245	1,602,955	2,202,708	17,786,679	1,253,878	1,146,285	60,442,958	4,159,804	4,833,763	.08	1.16
Letter messages (DLT and NLT)	34,969,748	941,346	1,821,027	31,292,924	828,107	1,967,949	24,472,734	689,444	1,063,603	90,735,406	2,458,897	4,852,579	.05	1.97
Greeting messages (GTG and XLT)	1,097,951	105,086	66,549	865,338	78,060	68,367	905,827	68,161	34,066	2,869,116	251,327	169,002	.06	.67
Miscellaneous messages							5,521,922	199,029	510,514	5,521,922	199,029	510,514	.09	2.57
Government messages (United States and foreign)	1,643,665	27,885	88,470	4,921,217	117,260	326,530	3,063,726	80,602	189,821	9,628,608	205,753	604,821	.06	2.94
Press messages	11,363,548	183,486	448,539	11,482,626	258,574	546,529	46,677,574	483,156	632,143	69,523,748	925,216	1,627,211	.02	1.76
Meteorological				3,242	803	237	15,445	1,747	1,393	18,687	2,550	1,630	.09	.64
Total foreign	88,570,407	4,361,915	6,196,233	100,609,306	5,495,548	9,259,393	[4]120,638,723	4,583,511	[5]5,791,163	[4]309,818,436	14,445,974	[5]21,246,789	.07	1.47
Mobile—including marine:														
Commercial messages:														
Full-rate messages							2,690,040	220,015	288,513	2,690,040	220,015	288,513	.11	1.31
CDE messages							478,020	66,828	28,990	478,020	66,828	28,990	.06	.43
Letter messages							90,803	3,609	6,210	90,803	3,609	6,210	.07	1.69
Greeting and gift messages (GTG and XLT)							103,491	10,569	8,845	103,491	10,569	8,845	.09	.84
Miscellaneous messages							1,096,183	34,132	39,891	1,096,183	34,132	39,891	.04	1.17
Government messages:														
United States							858,526	43,650	28,374	858,526	43,650	28,374	.03	.65
Foreign							44,767	2	3	44,767	2	3	------	1.50
Press messages							110,280	1,378	2,148	110,280	1,378	2,148	.02	1.56
Meteorological messages							189,707	28,945	18,008	189,707	28,945	18,008	.09	.62
Total mobile							[6]9,737,891	[7]779,587	[8]835,365	[6]9,737,891	[7]779,587	[8]835,365	.09	1.07
Grand total [9]		190,853,758	105,201,038		5,697,824	9,503,802		8,531,070	8,404,668		205,382,552	123,109,508	------	.60

[1] "Domestic—telegraph" includes international messages (primarily Canadian and Mexican) transmitted in accordance with carriers' rules governing domestic traffic.

[2] Data not reported in connection with "domestic" classification.

[3] The number of messages is not known in connection with unclassified revenues amounting to $693, included in the total.

[4] Excludes number of words not reported for 5,067 foreign messages.

[5] Excludes $164,577 representing adjustments in connection with foreign exchange and "cable interruption" traffic.

[6] Includes 3,013,476 full-rate, 557,392 CDE, 71,850 letter, 135,696 greeting and gift, and 297,660 miscellaneous words which were excluded from the number of such words shown above for the reason that the revenues derived therefrom were not classified.

[7] Includes 251,123 full-rate, 69,674 CDE, 2,874 letter, 16,962 greeting and gift, and 29,766 miscellaneous messages which were excluded from the number of such messages shown above for the reason that the revenues derived therefrom were not classified.

[8] Includes $414,383 applicable to the messages and words specified in footnotes 6 and 7 and not reported separately for each class.

[9] Includes domestic haul of mobile and foreign messages, shown under "Domestic—telegraph."

Selected statistics of telephone and telegraph carriers and controlling companies, 1938.—Selected data compiled from the annual reports received from all telephone, wire-telegraph, and radiotelegraph carriers for the year 1938 are shown in table XI. Similar information relative to the controlling companies that have large interests in carriers engaged in wire or radio communication is given in table XII. The total investment in plant and equipment of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission for the year ended December 31, 1938, amounted to $5,268,046,505, and the gross operating revenues were $1,276,937,519. The total number of employees at the close of the year was 352,413, and the total amount of salaries and wages paid during the year was $585,855,645.

TABLE XI.—*Summary of selected data from annual reports of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission*

[Year ended Dec. 31, 1938]

Item	All telephone carriers [1]	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers [2]	Total
Number of carriers	92	15	19	126
Investment in plant and equipment	$4,730,202,933	$505,249,732	$32,593,840	$5,268,046,505
Capital stock	4,292,434,374	157,379,884	7,809,957	4,457,624,215
Funded debt	1,033,504,535	109,218,000	1,808,210	1,144,530,745
Depreciation reserve	1,321,458,355	149,153,745	17,398,834	1,488,010,934
Total surplus	363,439,869	64,106,984	3,087,102	430,633,955
Operating revenues	1,143,287,173	123,288,463	10,361,883	1,276,937,519
Operating expenses	786,457,139	111,223,184	8,850,998	906,531,321
Operating taxes:				
Other than U. S. Government	107,248,531	6,369,287	248,791	113,866,609
U. S. Government	44,863,490	1,039,142	298,451	46,201,083
Total operating taxes	152,112,021	7,408,429	547,242	160,067,692
Net operating income	204,690,908	4,248,273	861,468	209,800,649
Dividends declared	338,611,226	247,710	294,500	339,153,436
Miles of wire	87,592,000	2,428,245	----------	90,020,245
Number of employees (Dec. 31)	286,840	62,499	3,074	352,413
Total compensation for year	503,062,615	77,417,261	5,375,769	585,855,645

[1] Includes data from two carriers located outside the continental limits of the United States.

[2] In comparing data shown in this table with prior years' data, consideration should be given to the effect of certain changes in the reporting requirements for radiotelegraph carriers embodied in a circular letter dated Jan. 4, 1939.

TABLE XII.—*Summary of selected data from annual reports of holding companies having large interests in the communications industry*

[Year ended Dec. 31, 1938]

Item	Amount
Number of companies	24
Investments in securities:	
Affiliated companies:	
Communication carriers	[1] $375,267,539
Other companies	[2] 196,967,466
Nonaffiliated companies:	
Communication carriers	[3] 2,187,885
Other companies	[4] 8,396,643
Investment advances to affiliated companies	145,445,440
Capital stock	378,575,998
Funded debt	196,769,230
Advances from affiliated companies	32,934,570
Total surplus	77,564,438
Dividend and interest income	21,669,810
Interest charges	12,323,335
Net income	7,194,387
Dividends declared	7,407,375
Operating taxes	1,222,338

[1] Includes foreign investments amounting to $161,440,071.

[2] Includes foreign investments amounting to $15,883,097.

[3] Includes foreign investments amounting to $1,175,646.

[4] Includes foreign investments amounting to $437,103. The reduction in this item compared with preceding year includes $43,108,926 due to reorganization of Postal Telegraph and Cable Corporation.

Stock voted by proxies.—The voting rights of stockholders of all telephone, wire-telegraph, and radio-telegraph carriers reporting to the Commission for the year 1938 are shown in table XIII. The table also includes data from holding companies having large interests in communication carriers. There were 1,066,297 stockholders entitled to 77,082,594 votes, of which 74,020,916 were based on common stock and 3,061,678 on preferred stock. During the year, 60,163,377 votes were cast at meetings for the election of directors of which number 58,950,638 votes, or 97.98 percent, represented shares voted by proxy.

TABLE XIII.—*Statement showing the voting rights of stockholders in communication carriers and controlling companies for the year 1938, and the number of shares voted by proxy*

Company groups	Number of companies	Number of stockholders having voting shares	Number of votes to which all stockholders were entitled		
			Total	Common	Preferred
Telephone carriers (class A)	75	692,192	49,070,759	47,915,958	1,154,801
Telephone carriers (class B)	17	684	164,529	164,529	----------
Telegraph carriers	9	30,932	1,069,420	1,069,420	----------
Cable carriers	5	829	803,226	803,226	----------
Radiotelegraph carriers	17	90	131,912	131,912	----------
Holding companies [1]	24	341,570	25,842,748	23,935,871	1,906,877
Total	147	1,066,297	77,082,594	74,020,916	3,061,678

Company groups	Number of votes to which 30 largest stockholders were entitled			Votes cast at most recent meeting for election of directors	
	Total	Common	Preferred	Total votes cast	Shares voted by proxy
Telephone carriers (class A)	29,413,183	28,606,736	807,447	40,477,420	40,214,697
Telephone carriers (class B)	147,366	147,366	----------	172,943	75,872
Telegraph carriers	198,303	198,303	----------	584,682	575,237
Cable carriers	587,226	587,226	----------	686,237	626,770
Radiotelegraph carriers	131,901	131,901	----------	161,661	129,511
Holding companies [1]	6,961,899	6,278,434	683,465	18,080,434	17,328,551
Total	37,439,878	35,948,966	1,490,912	60,163,377	58,950,638

[1] Represents companies having large interests in communication carriers.

Statistical averages and ratios relating to telephone and wire-telegraph carriers.—The averages and ratios shown in table XIV relate to the data compiled from the annual reports filed by all telephone and wire-telegraph carriers for the year 1938. The average investment in telephone plant, less depreciation, per company telephone at the close of 1938 was $203.02; the average amounts of local revenue and toll revenue per company telephone for the year were $43.43 and $18.58, respectively. The ratio of depreciation and amortization expenses to investment in telephone plant of telephone carriers was 3.5 percent, whereas the ratio of depreciation and extraordinary depreciation to investment in plant and equipment of wire-telegraph carriers was 2.18 percent. The operating ratio of telephone carriers and that of wire-telegraph carriers were 68.79 percent and 90.21 percent, respectively.

TABLE XIV.—*Averages and ratios of selected data of all telephone and wire-telegraph carriers* [1]

[Year ended Dec. 31, 1938]

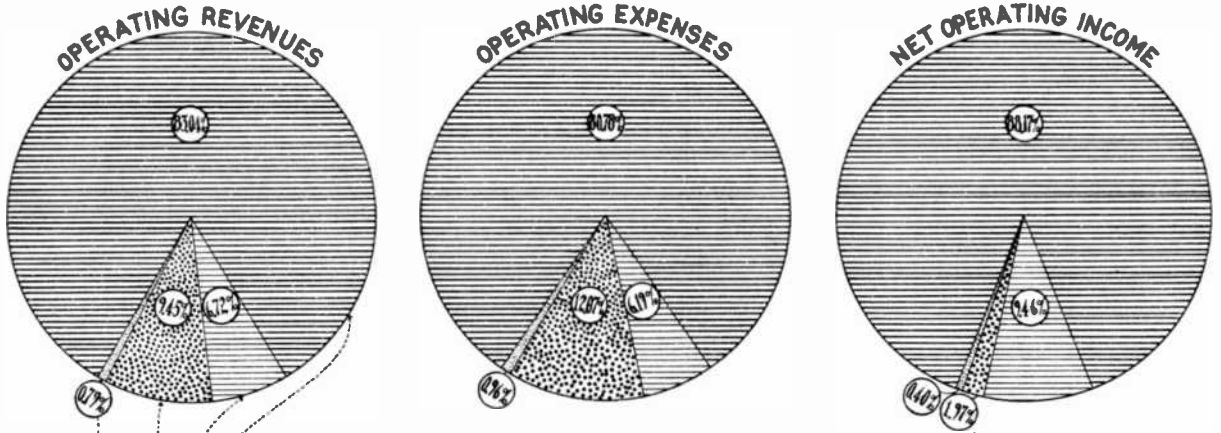
Item	Amount
TELEPHONE CARRIERS [2]	
Investment in telephone plant:	
Per mile of wire	$54.75
Per company telephone	$280.11
Per company telephone (less depreciation)	$203.02
Ratio of operating revenues to investment in telephone plant—percent	23.83
Ratio of depreciation reserve to investment in telephone plant—percent	27.52
Total local service revenues per telephone	$43.43
Total toll service revenues per telephone	$18.58
Operating revenues per telephone	$65.31
Operating expenses per telephone	$44.93
Ratio of operating expenses to operating revenues—percent	68.79
Depreciation and amortization expenses:	
Ratio to investment in telephone plant—percent	3.50
Ratio to operating revenues—percent	14.67
Ratio to operating expenses—percent	21.33
Operating taxes:	
Ratio to investment in telephone plant—percent	3.17
Ratio to operating revenues—percent	13.31
Net operating income:	
Ratio to investment in telephone plant—percent	4.27
Ratio to operating revenues—percent	17.90
Wire mileage:	
Percent wire in cable	95.06
Percent aerial wire	4.94
Calls originated per telephone per month: [3]	
Local	145.43
Toll	4.27
Employees at close of year, percent of total:	
Male	38.86
Female	61.14
Average compensation per employee per annum	[4] $1,754.36
Compensation chargeable to operating expenses:	
Ratio to operating revenues—percent	37.54
Ratio to operating expenses—percent	54.58
WIRE-TELEGRAPH CARRIERS [5]	
(Land line and ocean cable)	
Investment in plant and equipment:	
Per mile of wire	$208.07
Ratio of operating revenues to investment in plant and equipment—percent	24.40
Ratio of reserve for accrued depreciation to investment in plant and equipment—percent	29.52
Ratio of operating expenses to operating revenues—percent	90.21
Depreciation and extraordinary depreciation:	
Ratio to investment in plant and equipment—percent	2.18
Ratio to operating revenues—percent	8.92
Ratio to operating expenses—percent	9.89
Operating taxes:	
Ratio to investment in plant and equipment—percent	1.47
Ratio to operating revenues—percent	6.01
Operating income:	
Ratio to investment in plant and equipment—percent	.84
Ratio to operating revenues—percent	3.45
Wire mileage:	
Percent wire in cable	23.53
Percent aerial wire	76.47
Average compensation per employee per annum	[4] $1,238.70
Compensation chargeable to operating expenses:	
Ratio to operating revenues—percent	57.31
Ratio to operating expenses—percent	63.52

[1] For basic data underlying the computations in this table, see tables II and VII.
[2] Data for 2 carriers located outside the continental limits of the United States not included.
[3] Company and service telephone data.
[4] Represents total compensation for the year divided by the number of employees as of the close of the year.
[5] Excludes radiotelegraph carriers.

Analysis of operating data pertaining to communication carriers.—There is shown in chart 3, which follows, an analysis of the operating revenues, operating expenses, and net operating income of the telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1938. The data were compiled principally from the annual reports, but include also figures for 42 telephone carriers that are subject only to the provisions of sections 201–5 of the act. These carriers file monthly reports of revenues, expenses, and capital changes voluntarily for statistical purposes, but do not file annual reports with the Commission.

CHART 3

OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME FOR THE YEAR 1938
OF ALL COMMUNICATION CARRIERS REPORTING TO THE FEDERAL COMMUNICATIONS COMMISSION



	OPERATING REVENUES	OPERATING EXPENSES	NET OPERATING INCOME
BELL SYSTEM CARRIERS	$1,080,667,248	$744,943,391	$190,564,283
OTHER THAN BELL SYSTEM CARRIERS	87,440,832	57,059,225	20,446,224
ALL TELEPHONE CARRIERS	1,168,108,080	802,002,616	211,010,507
WIRE-TELEGRAPH CARRIERS	122,935,913	111,267,593	4,255,615
RADIOTELEGRAPH CARRIERS	10,342,401	8,850,998	861,468
ALL TELEGRAPH CARRIERS	133,278,314	120,118,591	5,117,083
ALL REPORTING CARRIERS	1,301,386,394	922,121,207	216,127,590

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

The gross operating revenues during 1938 of all reporting carriers were $1,301,386,394, of which $1,168,108,080, or 89.76 percent, were reported by 134 telephone carriers filing annual or monthly reports; $122,935,913, or 9.45 percent, were reported by 16 wire-telegraph carriers; and $10,342,401, or 0.79 percent, were reported by 19 radiotelegraph carriers during 1938.

The "uncollectible operating revenues" under the uniform system of accounts prescribed for telephone carriers are deducted from the gross operating revenues before the latter amount is transferred to the income statement; while under the provisions of the uniform system of accounts prescribed for telegraph carriers the "uncollectible operating revenues" are deducted subsequently from the "net telegraph and cable operating revenues" in the income statement. The operating revenues of wire-telegraph and radiotelegraph carriers, however, have been adjusted in chart 3 by the exclusion of the "uncollectible operating revenues" (which amounted to $428,230 during 1938) in order to make the figures comparable with those of the telephone carriers.

Distribution of operating revenues of communication carriers.—The distribution on a percentage basis of the operating revenues of class A telephone carriers and all wire-telegraph and radiotelegraph carriers reporting during 1938 indicating the principal groups of operating expense accounts, operating taxes, other deductions, and the net operating income, is shown in table XV. The distribution of each $100 of operating revenues on a similar basis is shown in chart 4. These compilations show the class A telephone carriers paid 13.3 percent of their operating revenues for taxes, whereas wire-telegraph and radiotelegraph carriers paid 6.0 percent during the year.

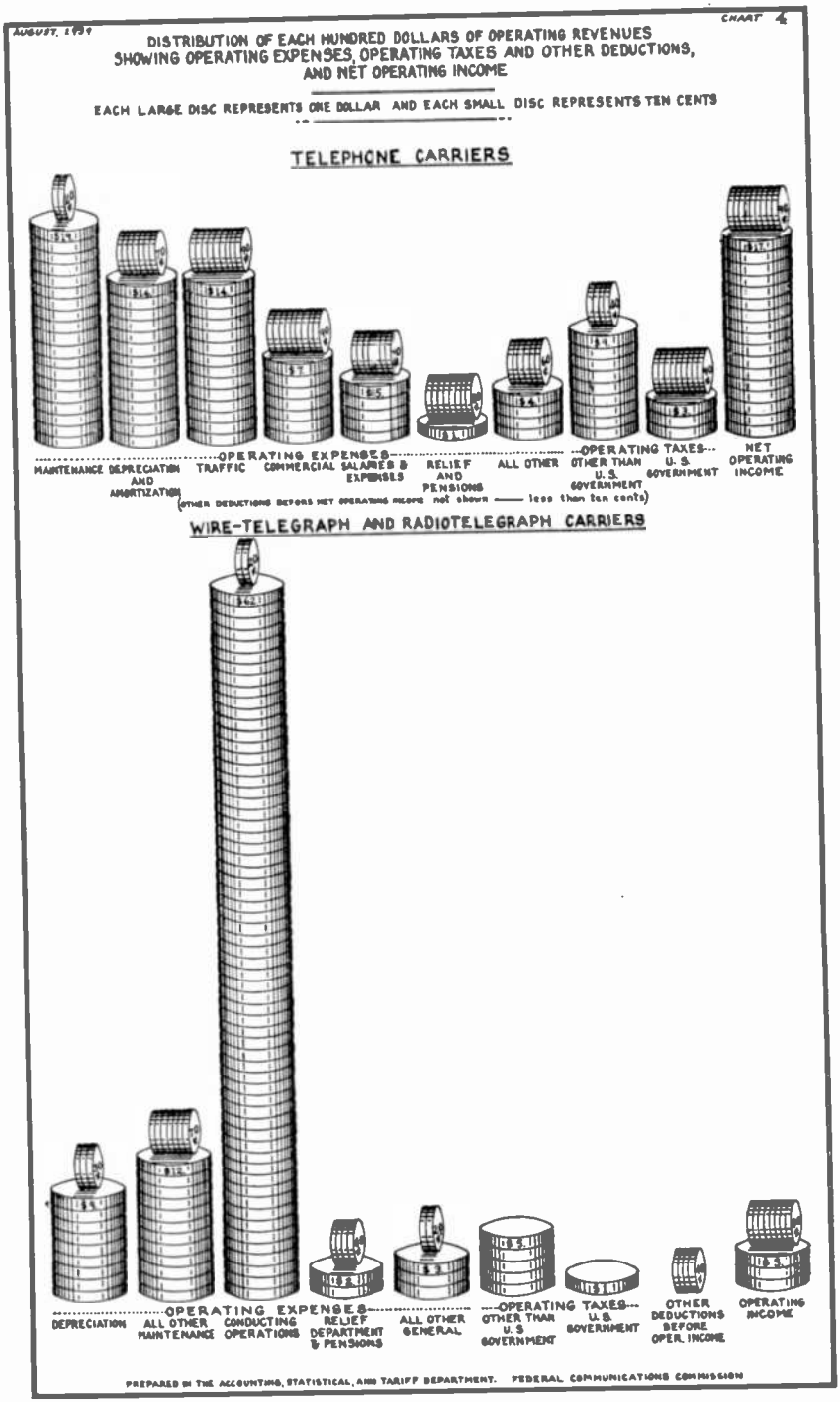
TABLE XV.—*Distribution of operating revenues showing operating expenses, operating taxes, and other deductions, and net operating income of class A telephone, wire-telegraph and radiotelegraph carriers*

[Year ended Dec. 31, 1938]

Item	Amount	Percent of operating revenues
TELEPHONE CARRIERS		
Operating revenues	$1,139,737,155	100.0
Operating expenses:		
Maintenance	219,108,613	19.2
Depreciation and amortization	167,210,503	14.7
Traffic	170,153,266	14.9
Commercial	89,962,682	7.9
General office salaries and expenses	64,393,023	5.7
Relief and pensions	20,554,071	1.8
All other	52,582,320	4.6
Total operating expenses	783,964,478	68.8
Operating taxes:		
Other than U. S. Government	106,977,890	9.4
U. S. Government	44,714,693	3.9
Total operating taxes	151,692,583	13.3
Other deductions before net operating income	27,105	(1)
Net operating income	204,052,989	17.9
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS[2]		
Operating revenues	133,650,346	100.0
Operating expenses:		
Depreciation	12,413,791	9.3
All other maintenance	16,912,261	12.7
Conducting operations	83,146,824	62.2
Relief department and pensions	3,267,382	2.4
All other general	4,337,088	3.2
Total operating expenses	120,074,182	89.8
Operating taxes:		
Other than U. S. Government	6,618,078	5.0
U. S. Government	1,337,593	1.0
Total operating taxes	7,955,671	6.0
Other deductions before operating income	510,752	.4
Operating income	5,109,741	3.8

[1] Less than 1/10 of 1 percent.
[2] Wire-telegraph carriers comprise land lines and ocean cables.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000. Data of 2 carriers located outside the continental limits of the United States not included.


AUGUST, 1934
CHART 4
DISTRIBUTION OF EACH HUNDRED DOLLARS OF OPERATING REVENUES
SHOWING OPERATING EXPENSES, OPERATING TAXES AND OTHER DEDUCTIONS,
AND NET OPERATING INCOME
EACH LARGE DISC REPRESENTS ONE DOLLAR AND EACH SMALL DISC REPRESENTS TEN CENTS
TELEPHONE CARRIERS
$19
$16
$14
$7
$5
$1
$4
$9
$5
$19
MAINTENANCE
DEPRECIATION AND AMORTIZATION
TRAFFIC
COMMERCIAL
SALARIES & EXPENSES
RELIEF AND PENSIONS
ALL OTHER
OPERATING EXPENSES
OTHER THAN U. S. GOVERNMENT
U. S. GOVERNMENT
OPERATING TAXES
NET OPERATING INCOME
(OTHER DEDUCTIONS BEFORE NET OPERATING INCOME not shown — less than ten cents)
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS
$62
$5
$15
$3
$3
$11
$3
$1
$11
DEPRECIATION
ALL OTHER MAINTENANCE
CONDUCTING OPERATIONS
RELIEF DEPARTMENT & PENSIONS
ALL OTHER GENERAL
OPERATING EXPENSES
OTHER THAN U. S. GOVERNMENT
U. S. GOVERNMENT
OPERATING TAXES
OTHER DEDUCTIONS BEFORE OPER. INCOME
OPERATING INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT. FEDERAL COMMUNICATIONS COMMISSION

Tax accruals by States.—The operating tax accruals reported by class A telephone carriers for the year 1938 are shown in table XVI. This table indicates that the amount accruing to the Federal Government was $44,714,693, or 29.48 percent; and $106,976,890, or 70.52 percent, to State governments and subdivisions thereof, including $27,390,969, or 18.06 percent, to New York; $11,382,271, or 7.50 percent, to Illinois; and $9,239,481, or 6.09 percent, to California. The amount of excise taxes collected by telephone carriers from persons using telephone service is not included in these figures.

TABLE XVI.—*Operating tax accruals by States and the Federal Government, of class A telephone carriers reporting on an annual basis to the Commission*

[Year ended Dec. 31, 1938]

State	Amount	State	Amount
Alabama	$609,874	New Jersey	$4,878,629
Arizona	448,234	New Mexico	155,519
Arkansas	454,697	New York	27,390,969
California	9,329,481	North Carolina	1,074,192
Colorado	1,039,339	North Dakota	248,441
Connecticut	918,881	Ohio	4,970,427
Delaware	113,226	Oklahoma	1,378,971
Florida	719,152	Oregon	1,107,562
Georgia	902,281	Pennsylvania	3,945,780
Idaho	304,189	Rhode Island	315,250
Illinois	11,382,271	South Carolina	495,391
Indiana	2,468,841	South Dakota	305,553
Iowa	1,118,853	Tennessee	1,178,719
Kansas	1,081,406	Texas	3,295,660
Kentucky	816,694	Utah	401,075
Louisiana	1,273,554	Vermont	132,153
Maine	434,573	Virginia	863,014
Maryland	1,638,004	Washington	1,971,701
Massachusetts	4,456,077	West Virginia	676,083
Michigan	3,642,409	Wisconsin	1,844,040
Minnesota	1,629,991	Wyoming	154,352
Mississippi	679,564	District of Columbia	702,883
Missouri	2,282,817		
Montana	363,494	Total other than U. S. Government taxes	[1] 106,976,890
Nebraska	876,530	Total U. S. Government taxes	44,714,693
Nevada	177,218		
New Hampshire	419,076	Total operating taxes	[1] 151,691,583

[1] Excludes $1,000 Canadian taxes.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000. Data for 2 carriers located outside the continental limits of United States not included.

Aggregate amount of operating tax accruals and excise taxes.—An analysis of the operating tax accruals and the excise taxes collected from persons using the communication services of all telephone, wire-telegraph, and radiotelegraph carriers reporting to the Commission for the year 1938 is given in table XVII. The principal kinds of taxes accruing to the Federal Government are shown separately. The total amount of taxes, including excise taxes accruing to the Federal Government, was $68,152,444, or 36.56 percent; and the amount accruing to other than the United States Government was $118,241,668, or 63.44 percent.

TABLE XVII.—*Operating tax accruals and excise taxes collected from persons using communication service, as reported by all telephone, wire-telegraph, and radiotelegraph carriers which filed annual reports with the Commission*

[Year ended Dec. 31, 1938]

Kind of tax	Telephone carriers [1]	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carrier	Total
Operating taxes:				
Other than U. S. Government	[2] $107,071,829	$6,369,287	$248,791	$113,689,907
U. S. Government:				
Income	35,835,798	83,427	130,625	36,049,850
Capital stock	2,768,110	81,646	26,821	2,876,577
Social security	5,875,832	874,065	140,720	6,890,617
Miscellaneous	36,490	4	285	36,779
Unassigned	245,400	.....	.....	245,400
Total	44,761,630	1,039,142	298,451	46,099,223
Total operating taxes	[2] 151,833,459	7,408,429	547,242	159,789,130
Excise taxes collected from persons using communication service:				
Other than U. S. Government	4,461,999	87,237	2,525	4,551,761
U. S. Government	16,702,659	5,230,727	119,835	22,053,221
Total excise taxes collected	21,164,658	5,317,964	122,360	26,604,982
Total taxes accounted for during the year:				
Other than U. S. Government	111,533,828	6,456,524	251,316	118,241,668
U. S. Government	61,464,289	6,269,869	418,286	68,152,444
Grand total	[2] 172,998,117	12,726,393	669,602	186,394,112

[1] Data for 2 carriers located outside the continental limits of the United States not included.
[2] Includes $1,000 Canadian taxes.

Advertising expenses.—The distribution of advertising expenses for the year 1938 of class A telephone carriers and of wire-telegraph and radiotelegraph carriers is shown in table XVIII. A total of $6,624,562 was spent by class A telephone carriers during the year, of which $3,775,255, or 56.99 percent, was used for advertising in newspapers and periodicals. The expenditures for advertising reported by wire-telegraph and radiotelegraph carriers amounted to $589,607 during the year.

TABLE XVIII.—*Distribution of advertising expenses of class A telephone carriers and wire-telegraph and radiotelegraph carriers for the year 1938*

Item	Amount	
CLASS A TELEPHONE CARRIERS		
Salaries and wages		$904,014
Publicity and advertisements:		
Newspaper and periodical advertising:		
Advertising space, newspapers, regular	$2,160,417	
Special newspaper advertising space and all other periodicals	1,266,804	
Preparation cost	348,034	
Total newspaper and periodical advertising		3,775,255
Booklets, pamphlets, and bill inserts		348,936
Window display, exhibits, posters, and placards		172,154
Motion pictures		55,659
Other publicity and advertisements:		
General press service and special news stories	27,561	
Lectures, demonstrations, radio, central office visits, etc	1,069,382	
Miscellaneous	97,657	
Total other publicity and advertisements		1,194,600
Total publicity and advertisements		5,546,604
Other expenses		173,944
Grand total—class A telephone carriers		6,624,562
WIRE-TELEGRAPH AND RADIOTELEGRAPH CARRIERS [1]		
Newspapers		39,528
Periodicals		28,282
Radio advertising		113,750
Contributions and donations charged to advertising		1,403
Advertising department, salaries and expenses		175,897
All other advertising expenses		230,747
Grand total—wire-telegraph and radiotelegraph carriers		599,607

[1] Wire-telegraph carriers comprise land lines and ocean cables.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000. Data for 2 carriers located outside the continental limits of the United States not included.

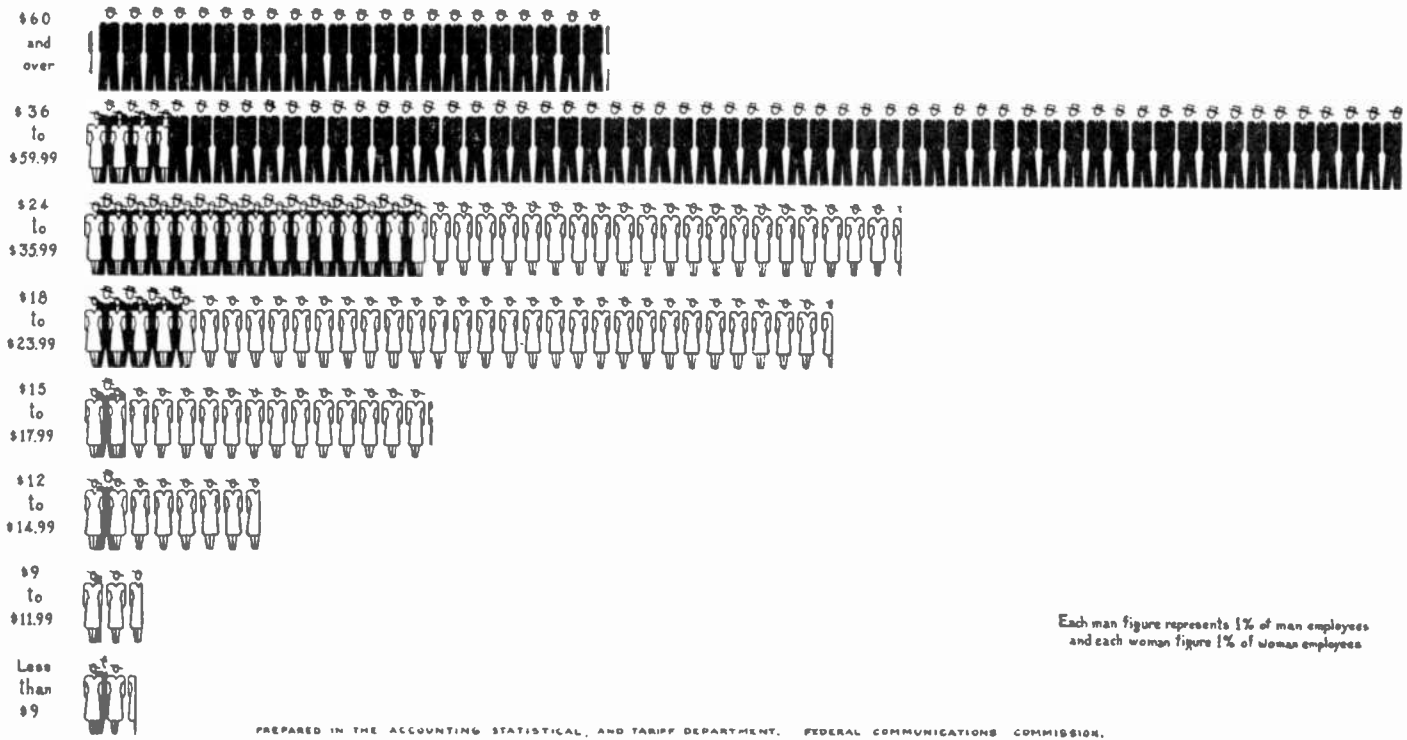
Number and compensation of telephone employees.—The number of employees at the end of the year, classified with respect to character of service rendered and according to rate of compensation per week, reported by class A telephone carriers is shown in table XIX and illustrated graphically in chart 5. There were 110,996 male employees as of December 31, 1938, of whom 63,114, or 56.86 percent, received weekly compensation ranging from $36 to $59.99 per week. There were 174,554 female employees at the close of the year, of whom 26,369, or 15.10 percent, were in the $15-to-$17.99-per-week class; 56,899, or 32.60 percent, in the $18-to-$23.99-per-week class; and 62,071, or 35.56 percent, in the $24-to-$35.99-per-week class.

TABLE XIX.—*Number of employees of class A telephone carriers classified with respect to character of service rendered and according to rate of compensation per week, at Dec. 31, 1938*

Class of employees	Number of employees at close of year			Number of employees classified according to rate of compensation per week at close of year															
				Less than $9		$9 to $11.99		$12 to $14.99		$15 to $17.99		$18 to $23.99		$24 to $35.99		$36 to $59.99		$60 and over	
	Male	Female	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
General officers and assistants	719	20	739	20	-------	6	-------	7	-------	3	-------	11	-------	14	-------	67	8	591	12
Operating officials and assistants	7,825	440	8,265	-------	-------	-------	-------	-------	-------	-------	-------	3	-------	81	98	1,681	305	6,060	37
Attorneys and right-of-way agents	524	2	526	1	-------	1	-------	1	-------	1	-------	1	2	9	-------	218	-------	292	-------
Engineers	5,023	20	5,043	-------	-------	-------	-------	-------	-------	1	-------	3	-------	50	-------	1,347	16	3,622	4
Draftsmen, surveyors, and student engineers	2,509	121	2,630	-------	-------	-------	-------	4	6	29	4	113	15	470	34	1,428	52	465	10
Accountants	1,379	29	1,408	1	-------	-------	8	1	2	1	1	2	1	34	6	370	9	970	2
Clerical employees	10,542	42,961	53,503	31	126	42	206	104	1,283	361	3,575	697	11,298	1,604	22,911	6,432	3,494	1,271	68
Local managers	2,288	181	2,469	1	7	-------	5	1	25	3	34	33	84	174	25	1,262	1	814	-------
Commercial agents	4,457	128	4,585	2	26	5	35	125	14	134	9	140	21	925	17	2,696	4	430	2
Experienced switchboard operators	163	119,974	120,137	38	2,662	22	3,232	17	10,084	22	21,209	35	43,685	13	36,850	14	2,116	2	136
Operators in training	1	3,746	3,747	1	692	-------	800	-------	1,454	-------	658	-------	142	-------	-------	-------	-------	-------	-------
Service inspectors	56	1,801	1,857	-------	1	-------	1	-------	3	-------	7	-------	112	1	1,284	17	391	38	2
Supervising foremen	1,327	2	1,329	-------	-------	-------	-------	-------	-------	1	-------	6	-------	42	-------	228	2	1,050	-------
Central office installation and maintenance men	21,109	30	21,139	3	-------	2	-------	4	3	30	2	262	4	1,464	18	15,143	3	4,201	-------
Line and station construction, installation, and maintenance men	34,336	1	34,337	48	-------	33	-------	158	-------	247	-------	1,419	-------	4,603	1	23,950	-------	3,878	-------
Cable and conduit construction and maintenance men	7,732	-------	7,732	1	-------	-------	-------	21	-------	69	-------	544	-------	1,941	-------	4,370	-------	786	-------
All other employees	11,006	5,098	16,104	514	647	239	408	418	546	520	870	948	1,535	4,222	827	3,921	258	224	7
Total employees	110,996	174,554	285,550	661	4,161	350	4,695	861	13,420	1,422	26,369	4,217	56,899	15,647	62,071	63,144	6,659	24,694	280
RECAPITULATION																			
Bell System carriers:																			
Full-time employees	102,875	155,382	258,257	6	2	105	1,603	652	10,241	1,170	23,371	3,251	53,240	13,599	60,257	60,193	6,402	23,899	266
Part-time employees	886	7,982	8,868	504	2,886	122	1,609	81	1,500	44	965	47	802	23	191	42	28	23	1
Other than Bell System carriers:																			
Full-time employees	7,143	10,690	17,833	97	986	118	1,381	116	1,620	201	2,000	911	2,839	2,022	1,622	2,908	229	770	13
Part-time employees	92	500	592	54	287	5	102	12	59	7	33	8	18	3	1	1	-------	2	-------
Total class A carriers:																			
Full-time employees	110,018	166,072	276,090	103	988	223	2,984	768	11,861	1,371	25,371	4,162	56,079	15,621	61,879	63,101	6,631	24,669	279
Part-time employees	978	8,482	9,460	558	3,173	127	1,711	93	1,559	51	998	55	820	26	192	43	28	25	1

NOTE.—Class A telephone carriers are those having average annual operating revenues exceeding $100,000. Data for 2 carriers located outside the continental limits of the United States not included.

August, 1939 DISTRIBUTION OF MALE AND FEMALE EMPLOYEES OF CLASS A TELEPHONE CARRIERS ACCORDING TO WEEKLY SALARY RATES Chart 5



PREPARED IN THE ACCOUNTING STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Number and compensation of telegraph employees.—The various classes of employees of wire-telegraph and radiotelegraph carriers at the end of June and December 1938, together with the aggregate monthly rates of compensation at the close of the year, are shown in table XX. The total number of employees in service decreased from 66,572 on June 30 to 65,573 on December 31, 1938, or a difference of 999 employees, of whom 912 were employees of wire-telegraph carriers, and 87 were employees of radiotelegraph carriers.

TABLE XX.—*Number of employees of wiretelegraph and radiotelegraph carriers classified with respect to character of service rendered, together with the aggregate monthly rate of compensation by classes of employees*

[Year ended Dec. 31, 1938]

Class of employees	Wire-telegraph carriers[1]			Radiotelegraph			Total		
	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year	Number of employees		Aggregate monthly rates of compensation at close of year
	June	December		June	December		June	December	
General officers and staff	149	143	$95,131	101	96	$22,903	250	239	$118,034
General office clerks	1,151	1,142	214,458	126	129	18,168	1,277	1,271	232,626
Other officers and staff	466	463	144,365	32	39	14,589	498	502	158,954
Other officers' clerks	1,717	1,595	255,574	75	71	9,330	1,792	1,666	264,904
Managers	4,468	4,304	603,008	134	132	34,787	4,602	4,436	637,795
Solicitors	474	450	76,425	62	58	10,606	536	508	87,031
Chief operators	1,716	1,731	324,606	141	120	12,237	1,857	1,851	336,843
Operators	16,062	16,253	1,789,760	730	708	113,755	16,792	16,961	1,903,515
Office clerks	9,062	9,214	906,744	415	400	38,236	9,477	9,614	944,980
Other office employees	1,396	1,403	136,338	228	225	24,248	1,624	1,630	160,586
Messengers	20,564	19,660	979,295	404	388	18,587	20,968	20,048	997,882
Testing and regulating force	1,674	1,599	308,111	189	192	31,865	1,863	1,791	339,976
Equipment and power men	723	765	115,117	109	104	15,014	832	869	130,131
Section linemen and foremen of construction and maintenance	1,881	1,936	306,935	81	79	18,915	1,962	2,015	325,850
Linemen, laborers, teamsters, etc	903	908	99,472	80	79	9,661	983	987	109,133
Others	1,005	931	99,610	254	254	37,427	1,259	1,185	137,037
Total	63,411	62,499	6,454,949	3,161	3,074	430,328	66,572	65,573	6,885,277

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Relief and pension statistics.—The data in table XXI pertaining to relief and pensions have been compiled from the annual reports filed by class A telephone carriers and by all wire-telegraph and radiotelegraph carriers for the year 1938. The gross charges to operating expenses for relief and pensions amounted to $23,821,453. A portion of these charges, together with interest on funds, was added to benefit and pension reserves and to pension funds held by trustees. During the year, 58,213 benefit cases were handled at an expenditure of $8,697,532. At the end of 1938, the carriers reported that 11,566 persons were receiving pensions and that the amount paid for pensions during the year was $8,140,045.

TABLE XXI.—*Summary of relief and pension data of class A telephone, wire-telegraph, and radiotelegraph carriers*

[Year ended Dec. 31, 1938]

Item	Class A telephone carriers	Wire-telegraph carriers (land line and ocean cable)	Radiotelegraph carriers	Total
Benefits:				
Number of cases handled during year	51,467	6,731	(1)	58,213
Amount paid during year	$7,987,847	$688,494	$21,191	$8,697,532
Pensions:				
Number of cases being paid at end of year	8,469	3,094	3	11,566
Amount paid during year	$5,957,213	$2,177,181	$5,651	$8,140,045
Benefit and pension reserve at end of year	$1,362,020	$10,575,846	$148,285	$12,086,151
Pension funds held by outside trustees	$198,698,510		$674,073	$199,372,583
Relief and pension charges to operating expenses [2]	$20,554,071	$3,200,117	$67,265	$23,821,453
Total number of employees	285,550	62,499	3,074	351,123
Total compensation for the year	$501,504,752	$77,417,261	$5,375,769	$584,297,782
Total operating revenues	$1,139,737,155	$123,288,463	$10,361,883	$1,273,387,501

[1] Complete data not available.
[2] Consists of charges to account 672, "Relief and pensions," for telephone carriers, and charges to account 649, "Relief department and pensions," for telegraph, cable, and radiotelegraph carriers.

NOTE.—Class A telephone carriers are those carriers having average annual operating revenues exceeding $100,000. Data for 2 carriers located outside the continental limits of the United States not included.

Accident statistics.—Information relative to the number of employees and persons other than employees who were killed or injured in accidents during 1938 is shown as follows: (a) Data reported by class A telephone carriers, in table XXII; and (b) data reported by wire-telegraph and radiotelegraph carriers, in table XXIII.

TABLE XXII.—*Persons killed or injured in accidents occurring in connection with the activities of class A telephone carriers*

[Year ended Dec. 31, 1938]

Class of employees	Employees and other persons killed or injured during year					
	Number of persons killed			Number of persons injured		
	Male	Female	Total	Male	Female	Total
General officers and assistants				2		2
Operating officials and assistants				3	3	6
Attorneys and right-of-way agents						
Engineers	1		1	6		6
Draftsmen, surveyors, and student engineers				4		4
Accountants				3	1	4
Clerical employees				24	119	143
Local managers				14		14
Commercial agents				41	4	45
Experienced switchboard operators					464	464
Operators in training					18	18
Service inspectors				1	13	14
Supervising foremen				4		4
Central office installation and maintenance men				37		37
Line and station construction, installation, and maintenance men	12		12	494		494
Cable and conduit construction and maintenance men				73		73
All other employees	3		3	62	97	159
Total for employees	16		16	768	719	1,487
Persons other than employees	58	20	78	1,580	1,057	2,637
Grand total, employees and other persons	74	20	94	2,348	1,776	4,124

NOTE.—Class A telephone carriers are those carriers having average annual operating revenuesexceeding $100,000. Data for two carriers located outside the continental limits of the United States not included.

TABLE XXIII.—*Employees killed or injured in accidents occurring in connection with the operations of wire-telegraph and radiotelegraph carriers* [1]

[Year ended Dec. 31, 1938]

Item	Number of employees			
	In plant work	In operation	Otherwise	Total
Killed:				
Male	7	1	7	15
Female				
Total	7	1	7	15
Injured:				
Male	246	255	2,682	3,183
Female		287	92	379
Total	246	542	2,774	3,562

[1] Wire-telegraph carriers comprise land lines and ocean cables.

Receiverships and trusteeships.—Statistical data from reports filed by holding companies which were in the hands of receivers and trustees during 1938 are shown in table XXIV. Information concerning the intercorporate relations of these companies is given in table XXXVIII. Among the telephone, wire-telegraph, and radio-telegraph carriers filing reports on an annual basis there was none in receivership or trusteeship at the close of the year.

TABLE XXIV.—*Summary showing statistics of holding companies in the hands of receivers or trustees*

[Year ended Dec. 31, 1938]

Name of company	Name of receivers or trustees	Title	Date of appointment	Capital stock	Funded debt	Matured funded debt
HOLDING COMPANIES [1]						
Ann Arbor Railroad Co., The	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers	Dec. 4, 1931 [2]	$7,250,000	$9,164,341	$200,200
Associated Companies, The	George S. Gibbs and Raymond C. Kramer	Trustees	June 21, 1938 [3]	90,408,400		
Chicago, Milwaukee, St. Paul & Pacific R. R. Co.	Henry A. Scandrett, Walter J. Cummings, and George I. Haight.	do	Jan. 1, 1936	[4] 224,407,824	464,318,229	14,870,663
Postal Telegraph & Cable Corporation	George S. Gibbs and Raymond C. Kramer	do	Dec. 24, 1935 [5]	[6] 55,970,750	50,670,180	
United Telephone & Electric Co., The Wabash Ry. Co.	William C. A. Henry	Trustee	(7)	[8] 11,952,350		
	Norman B. Pitcairn and Frank C. Nicodemus, Jr.	Receivers	Dec. 1, 1931 [9]	138,120,767	127,939,826	22,108,994
Total				528,110,091	652,092,576	37,179,857

[1] Represents companies which directly or indirectly control communication carriers.
[2] Norman B. Pitcairn appointed receiver Oct. 20, 1933, to succeed Walter S. Franklin, resigned.
[3] Date of temporary appointment made permanent July 23, 1938.
[4] Includes $105,100,524 book liability for 1,174,060 shares of common stock without par value.
[5] Date of temporary appointments of Alfred E. Smith and George S. Gibbs made permanent Jan. 27, 1936; resignation of Alfred E. Smith as trustee was accepted as of midnight Dec. 31, 1937. Raymond C. Kramer was appointed temporary trustee Sept. 8, 1937, which appointment was made permanent Oct. 5, 1937.
[6] Includes $25,441,250 book liability for 1,017,500 shares of common stock without par value.
[7] Data not reported.
[8] Includes $3,099,350 book liability for 36,178 shares of common stock without par value.
[9] Norman B. Pitcairn appointed receiver Oct. 19, 1933, to succeed Walter S. Franklin, resigned.

Railway telegraph and telephone operations.—The operating revenues derived from telegraph and telephone service performed by class I steam railways during 1938, together with the plant mileage operated, are shown in table XXV. This information was compiled from annual reports filed with the Interstate Commerce Commission. The revenues shown in this table represent amounts received incidentally for telegraph and telephone service rendered to the general public, as the communication facilities are used principally in connection with the operation of railways.

TABLE XXV.—*Telegraph and telephone revenues received and wire mileage operated by class I steam railways*

[Compiled from annual reports filed with the Interstate Commerce Commission for the year ended Dec. 31, 1938]

Name of railway	Operating revenues (account 138)			Mileage operated		
	Telegraph	Telephone	Total	Pole line	Telegraph wire	Telephone wire
Atchison, Topeka & Santa Fe Ry. Co.	$324,430	----------	$324,430	13,308	42,586	37,342
Baltimore & Ohio R. R. Co	60,151	----------	60,151	5,739	16,575	18,682
Chicago, Burlington & Quincy R. R. Co.	134,462	----------	134,462	8,697	26,294	17,689
Duluth, Missabe & Iron Range Ry. Co.	1,885	$79,696	81,581	565	1,206	5,523
Great Northern Ry. Co.	106,090	----------	106,090	7,803	28,190	21,403
Louisville & Nashville R. R. Co.	44,689	----------	44,689	4,525	2,665	18,802
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	45,736	----------	45,736	4,100	15,799	817
New York, New Haven & Hartford R. R. Co.	32,109	----------	32,109	1,844	503	26,241
Northern Pacific Ry. Co.	76,574	----------	76,574	5,863	12,846	17,938
Pennsylvania R. R. Co.	103,425	----------	103,425	9,424	7,373	170,753
Southern Pacific Co.	358,198	32,002	390,200	8,388	23,694	19,298
Texas & New Orleans R. R. Co.	32,823	1,800	34,623	4,362	7,832	10,645
Union Pacific R. R. Co.	297,899	----------	297,899	9,312	24,745	23,771
Other class I steam railways [1]	215,176	17,148	232,324	130,324	302,992	383,694
Total, United States	1,833,647	130,646	1,964,293	220,254	513,300	772,598
Copper River & Northwestern Railway Co. (Alaska)	----------	2,124	2,124	194	----------	241
Oahu Railway & Land Co. (Hawaii)	----------	----------	----------	186	----------	186
Grand total	1,833,647	132,770	1,966,417	220,634	513,300	773,025

[1] Represents returns from 68 class I steam railways in the United States, each having gross annual telegraph and telephone revenues less than $25,000, and 55 class I steam railways which did not report any telegraph or telephone revenues.

The major class of employees engaged in telegraph and telephone service and their compensation, as reported by class I steam railways, are shown in the following statement. These data were compiled from the annual reports filed with the Interstate Commerce Commission for the year 1938.

Class of employees	Average number of employees [1]	Total annual compensation
Station agents (telegraphers and telephoners)	14,471	$27,604,183
Chief telegraphers and telephoners or wire chiefs	794	2,103,284
Clerk-telegraphers and clerk-telephoners	7,657	15,339,435
Telegraphers, telephoners, and towermen	13,204	27,118,396
Total	36,126	72,165,298

[1] Based on 12 middle-of-month counts.

(B) Statistics From Monthly Reports of Telephone and Telegraph Carriers

Telephone carriers reporting monthly.—The names of the large telephone carriers filing monthly reports with the Commission and the geographical regions in which they are located are shown in table XXVI. All telephone carriers included in the Bell System are marked with an asterisk. The carriers marked with a dagger have been notified that they are subject only to the provisions of sections 201–5 of the Communications Act of 1934, but have continued voluntarily to file monthly reports for statistical purposes.

TABLE XXVI.—*List of large telephone carriers reporting on a monthly basis to the Commission, showing geographical regions to which the carriers have been assigned for statistical purposes*

Name of carrier	Geographical region
American Telephone Co	South Central.
*American Telephone & Telegraph Co	Middle Atlantic.
†Ashland Home Telephone Co	Southeastern.
†Associated Telephone Co., Ltd	Pacific.
*Bell Telephone Co. of Nevada	Mountain.
*Bell Telephone Co. of Pennsylvania	Middle Atlantic.
Bluefield Telephone Co	Chesapeake.
†California Water & Telephone Co	Pacific.
Carolina Telephone & Telegraph Co	Southeastern.
*Chesapeake & Potomac Telephone Co	Chesapeake.
*Chesapeake & Potomac Telephone Co. of Baltimore City	Do.
*Chesapeake & Potomac Telephone Co. of Virginia	Do.
*Chesapeake & Potomac Telephone Co. of West Virginia	Do.
Cincinnati & Suburban Bell Telephone Co	Great Lakes.
†Citizens Independent Telephone Co	Do.
†Commonwealth Telephone Co. (Pennsylvania)	Middle Atlantic.
†Commonwealth Telephone Co. (Wisconsin)	Great Lakes.
*Dakota Central Telephone Co	North Central.
†DeKalb-Ogle Telephone Co	Great Lakes.
*Diamond State Telephone Co	Middle Atlantic.
†Elyria Telephone Co	Great Lakes.
†Gulf States Telephone Co	South Central.
Home Telephone & Telegraph Co	Great Lakes.
*Illinois Bell Telephone Co	Do.
†Illinois Central Telephone Co	Do.
†Illinois Commercial Telephone Co	Do.
†Illinois Consolidated Telephone Co	Do.
†Illinois Telephone Co	Do.
Indiana Associated Telephone Corporation	Do.
*Indiana Bell Telephone Co	Do.
†Indiana Telephone Corporation	Do.
Inter-Mountain Telephone Co	Southeastern.
Interstate Telephone Co	Pacific.
†Intra State Telephone Co	Great Lakes.
†Iowa State Telephone Co	North Central.
†Jamestown Telephone Corporation	Middle Atlantic.
Keystone Telephone Co of Philadelphia	Do.
†Kittanning Telephone Co	Do.
†La Crosse Telephone Corporation	Great Lakes.
†Lexington Telephone Co	Southeastern.
†Lincoln Telephone & Telegraph Co	North Central.
†Lorain Telephone Co	Great Lakes.
†Mansfield Telephone Co	Do.
Michigan Associated Telephone Co	Do.
*Michigan Bell Telephone Co	Do.
†Missouri Telephone Co	South Central.
*Mountain States Telephone & Telegraph Co	Mountain.
Mutual Telephone Co	(1).
Nebraska Continental Telephone Co	North Central.
*New England Telephone & Telegraph Co	New England.
*New Jersey Bell Telephone Co	Middle Atlantic.
*New York Telephone Co	Do.
†Northern Ohio Telephone Co	Great Lakes.
*Northwestern Bell Telephone Co	North Central.
Ohio Associated Telephone Co	Great Lakes.
*Ohio Bell Telephone Co	Do.
†Ohio Standard Telephone Co	Do.
†Orange County Telephone Co	Middle Atlantic.
*Pacific Telephone & Telegraph Co	Pacific.
†Peninsular Telephone Co	Southeastern.
Pennsylvania Telephone Corporation	Middle Atlantic
†Peoples Telephone Corporation	Do.
†Portsmouth Home Telephone Co	Great Lakes.
Rochester Telephone Corporation	Middle Atlantic.
San Angelo Telephone Co	South Central.
†Santa Barbara Telephone Co	Pacific.
Southeast Missouri Telephone Co	South Central.

See footnotes at end of table.

TABLE XXVI.—*List of large telephone carriers reporting on a monthly basis to the Commission, showing geographical regions to which the carriers have been assigned for statistical purposes*—Continued

Name of carrier	Geographical region
*Southern Bell Telephone & Telegraph Co	Southeastern.
*Southern California Telephone Co	Pacific.
†Southern Continental Telephone Co	Southeastern.
Southern New England Telephone Co	New England.
†Southwest Telephone Co. (Texas)	South Central.
Southwestern Associated Telephone Co	Do.
*Southwestern Bell Telephone Co.[2]	Do.
†Southwestern States Telephone Co	Do.
†Star Telephone Co	Great Lakes.
†Texas Long Distance Telephone Co	South Central.
†Texas Telephone Co	Do.
†Tri-County Telephone Co	Great Lakes.
*Tri-State Telephone & Telegraph Co	North Central.
Two States Telephoue Co	South Central.
†Union Telephone Co	Great Lakes.
United Telephone Co. (Missouri)	South Central.
United Telephone Companies, Inc	Great Lakes.
United Telephone Co. of Pennsylvania	Middle Atlanti
†Upstate Telephone Corporation of New York	Do.
†Wabash Telephone Co	Great Lakes.
†Warren Telephone Co	Do.
West Coast Telephone Co	Pacific.
†Western Light & Telephone Co	South Central.
*Wisconsin Telephone Co	Great Lakes.

*Represents carriers included in the Bell System.

†Represents carriers subject only to the provisions of sections 201–205 of the Communications Act of 1934, which file reports for statistical purposes.

[1] Located in Hawaii. Figures not included in the following summaries of monthly reports of large telephone carriers in the United States.

[2] The United Telephone Co. (Kansas) was acquired by the Southwestern Bell Telephone Co. as of December 31, 1938.

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately $250,000 or more.

Monthly operating data from telephone carriers.—The following table XXVII shows statistical data pertaining to December, and cumulative figures for 12 months ended with December 1938, as compared with returns received for the corresponding periods in 1937. This information was compiled from the monthly reports filed by large telephone carriers. The net operating income during the month of December 1938 was 9.06 percent larger than during the same month in 1937, while for the 12-month period in 1938 it was 7.51 percent less than for the corresponding period in 1937. For the 12-month period in 1938, the operating revenues increased 0.29 percent and the operating expenses increased 1.33 percent over the same period in 1937.

TABLE XXVII.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*

MONTH OF DECEMBER

Item	1938	1937	Increase or decrease	
			Amount	Ratio, percent
Number of company telephones in service at end of month	17,704,232	17,195,471	508,761	2.96
Operating revenues:				
Subscribers' station revenues	$62,109,550	$60,659,036	$1,450,514	2.39
Public telephone revenues	4,078,114	4,079,780	−1,666	−.04
Miscellaneous local service revenues	964,992	1,011,523	−46,531	−4.60
Message tolls	26,590,714	25,497,144	1,093,570	4.29
Miscellaneous toll service revenues	2,723,664	2,859,063	−136,399	−4.77
Revenues from general services and licenses	1,256,183	1,252,104	4,079	.33
Sundry miscellaneous revenues	4,217,764	4,073,868	143,896	3.53
Uncollectible operating revenues—Dr	387,991	386,704	1,290	.33
Operating revenues	101,551,987	99,045,814	2,506,173	2.53

TABLE XXVII.—*Summary of revenues, expenses, and capital changes from monthly reports of large telephone carriers*—Continued

MONTH OF DECEMBER—Continued

Item	1938	1937 [2]	Increase or decrease	
			Amount	Ratio, percent
Operating expenses:				
Depreciation and amortization expenses	$14,370,240	$14,529,910	−$159,670	−1.10
All other maintenance	19,441,255	20,270,938	−829,683	−4.09
Traffic expenses	15,035,471	15,183,248	−147,777	−.97
Commercial expenses	8,177,728	7,915,472	262,256	3.31
General office salaries and expenses	5,762,155	5,794,616	−32,461	−.56
Relief and pensions	1,855,786	1,778,913	76,873	4.32
General services and licenses	1,229,582	1,225,756	3,826	.31
All other operating expenses	3,571,944	3,418,118	153,826	4.50
Operating expenses	69,444,161	70,116,971	−672,810	−.96
Income items:				
Net operating revenues	32,107,826	28,928,843	3,178,983	10.99
Rent from lease of operating property	473	732	−259	−35.38
Rent for lease of operating property	903	140	763	545.00
Net operating income before tax deduction	32,107,396	28,929,435	3,177,961	10.99
Operating taxes	13,272,000	11,659,123	1,612,877	13.83
Net operating income	18,835,396	17,270,312	1,565,084	9.06
Ratio of expenses to revenues.....percent	68.38	70.79	−2.41	
Changes in capital items:				
Increase during month in "telephone plant" [1]	$11,186,934	$5,928,114		
Increase during month in "capital stock"	$29,158,029	$538,748		
Increase during month in "funded debt"	$288,387	−$11,131,084		

12 MONTHS ENDED WITH DECEMBER

Operating revenues:				
Subscribers' station revenues	$718,336,586	$705,100,447	$13,236,139	1.88
Public telephone revenues	45,133,371	46,138,452	−1,005,081	−2.18
Miscellaneous local service revenues	11,680,474	12,314,407	−633,933	−5.15
Message tolls	296,020,948	304,154,612	−8,133,664	−2.67
Miscellaneous toll service revenues	32,918,201	34,905,695	−1,987,494	−5.69
Revenues from general services and licenses	14,605,392	14,516,137	89,255	.61
Sundry miscellaneous revenues	48,792,290	45,801,937	2,990,353	6.53
Uncollectible operating revenues—Dr.	5,435,553	4,225,672	1,209,881	28.63
Operating revenues	1,162,051,659	1,158,706,015	3,345,644	.29
Operating expenses:				
Depreciation and amortization expenses	171,052,362	174,892,854	−3,840,492	−2.20
All other maintenance	222,808,604	217,428,889	5,379,715	2.47
Traffic expenses	172,916,712	170,406,709	2,510,003	1.47
Commercial expenses	91,410,001	89,562,997	1,847,004	2.06
General office salaries and expenses	65,812,890	64,157,986	1,654,904	2.58
Relief and pensions	20,713,278	19,777,912	935,366	4.73
General services and licenses	14,296,840	14,215,743	81,097	.57
All other operating expenses	38,783,222	36,874,022	1,909,200	5.18
Operating expenses	797,793,909	787,317,112	10,476,797	1.33
Income items:				
Net operating revenues	364,257,750	371,388,903	−7,131,153	−1.92
Rent from lease of operating property	6,484	6,434	50	.78
Rent for lease of operating property	3,860	1,703	2,157	126.66
Net operating income before tax deduction	364,260,374	371,393,634	−7,133,260	−1.92
Operating taxes	154,486,678	144,579,252	9,907,426	6.85
Net operating income	209,773,696	226,814,382	−17,040,686	−7.51
Ratio of expenses to revenues.....percent	68.65	67.95	0.70	
Changes in capital items:				
Increase during period in "telephone plant" [1]	$118,348,481	$143,993,677		
Increase during period in "capital stock"	$12,178,885	−$29,106,758		
Increase during period in "funded debt"	$93,280,461	−$30,741,245		

[1] The figures for "Telephone plant" include increases in "Telephone plant in service," "Telephone plant under construction," "Property held for future telephone use," and "Telephone plant acquisition adjustment."

[2] Returns in this column reflect depreciation adjustments on property in Nebraska.

NOTES.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenue of approximately $250,000 or more.

Dash (—) indicates deficit or other reverse item.

Proportion of the telephone industry covered by monthly reports.—Statistical data relating to large telephone carriers reporting monthly to the Commission for the year 1937 are compared in the following statement with figures shown in the "Census of Electrical Industries—Telephones and Telegraphs: 1937" for all telephone systems and lines in the United States. The gross operating revenues for the year 1937 of the 91 large telephone carriers reporting monthly to the Commission amounted to $1,158,706,015 and covered approximately 98 percent of the revenues of all telephone carriers in the United States.

Item	Total operating revenues for year 1937	Number of telephones Dec. 31, 1937
Census of electrical industries:		
50,560 systems and lines	$1,180,028,372	19,463,401
91 carriers reporting to the Commission	1,158,706,015	[1] 17,195,471
Percent of census total	98.19	88.39

[1] Includes all telephones except private-line telephones and telephones of connecting lines for which local or switching services are rendered.

Monthly statistics of telephone carriers from January 1933 to June 1939.—The operating revenues, operating expenses, and net operating income of the large telephone carriers that reported on a monthly basis from January 1933 to June 1939, inclusive, are given in table XXVIII and the trends reflected in chart 6. During the period from June 1933 to June 1939, the monthly operating revenues increased from $80,428,967 to $102,118,913; the monthly operating expenses increased from $55,999,132 to $68,184,097; and the monthly net operating income increased from $16,144,719 to $20,027,371.

Approximately $16,000,000 in refunds to Chicago coin-box subscribers, in repayment of collections that had been made covering an 11-year period, were deducted from operating revenues during June 1934 by the Illinois Bell Telephone Co., but have been restored in chart 6 in order to preserve the consistency of the trend. The revised uniform system of accounts for telephone carriers that became effective January 1, 1937, had only a minor effect on the operating returns.

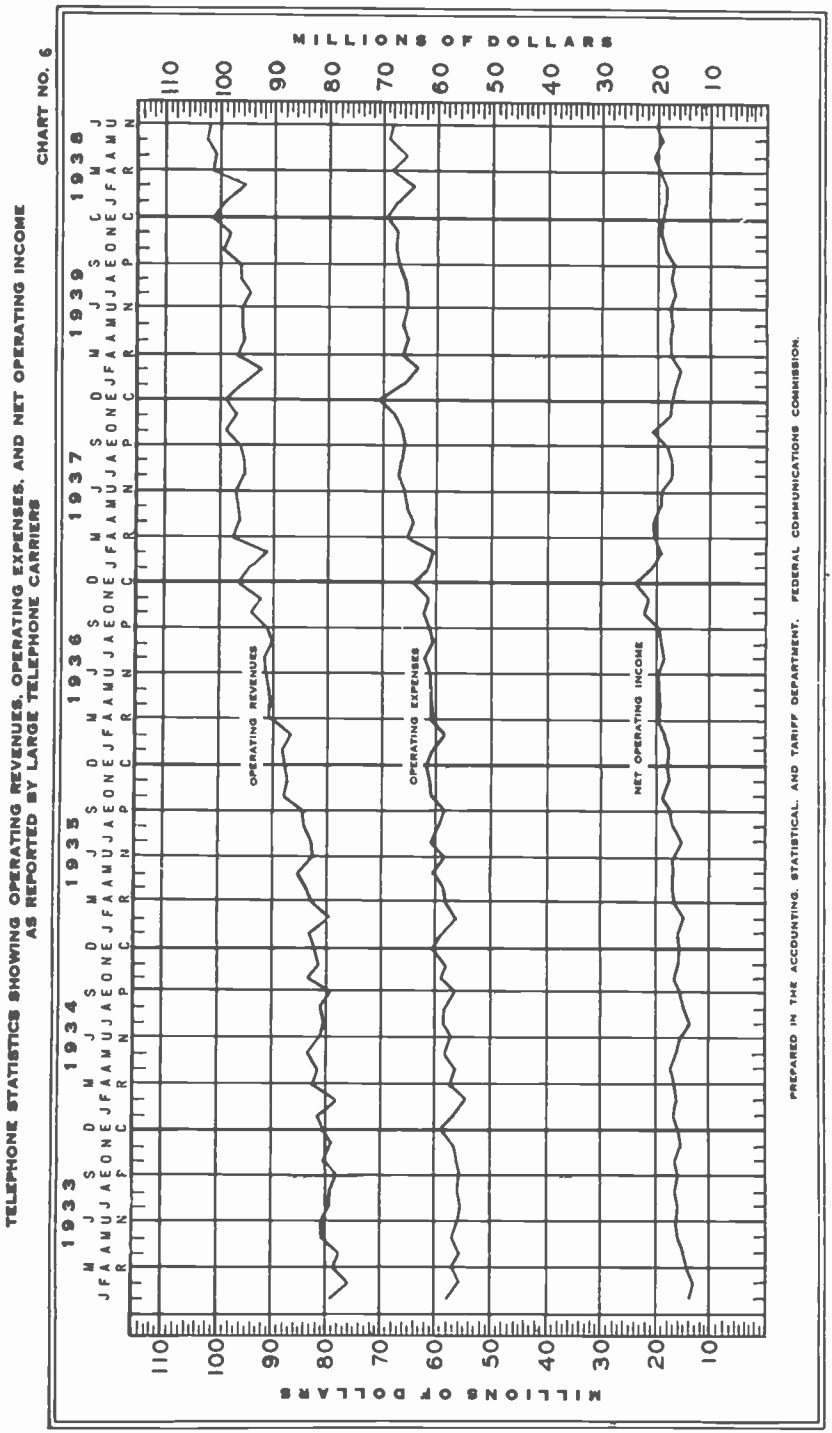
TABLE XXVIII.—*Monthly telephone operating statistics showing revenues, expenses, and net operating income as reported by large telephone carriers from January 1933 to June 1939, inclusive*

Month	Operating revenues						
	1933	1934	1935	1936	1937	1938	1939
January	$79,449,395	$81,350,361	$83,230,504	$88,361,976	$94,779,883	$96,257,455	$99,233,789
February	75,790,288	78,320,835	[1] 79,608,659	86,953,032	91,765,272	92,297,164	96,063,633
March	78,662,241	82,401,739	82,982,488	90,514,624	97,552,766	97,138,307	101,609,891
April	77,783,389	81,574,187	83,938,786	90,361,484	96,657,583	95,911,787	100,083,374
May	80,522,404	83,128,231	85,211,685	90,835,259	96,931,883	96,289,146	102,646,302
June	80,428,967	[1] 66,384,381	83,589,582	91,334,901	97,205,606	96,305,464	102,118,913
July	79,144,340	80,315,541	83,889,282	91,621,342	95,894,942	94,954,498	
August	79,077,956	81,005,655	84,201,767	90,065,959	95,904,902	96,482,355	
September	78,338,834	79,805,693	84,526,140	91,164,857	96,614,793	96,724,500	
October	80,115,279	83,377,342	88,193,336	94,474,691	99,156,085	99,607,641	
November	78,970,252	81,341,489	[1] 87,209,620	92,888,832	97,196,486	98,531,355	
December	80,409,359	[1] 82,171,067	[1] 88,044,772	97,136,780	99,045,814	101,551,987	
Total	948,692,704	[1] 961,176,521	[1] 1,014,626,621	1,095,713,737	1,158,706,015	1,162,051,659	601,755,902
	Operating expenses						
January	$58,023,014	$56,660,588	$58,919,333	$60,455,792	[2] $61,761,759	$66,589,710	$67,280,618
February	55,371,291	54,644,868	[1] 56,498,039	58,603,461	60,601,384	63,906,167	64,155,197
March	57,198,070	57,621,102	58,398,745	60,572,358	65,180,035	66,613,821	68,456,196
April	55,467,873	56,284,375	58,612,389	60,540,298	64,273,685	65,379,122	65,683,453
May	57,107,246	58,425,666	60,170,503	60,599,618	65,350,866	66,323,069	68,982,872
June	55,999,132	[1] 41,203,652	58,566,170	60,791,556	66,084,114	65,696,223	68,184,097
July	55,301,474	58,638,170	60,820,407	62,441,016	67,003,600	65,504,748	
August	55,517,814	58,463,602	59,382,059	60,261,329	66,682,231	66,238,646	
September	55,091,537	56,822,773	58,531,657	61,215,138	66,040,651	67,030,396	
October	56,026,901	59,169,699	60,530,810	62,266,508	66,513,657	67,633,790	
November	56,584,655	58,138,980	[1] 60,894,797	61,668,420	67,708,159	67,434,056	
December	58,788,744	[1] 60,004,837	[1] 61,877,215	64,266,379	[2] 70,116,971	69,444,161	
Total	676,477,751	[1] 676,078,312	[1] 713,202,124	[2] 733,681,873	[2] 787,317,112	797,793,909	402,742,433

	Net operating income						
January	$13,963,345	$16,663,945	$15,877,224	$17,752,436	[2] $20,913,482	$16,824,922	$18,526,976
February	13,044,592	15,742,005	[1] 14,754,980	18,220,342	19,219,424	15,634,441	18,437,865
March	14,204,427	16,570,554	16,297,776	19,621,878	20,176,734	17,556,969	19,478,655
April	14,837,852	17,354,422	16,751,327	19,264,378	20,262,358	17,651,367	20,575,979
May	15,937,320	16,160,140	16,580,350	19,659,214	19,208,848	17,426,179	19,832,318
June	16,144,719	[1] 17,411,909	16,568,547	[2] 19,741,809	19,077,687	17,752,080	20,027,371
July	15,874,309	13,743,752	14,907,080	18,437,274	17,166,329	16,458,423	
August	16,313,527	14,609,328	16,563,590	18,992,778	17,164,032	17,260,686	
September	15,757,741	15,143,451	17,531,376	19,423,669	18,183,595	16,790,844	
October	16,499,848	16,691,177	19,014,030	22,227,249	20,524,179	18,636,671	
November	14,950,379	15,645,035	[1] 17,935,997	21,413,818	17,557,402	18,945,718	
December	15,376,226	[1] 15,327,906	[1] 18,042,773	23,895,867	[2] 17,270,312	18,835,396	
Total	182,904,285	[1] 191,063,624	[1] 200,825,050	[2] 238,650,712	[2] 226,814,382	209,773,696	116,879,164

[1] These returns reflect adjustments covering estimated refunds.
[2] These returns reflect depreciation adjustments on property in Nebraska.

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately $250,000 or more.


TELEPHONE STATISTICS SHOWING OPERATING REVENUES, OPERATING EXPENSES, AND NET OPERATING INCOME AS REPORTED BY LARGE TELEPHONE CARRIERS
CHART NO. 6
MILLIONS OF DOLLARS
1933
1934
1935
1936
1937
1939
1938
OPERATING REVENUES
OPERATING EXPENSES
NET OPERATING INCOME
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Monthly total and daily average message tolls.—The message tolls reported by large telephone carriers on a monthly basis from January 1933 to June 1939, inclusive, together with the average amount per day, are shown in table XXIX. The revenues received from "toll private-line services" and "other toll service" are not included in this summary. The total monthly message tolls increased from $19,807,346 in June 1933, to $26,923,361 in June 1939. During this period the daily average toll message revenues increased from $660,245 in June 1933, to $897,445 in June 1939. The trend during the period from January 1933 to June 1939 of the daily average amount of message tolls is shown in chart 7.

TABLE XXIX.—*Summary showing monthly total and daily average message tolls of large telephone carriers from January 1933 to June 1939, inclusive*

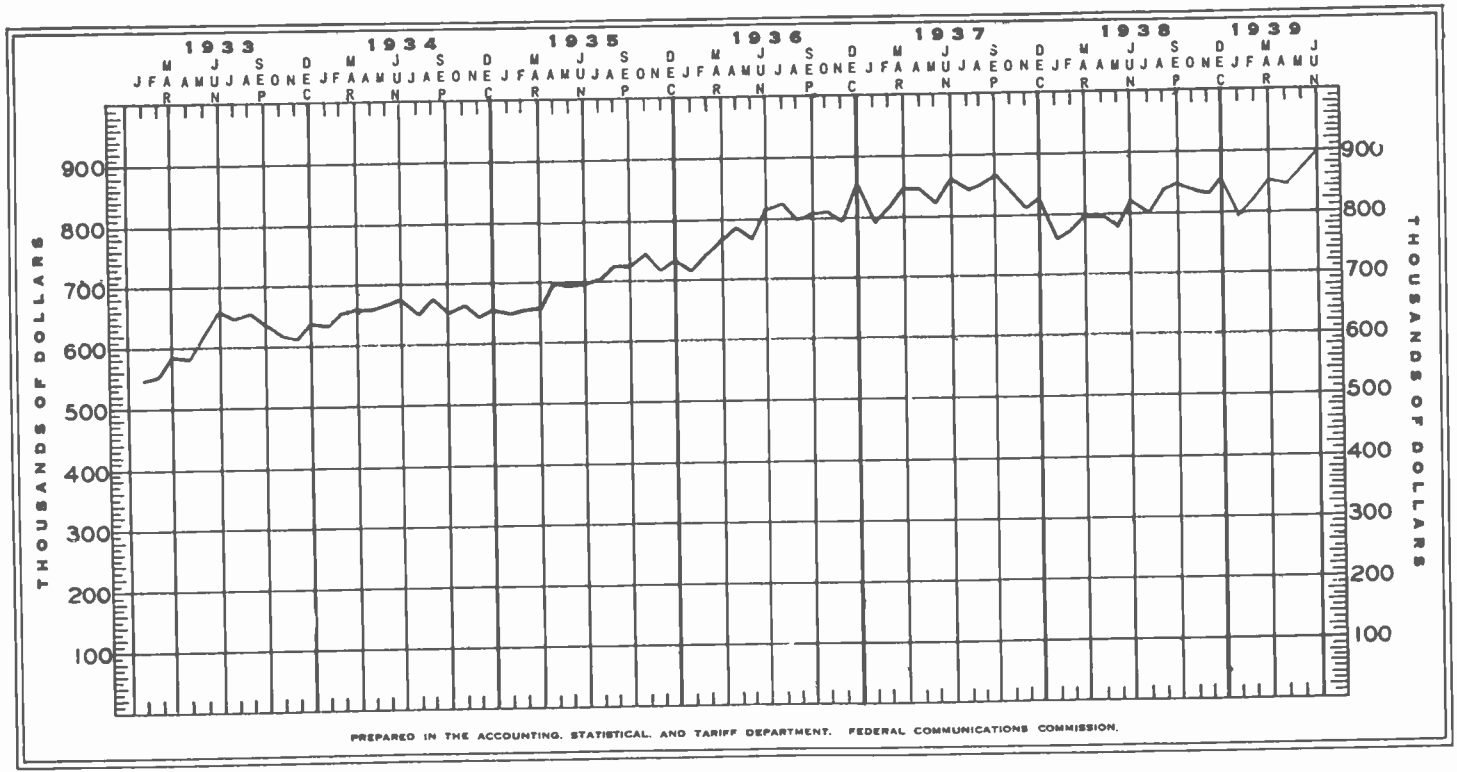
Month	1933		1934		1935		1936	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$16, 994, 165	$548, 199	$18, 629, 721	$633, 217	$20, 116, 509	$648, 920	$22, 190, 303	$715, 816
February	15, 488, 724	553, 169	18, 311, 989	654, 000	18, 258, 711	652, 097	21, 570, 225	743, 801
March	18, 133, 417	584, 949	20, 480, 088	660, 648	20, 378, 715	657, 378	23, 765, 567	766, 631
April	17, 423, 065	580, 769	19, 805, 806	660, 194	20, 916, 570	697, 219	23, 613, 804	787, 127
May	19, 478, 575	628, 341	20, 767, 992	669, 935	21, 594, 346	696, 592	23, 796, 271	767, 622
June	19, 807, 346	660, 245	20, 305, 817	676, 861	20, 925, 023	697, 501	24, 443, 178	814, 773
July	20, 135, 960	649, 547	20, 139, 894	649, 674	21, 882, 664	705, 892	25, 506, 391	822, 787
August	20, 261, 511	653, 597	20, 964, 208	676, 265	22, 558, 102	727, 681	24, 797, 028	799, 904
September	19, 174, 859	639, 162	19, 541, 690	651, 390	21, 782, 681	726, 089	24, 196, 949	806, 565
October	19, 185, 590	618, 890	20, 597, 693	664, 442	23, 051, 814	743, 607	25, 080, 140	809, 037
November	18, 393, 599	613, 120	19, 333, 804	644, 460	21, 591, 993	719, 733	23, 939, 495	797, 983
December	19, 789, 889	638, 384	20, 251, 714	653, 281	22, 714, 300	732, 719	26, 439, 617	852, 891
Total	224, 266, 700	614, 429	240, 130, 416	657, 892	255, 771, 428	700, 744	289, 338, 968	790, 544

Month	1937		1938		1939	
	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day	Message tolls	Average message tolls per day
January	$24, 519, 237	$790, 943	$23, 533, 358	$759, 141	$24, 730, 843	$797, 769
February	22, 754, 772	812, 670	21, 588, 677	771, 024	22, 953, 591	819, 771
March	26, 250, 877	846, 802	24, 649, 376	795, 141	26, 498, 389	854, 787
April	25, 371, 260	845, 709	23, 849, 134	794, 971	25, 274, 520	842, 484
May	25, 397, 947	819, 289	24, 132, 468	778, 467	27, 100, 696	874, 216
June	25, 836, 669	861, 222	24, 576, 923	819, 231	26, 923, 361	897, 445
July	26, 076, 333	841, 172	24, 799, 742	799, 992		
August	26, 401, 979	851, 677	25, 984, 143	838, 198		
September	25, 887, 107	862, 904	25, 428, 288	847, 610		
October	25, 860, 549	834, 211	25, 928, 743	836, 411		
November	24, 300, 738	810, 025	24, 959, 382	831, 979		
December	25, 497, 144	822, 489	26, 590, 714	857, 765		
Total	304, 154, 612	833, 300	296, 020, 948	811, 016		

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenue of approximately $250,000 or more.

AVERAGE REVENUES PER DAY FROM TOLL MESSAGES AS COMPILED FROM MONTHLY REPORTS FILED BY LARGE TELEPHONE CARRIERS

CHART NO. 7



PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Telephones in service.—The number of company telephones in service at the end of each month from January 1933, to June 1939 is shown in table XXX, and the trend during this period is reflected in chart 8. The number of telephones in service increased from 14,286,795 in August 1933, to 18,072,020 in June 1939, or 26.49 percent.

TABLE XXX.—*Number of telephones in service in the United States as reported by large telephone carriers, by months, from January 1933 to June 1939, inclusive* [1]

Month	1933	1934	1935	1936	1937	1938	1939
January	14, 940, 458	14, 400, 043	14, 744, 353	15, 295, 692	16, 315, 289	17, 229, 895	17, 734, 613
February	14, 820, 220	14, 439, 183	14, 782, 483	15, 368, 397	16, 415, 216	17, 261, 509	17, 808, 350
March	14, 693, 079	14, 496, 906	14, 837, 216	15, 455, 192	16, 532, 224	17, 301, 824	17, 897, 364
April	14, 596, 401	14, 563, 647	14, 893, 258	15, 541, 044	16, 655, 031	17, 336, 387	17, 973, 761
May	14, 506, 025	14, 600, 007	14, 946, 396	15, 627, 577	16, 762, 873	17, 365, 532	18, 055, 011
June	14, 400, 533	14, 583, 393	14, 936, 756	15, 650, 630	16, 800, 336	17, 343, 739	18, 072, 020
July	14, 314, 697	14, 547, 163	14, 914, 281	15, 699, 574	16, 829, 994	17, 334, 621	----------
August	14, 286, 795	14, 557, 047	14, 943, 768	15, 773, 584	16, 891, 361	17, 372, 770	----------
September	14, 345, 350	14, 626, 161	15, 048, 005	15, 914, 147	17, 002, 295	17, 465, 101	----------
October	14, 360, 902	14, 662, 525	15, 117, 838	16, 033, 442	17, 084, 607	17, 528, 279	----------
November	14, 365, 801	14, 682, 005	15, 174, 997	16, 114, 792	17, 141, 638	17, 592, 651	----------
December	14, 376, 947	14, 703, 888	15, 231, 070	16, 221, 582	17, 195, 471	17, 704, 232	----------

[1] Includes all telephones except private-line telephones and telephones of connecting line for which local or witching services are rendered.

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately $250,000 or more.

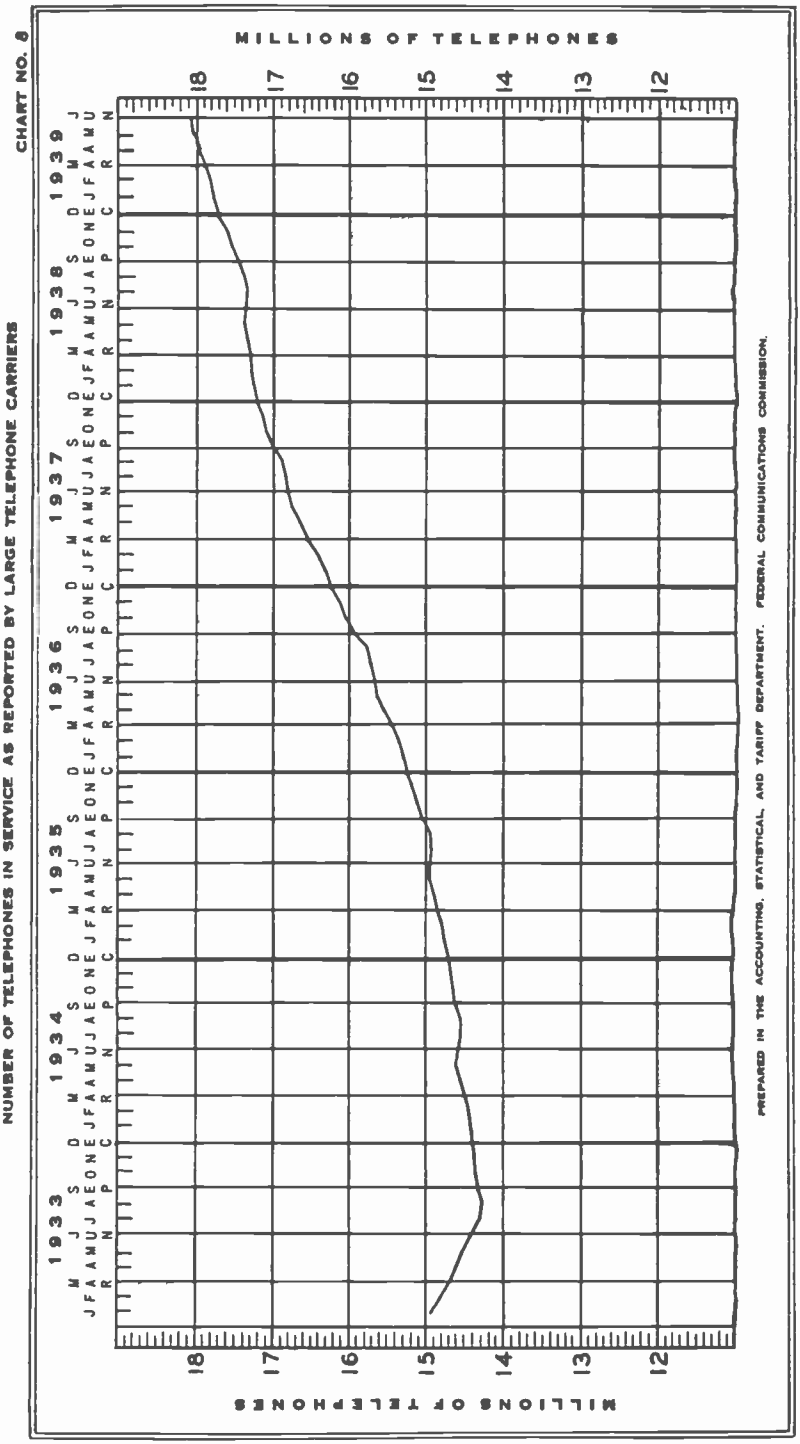


CHART NO. 8
NUMBER OF TELEPHONES IN SERVICE AS REPORTED BY LARGE TELEPHONE CARRIERS
MILLIONS OF TELEPHONES
18
17
16
15
14
13
12
1933
1934
1935
1936
1937
1938
1939
PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

Operating averages per telephone per day.—The average amounts of operating revenues and operating expenses per telephone per day, arranged by geographical regions, and based on reports from large telephone carriers filed on a monthly basis are given in table XXXI. Data applicable to carriers of the Bell System and to carriers not affiliated with the Bell System are shown separately in this table. The returns from the American Telephone and Telegraph Co. were excluded from the averages for the geographical regions, as the operations of the long-lines department of this carrier cover the entire country; but these returns were included in the separate total for the United States. The gross operating revenues and expenses are used in computing these averages. They have been computed on the basis of 325 days to the year, which is the basis used by the Bureau of the Census in similar computations.

The average gross operating revenues per telephone per day for the United States were $0.2141 for Bell System carriers and $0.2055 for all reporting large telephone carriers. These amounts compare with average gross operating expenses per telephone per day of $0.1476 for Bell System carriers and $0.1411 for all reporting large telephone carriers.

TABLE XXXI.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*

[Year ended Dec. 31, 1938]

ALL LARGE TELEPHONE CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$92,336,420	$68,739,628	1,565,842	$0.1814	$0.1351
Middle Atlantic region [1]	337,171,521	230,375,348	4,766,739	.2176	.1487
Great Lakes region	227,322,284	150,459,818	4,010,207	.1744	.1154
Eastern district [1]	656,830,225	449,574,794	10,342,788	.1954	.1337
Chesapeake region	43,288,819	29,518,818	815,749	.1633	.1113
Southeastern region	70,451,351	45,787,657	1,248,614	.1736	.1128
Southern district	113,740,170	75,306,475	2,064,363	.1695	.1122
North Central region	44,899,070	31,094,422	903,697	.1529	.1059
South Central region	95,577,529	62,063,279	1,615,110	.1821	.1182
Mountain region	25,441,563	17,446,589	494,434	.1583	.1086
Pacific region	122,188,911	82,417,412	1,982,652	.1896	.1279
Western district	288,107,073	193,021,702	4,995,893	.1774	.1189
United States [1]	1,058,677,468	717,902,971	17,403,044	.1872	.1269
United States [2]	1,162,051,659	797,793,909	17,403,044	.2055	.1411

BELL SYSTEM CARRIERS

New England region	$74,299,427	$55,524,442	1,224,453	$0.1867	$0.1395
Middle Atlantic region [1]	324,319,824	221,882,209	4,480,708	.2227	.1524
Great Lakes region	199,753,185	133,383,291	3,326,047	.1848	.1234
Eastern district [1]	598,372,436	410,789,942	9,031,208	.2039	.1400
Chesapeake region	42,810,476	29,202,197	806,326	.1634	.1114
Southeastern region	64,264,739	42,196,641	1,109,322	.1783	.1170
Southern district	107,075,215	71,398,838	1,915,648	.1720	.1147
North Central region	41,453,614	28,722,636	810,540	.1574	.1090
South Central region	89,216,038	58,001,226	1,463,280	.1876	.1220
Mountain region	25,441,563	17,446,589	494,434	.1583	.1086
Pacific region	114,895,386	78,004,155	1,799,965	.1964	.1333
Western district	271,006,601	182,174,606	4,568,219	.1825	.1227
United States [1]	976,454,252	664,363,386	15,515,075	.1936	.1318
United States [2]	1,079,828,443	744,254,324	15,515,075	.2141	.1476

[1] Excludes figures for American Telephone & Telegraph Co. inasmuch as its operations are not confined to geographical region.

[2] Includes figures for American Telephone & Telegraph Co.

TABLE XXXI.—*Averages per telephone per day of the operating revenues and operating expenses of large telephone carriers, by geographical regions*—Contd.

OTHER THAN BELL SYSTEM CARRIERS

Geographical groupings	Total operating revenues	Total operating expenses	Average number of telephones	Averages	
				Operating revenues per telephone per day	Operating expenses per telephone per day
New England region	$18,036,993	$13,215,186	341,389	$0.1626	$0.1191
Middle Atlantic region	12,851,697	8,493,139	286,031	.1382	.0914
Great Lakes region	27,569,099	17,076,527	684,160	.1240	.0768
Eastern district	58,457,789	38,784,852	1,311,580	.1371	.0910
Chesapeake region	478,343	316,621	9,423	.1562	.1034
Southeastern region	6,186,612	3,591,016	139,292	.1367	.0793
Southern district	6,664,955	3,907,637	148,715	.1379	.0808
North Central region	3,445,456	2,371,786	93,157	.1138	.0783
South Central region	6,361,491	4,062,053	151,830	.1289	.0823
Mountain region					
Pacific region	7,293,525	4,413,257	182,687	.1228	.0743
Western district	17,100,472	10,847,096	427,674	.1230	.0780
United States	82,223,216	53,539,585	1,887,969	.1340	.0873

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately $250,000 or more.

Monthly operating data from telegraph carriers.—Statistical data compiled from monthly reports filed by large wire-telegraph and radiotelegraph carriers for the month of December 1938, and for the 12 months ended with December 1938, are shown in table XXXII. The Southern Radio Corporation discontinued filing monthly reports inasmuch as its radiotelegraph operations in the United States ceased May 31, 1938. The gross operating revenues of the 17 wire-telegraph and radiotelegraph carriers reporting on a monthly basis were $132,494,224, of which the sum of $112,857,694 or 85.18 percent, was reported by three wire-telegraph carriers.

TABLE XXXII.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*

FOR THE MONTH OF DECEMBER 1938

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co	$5,125	$3,992	$608	$660
Postal Telegraph-Cable Co. (land-line system)	[1] 1,916,967	1,870,858	−35,230	−282,134
Western Union Telegraph Co	[2] 8,630,620	7,349,787	803,016	386,829
Total, land-line telegraph carriers	10,552,712	9,224,637	768,394	105,355
All America Cables and Radio, Inc	495,971	333,056	157,382	146,092
Commercial Cable Co. (New York and limited)	344,909	304,244	84,006	−17,579
Commercial Pacific Cable Co	75,753	64,172	10,265	19,801
French Telegraph Cable Co	26,605	37,653	−11,630	−11,936
Mexican Telegraph Co	33,191	22,757	8,927	6,010
Total, ocean cable carriers	976,429	761,882	248,950	142,388
Globe Wireless Ltd	44,860	35,546	8,311	8,204
Mackay Radio & Telegraph Co. (California)	96,675	77,511	15,751	752
Mackay Radio & Telegraph Co. (Delaware)	79,606	69,270	5,162	−22,542
Mutual Telephone Co. (wireless department—Hawaii)	4,945	8,146	−3,168	−3,168
Press Wireless, Inc	38,055	39,185	−1,130	−1,130
R. C. A. Communications, Inc	450,620	387,900	17,967	75,882
Radiomarine Corp. of America	90,577	94,343	−6,624	−6,597
Tropical Radio Telegraph Co	65,650	52,685	−14,779	−9,773
United States-Liberia Radio Corporation	7,549	5,289	1,879	1,879
Total, radiotelegraph carriers	878,537	769,875	23,369	43,507
Grand total	12,407,678	10,756,394	1,040,713	291,250

See footnotes at end of table.

TABLE XXXII.—*Summary of revenues, expenses, and related items from monthly reports of large telegraph carriers*—Continued

FOR 12 MONTHS ENDED WITH DECEMBER 1938

Name of carrier	Total operating revenues	Total operating expenses	Operating income	Net income
Northern Telegraph Co	$56,198	$44,409	$7,342	$8,360
Postal Telegraph-Cable Co. (land-line system)	[1] 21,089,095	21,061,816	−1,067,409	−4,042,518
Western Union Telegraph Co	[2] 91,712,401	81,506,663	3,974,730	−1,637,879
Total, land-line telegraph carriers	112,857,694	102,612,888	2,914,663	−5,672,037
All America Cables and Radio, Inc	4,732,962	3,644,711	685,399	544,231
Commercial Cable Co. (New York and limited)	3,789,381	3,172,086	552,365	−522,077
Commercial Pacific Cable Co	720,081	741,639	−40,240	75,478
French Telegraph Cable Co	367,940	371,451	−12,128	−15,803
Mexican Telegraph Co	373,591	268,659	88,666	53,649
Total, ocean cable carriers	9,983,955	8,198,546	1,274,562	135,478
Globe Wireless Ltd	457,245	455,656	−15,976	−16,890
Mackay Radio & Telegraph Co. (California)	1,060,590	929,076	87,999	−92,894
Mackay Radio & Telegraph Co. (Delaware)	990,856	968,850	−9,654	−340,374
Mutual Telephone Co. (wireless department—Hawaii)	62,111	51,265	4,686	4,686
Press Wireless, Inc	494,768	456,632	28,186	28,186
R. C. A. Communications, Inc	4,701,128	4,340,751	−72,047	443,764
Radiomarine Corp. of America	1,154,379	932,351	154,721	155,142
Tropical Radio Telegraph Co	659,030	599,862	37,840	96,918
United States-Liberia Radio Corporation	72,468	61,708	7,488	7,488
Total, radiotelegraph carriers	9,652,575	8,796,151	223,243	286,026
Grand total	132,494,224	119,607,585	4,412,468	−5,250,533

[1] Includes revenues from telephone operations amounting to $55,765 for December 1938, and $675,929 for the year 1938, respectively.

[2] Includes "revenues from transmission-cable" amounting to $569,668 for December 1938, and $6,196,212 for the year 1938, respectively.

NOTES.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

Dash (—) indicates deficit or other reverse item.

Telegraph operations of large telephone carriers.—In table XXXIII, the revenues applicable to the telegraph operations of 225 large telephone carriers are shown for the month of December 1938, and for the 12 months ended with December 1938, in comparison with the corresponding periods in 1937. Only items that are readily available from the carriers' accounts are reflected in this summary. It includes data from 223 carriers in the Bell System and from the Cincinnati & Suburban Bell Telephone Co. and the Southern New England Telephone Co.

The cumulative figures for the year in this summary indicate that the volume of telegraph business reported by the large telephone carriers decreased from $26,080,068 in 1937 to $23,831,705 in 1938. A large portion of these operating revenues was derived from private-line teletypewriter and teletypewriter exchange service, and $5,468,357 was derived from private-line Morse service.

TABLE XXXIII.—*Summary of monthly reports of telephone carriers relative to available data concerning telegraph operations* [1]

Item	December 1938		December 1937	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]
OPERATING REVENUES				
Subscribers' station revenues	$58,325,457	$21,470	$56,967,896	$18,161
Public telephone revenues	4,024,663		4,025,806	
Miscellaneous local service revenues	900,557	219,008	948,149	226,874
Message tolls	25,486,913	602,506	24,398,740	558,757
Miscellaneous toll service revenues	2,694,877	1,141,255	2,840,689	1,288,652
Revenues from general services and licenses	1,255,865		1,251,640	
Sundry miscellaneous revenues	4,029,868	510	3,892,469	425
Uncollectible operating revenues—Dr	363,051	6,464	369,323	1,409
Total	96,355,149	1,978,285	93,956,066	2,091,460

Item	1938 cumulative figures		1937 cumulative figures	
	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]	Total operating revenues	Amounts applicable to respondents' telegraph operations [2]
OPERATING REVENUES				
Subscribers' station revenues	$673,663,593	$229,903	$662,141,424	$204,051
Public telephone revenues	44,530,002		45,522,456	
Miscellaneous local service revenues	10,922,618	2,613,353	11,565,416	2,739,499
Message tolls	282,924,016	6,785,394	290,770,047	6,788,515
Miscellaneous toll service revenues	32,627,454	14,220,590	34,645,813	16,355,941
Revenues from general services and licenses	14,598,058		14,508,580	
Sundry miscellaneous revenues	46,681,103	5,243	43,793,875	5,694
Uncollectible operating revenues—Dr	5,149,003	22,778	3,960,185	13,632
Total	1,100,797,781	23,831,705	1,098,987,426	26,080,068

[1] Comprises 23 Bell System carriers and the Cincinnati & Suburban Bell Telephone Co. and Southern New England Telephone Co.

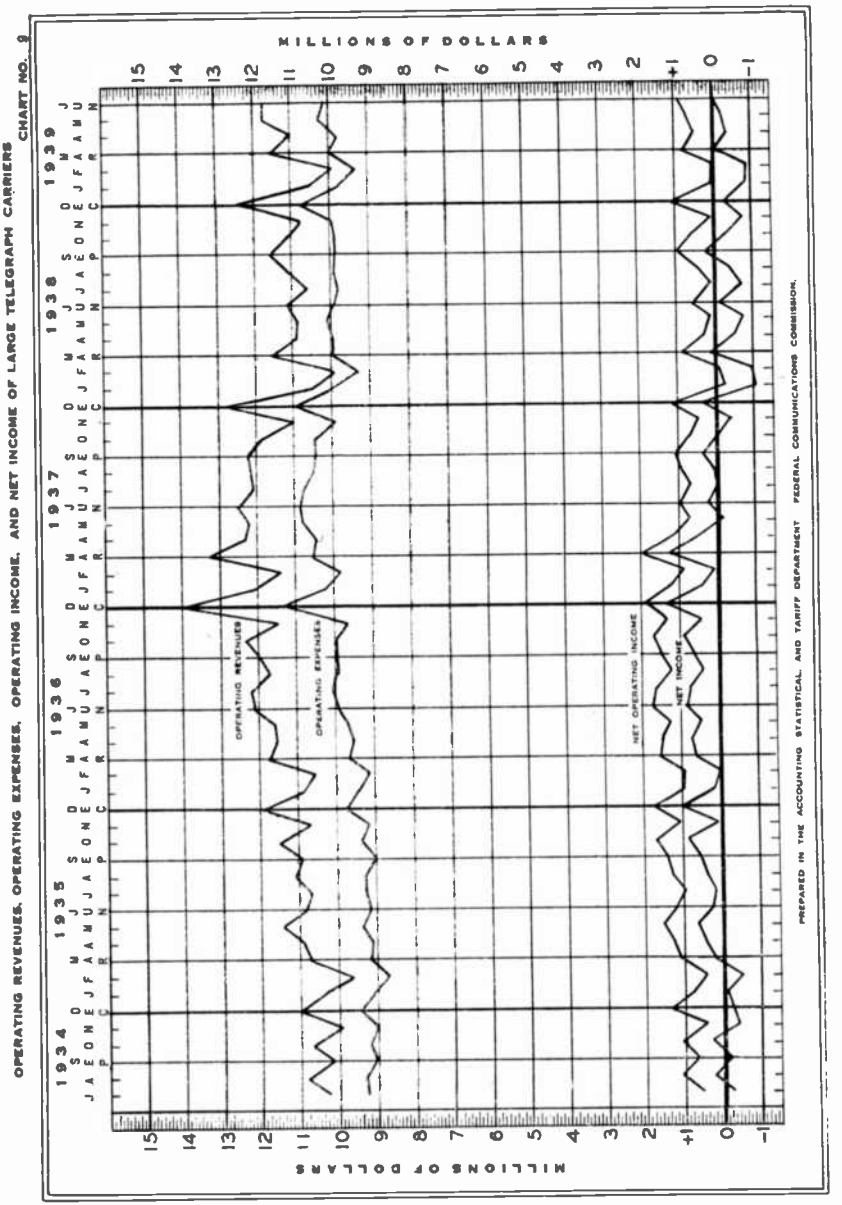
[2] Reflects only items which are readily available from carriers' accounts.

Monthly statistics of telegraph carriers from July 1934 to June 1939.—The operating revenues, operating expenses, operating income, and net income of the large wire-telegraph and radiotelegraph carriers, which reported on a monthly basis from July 1934 to June 1939, are given in table XXXIV, and the trends during this period are shown in chart 9. There was a loss in 1939 in spite of a small increase in operating revenues over the period from July 1934 to June 1939. This loss, however, was not as large as that of 1938. This unfavorable trend began in 1937 when the net income was only about one-third of that of 1936. It reached its lowest ebb in 1938 and was followed by an upward trend in 1939.

TABLE XXXIV.—*Monthly operating statistics showing revenues, expenses, operating income, and net income as reported by large telegraph carriers from July 1934 to June 1939, inclusive*

Month	1934	1935	1936	1937	1938	1939
Operating revenues						
January		$10,362,033	$10,911,897	$12,136,016	$10,541,024	$10,549,103
February		9,611,350	10,585,074	11,364,374	9,973,641	9,987,040
March		10,720,707	11,726,246	13,250,344	11,598,330	11,577,244
April		10,878,367	11,512,789	12,310,802	10,950,911	11,011,762
May		11,411,893	11,574,330	12,194,855	10,930,917	11,735,134
June		10,798,585	12,128,173	12,510,565	11,231,782	11,720,905
July	$10,288,243	10,710,993	12,193,309	12,041,073	10,615,984	
August	10,986,673	11,089,297	11,708,672	12,137,157	11,092,305	
September	10,178,062	10,897,978	11,956,495	12,187,289	11,549,524	
October	10,725,812	11,533,959	12,290,679	11,909,809	11,156,127	
November	9,933,054	10,666,676	11,505,224	10,995,002	10,751,258	
December	11,004,971	11,925,571	13,900,521	12,696,183	12,407,078	
Total	63,016,815	130,613,379	142,023,409	145,733,469	132,799,541	66,581,188
Operating expenses						
January		$9,126,390	$9,420,527	$10,224,172	$10,014,191	$9,816,459
February		8,686,579	9,159,483	9,812,451	9,328,764	9,318,883
March		9,153,476	9,651,658	10,553,118	9,978,339	10,031,020
April		9,130,371	9,534,459	10,457,912	9,963,843	9,808,871
May		9,376,111	9,681,113	10,795,104	10,071,443	10,289,234
June		9,160,096	9,901,625	10,873,625	9,903,483	10,142,286
July	$9,275,142	9,286,674	10,089,727	10,762,560	9,856,853	
August	9,326,337	9,314,022	9,961,601	10,503,183	9,935,398	
September	9,028,709	9,027,064	9,974,132	10,414,202	9,898,735	
October	9,225,020	9,392,098	9,965,431	10,431,137	9,903,125	
November	9,019,603	9,179,022	9,669,800	9,949,959	9,991,477	
December	9,458,110	9,720,053	11,290,617	10,957,719	10,756,394	
Total	55,332,921	110,551,944	118,300,173	125,736,142	119,602,068	59,406,753
Operating income						
January		$778,067	$981,459	$1,218,792	−$196,210	$15,308
February		470,181	919,278	879,582	−51,025	−16,931
March		1,115,485	1,562,679	1,902,427	880,453	814,020
April		1,280,193	1,503,698	1,156,443	259,898	512,377
May		1,537,331	1,385,138	712,793	130,868	698,901
June		1,179,070	1,720,742	946,378	601,066	886,039
July	$527,309	969,419	1,614,552	642,317	41,105	
August	1,074,209	1,314,097	1,255,078	950,157	431,067	
September	668,071	1,418,137	1,494,735	1,078,106	952,883	
October	1,075,143	1,682,661	1,698,630	790,087	558,202	
November	438,859	1,039,152	1,332,094	428,779	68,467	
December	1,330,026	1,734,304	1,887,073	1,116,307	1,040,713	
Total	5,113,617	14,518,097	17,355,156	11,875,768	4,717,479	2,909,714
Net income						
January		−$60,911	$131,091	$408,473	−$1,061,203	−$984,468
February		−463,886	−24,895	44,593	−948,951	−933,900
March		206,972	622,838	1,248,585	70,810	405
April		433,001	691,179	424,790	−559,813	−387,429
May		637,004	442,004	−135,726	−753,993	−229,328
June		248,659	834,273	203,369	−185,822	42,934
July	−$232,781	129,721	726,813	−36,395	−762,284	
August	244,478	391,400	395,406	95,591	−406,028	
September	−169,940	523,848	630,833	344,257	199,328	
October	318,698	828,207	905,059	−9,399	−356,488	
November	−396,241	85,278	475,974	−413,539	−774,370	
December	−207,065	996,780	1,304,729	359,312	291,250	
Total	−442,751	3,956,073	7,135,304	2,533,901	−5,249,564	−2,391,786

NOTES.—"Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.
Dash (—) indicates deficit or other reverse item.



The index numbers of operating revenues of telegraph carriers.—The index numbers of the operating revenues of large wire-telegraph and of radiotelegraph carriers, based on returns shown in the monthly reports filed with the Commission, are given in tables XXXV and XXXVI, respectively. The monthly returns received during 1929 from wire-telegraph carriers have been used as a basis in computing the index numbers for subsequent years. While the returns for June 1939 show that the operating revenues decreased to 67.51 percent of the 1929 figure, a slight improvement is shown in the returns for April, May, and June 1939, when compared with the returns for the similar period in 1938.

In view of the fact that the revenue figures of the radiotelegraph carriers for the years 1929 to 1933, inclusive, are incomplete, the index numbers have been computed on the basis of the monthly returns filed during 1934. Effective

January 1, 1939, changed requirements in the reporting of operating revenues by radiotelegraph carriers caused a higher level of the monthly index numbers for 1939 than for prior months. An increase of approximately seven in the amounts of the percentage relatives results therefrom.

TABLE XXXV.—*Index numbers of monthly operating revenues of large wire-telegraph carriers from January 1930 to June 1939, inclusive*

[1929=100]

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
January	100	95.47	80.77	63.84	51.22	61.99	61.01	64.13	71.39	61.30	61.19
February	100	96.61	81.96	67.34	52.96	63.09	61.65	67.46	72.34	62.77	63.06
March	100	92.62	79.84	65.23	58.17	63.13	60.13	65.66	63.80	63.73	63.69
April	100	96.31	81.79	60.97	54.22	60.97	63.35	67.29	71.06	62.78	63.13
May	100	92.71	76.69	57.73	60.27	62.17	63.75	64.65	67.76	60.42	64.69
June	100	94.90	80.94	61.38	65.04	64.23	62.88	70.62	72.23	64.49	67.51
July	100	87.80	75.05	51.37	61.78	57.85	60.40	68.76	66.97	59.35	-------
August	100	84.10	69.32	55.36	58.58	59.68	60.90	64.18	65.60	60.49	-------
September	100	88.29	73.30	58.27	59.62	57.89	62.02	68.02	68.41	65.36	-------
October	100	82.11	67.27	50.85	54.09	56.33	60.46	64.38	61.90	58.15	-------
November	100	82.63	69.59	55.84	60.79	60.83	65.29	70.20	66.72	65.20	-------
December	100	87.89	72.56	56.36	61.54	62.65	67.98	79.03	71.50	70.24	-------
For year	100	90.00	75.64	58.56	58.22	60.84	62.46	67.82	69.05	62.80	-------

NOTE.—"Large wire-telegraph carriers" comprises 3 land-line telegraph carriers and 5 ocean-cable carriers each having annual operating revenues of approximately $50,000 or more.

TABLE XXXVI.—*Index numbers of monthly operating revenues of large radiotelegraph carriers from January 1935 to June 1939, inclusive*

[1934=100]

Month	1934	1935	1936	1937	1938	1939
	Percent	Percent	Percent	Percent	Percent	Percent
January	100	111.54	120.35	132.50	126.39	136.48
February	100	102.07	122.77	134.32	127.18	129.83
March	100	105.72	116.89	142.48	136.43	143.81
April	100	113.78	118.84	145.90	133.05	141.41
May	100	110.10	111.97	127.66	115.68	135.77
June	100	104.32	117.05	137.04	124.25	132.06
July	100	99.54	113.53	135.33	111.66	----------
August	100	98.64	107.58	134.38	109.42	----------
September	100	106.74	117.84	143.37	122.30	----------
October	100	110.37	118.95	127.92	115.03	----------
November	100	108.67	122.49	126.05	123.72	----------
December	100	106.58	128.79	132.46	121.89	----------
For year	100	106.42	118.06	134.86	121.77	----------

NOTES.—"Large radiotelegraph carriers" comprises 9 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

In comparing the index numbers in this table, consideration should be given to the effect of certain changes in the reporting requirements effective on Jan. 1, 1939, embodied in a circular letter dated Jan. 4, 1939. This has resulted in an abnormal increase of approximately 7 in the percentages for the months of 1939.

Employees and their compensation.—Labor statistics relating to large telephone, wire-telegraph, and radiotelegraph carriers are shown in table XXXVII separately for each group of carriers. The table shows data for the year 1938 in comparison with those for 1937. The information relates to the carriers that filed monthly reports with the Commission, but the data were compiled from annual reports and correspondence. The number of telephone employees decreased from 301,771 in 1937 to 293,429 in 1938, whereas their compensation increased from $496,694,574 to $510,242,789 during this period. The returns from wire-telegraph and radiotelegraph carriers indicate that, for those carriers, the number of employees and their compensation decreased from 72,685 and $90,254,217, respectively, in 1937 to 65,476 and $82,725,616, respectively, in 1938.

A comparative analysis of the number of employees of large telephone, wire-telegraph, and radiotelegraph carriers for 1937 and 1938 is shown in chart 10 and a similar comparative analysis of the total annual compensation of employees in service is shown in chart 11.

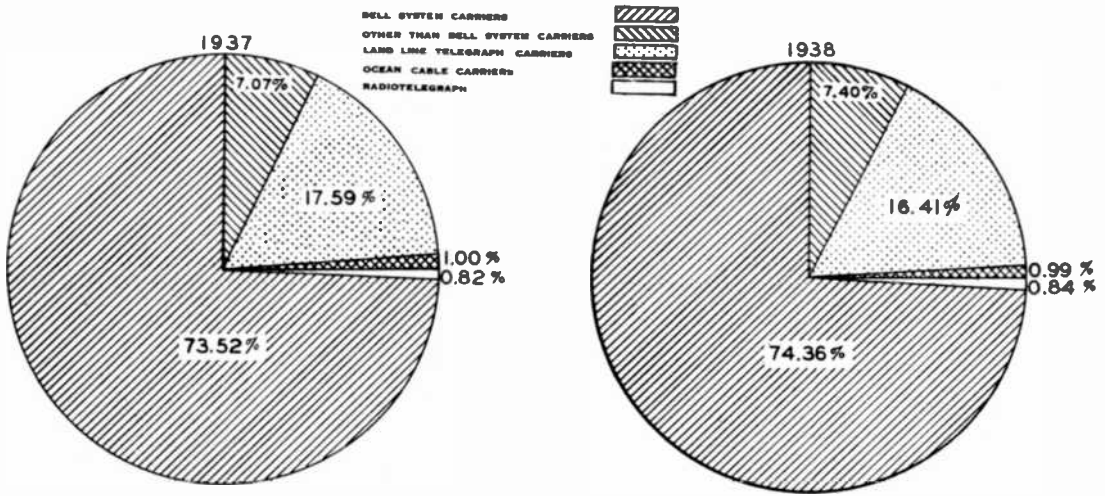
TABLE XXXVII.—*Compensation of employees, by months, and number of employees in service at the end of the year, as reported by large telephone and telegraph carriers for the years 1937 and 1938*

Month	Telephone carriers			Telegraph carriers				Grand total
	Bell System	Other than Bell System	Total	Land-line telegraph	Ocean cable	Radiotelegraph	Total	
1937								
January	$35,853,512	$2,635,913	$38,489,425	$6,512,297	$383,432	$385,661	$7,281,390	$45,770,815
February	34,389,272	2,539,065	36,928,337	6,163,950	383,098	384,142	6,931,190	43,859,527
March	37,881,721	2,724,094	40,605,815	6,823,033	382,264	394,862	7,600,159	48,205,974
April	37,641,880	2,681,022	40,322,902	6,683,975	387,100	399,444	7,470,519	47,793,421
May	38,294,031	2,678,914	40,972,945	6,922,887	391,195	405,674	7,719,756	48,692,701
June	38,815,382	2,756,037	41,571,419	6,933,890	381,412	412,405	7,727,707	49,299,126
July	40,049,502	2,852,987	42,902,489	6,994,610	389,938	432,235	7,816,783	50,719,272
August	40,013,677	2,835,819	42,849,496	6,749,981	383,812	429,166	7,562,959	50,412,455
September	40,093,102	2,826,006	42,919,108	6,674,554	384,875	422,473	7,481,902	50,401,010
October	39,448,909	2,803,393	42,252,302	6,623,365	393,026	427,044	7,443,435	49,695,737
November	39,987,440	2,817,561	42,805,001	6,428,831	400,405	429,214	7,258,450	50,063,451
December	41,088,761	2,986,574	44,075,335	7,018,981	399,419	541,567	7,959,967	52,035,302
Total	463,557,189	33,137,385	496,694,574	80,530,354	4,659,976	5,063,887	90,254,217	586,948,791
Number of employees in service Dec. 31, 1937	275,306	26,465	301,771	65,850	3,758	3,077	72,685	374,456
1938								
January	$39,232,671	$2,788,455	$42,021,126	$6,041,552	$387,969	$441,995	$6,871,516	$48,892,642
February	37,025,947	2,658,259	39,684,206	5,522,208	391,324	428,786	6,342,318	46,026,524
March	40,182,306	2,880,415	43,062,721	6,026,096	385,491	444,661	6,856,238	49,918,959
April	38,540,606	2,844,687	41,385,293	6,103,512	391,080	437,405	6,931,997	48,317,290
May	39,832,976	2,882,095	42,715,071	6,135,386	379,498	438,206	6,953,090	49,668,161
June	39,227,410	2,859,526	42,086,936	6,021,272	375,778	441,386	6,838,436	48,925,372
July	39,330,502	2,857,684	42,188,186	6,008,378	382,216	447,439	6,838,033	49,026,219
August	40,480,683	2,946,885	43,427,568	6,058,573	369,315	446,546	6,874,434	50,302,002
September	40,712,959	2,984,640	43,697,599	6,022,348	364,601	445,178	6,832,125	50,529,724
October	40,402,987	3,087,057	43,490,044	6,040,697	378,775	440,009	6,859,481	50,349,525
November	40,149,709	2,865,903	43,015,612	6,099,587	373,823	436,501	6,909,911	49,925,523
December	40,523,681	2,944,746	43,468,427	6,767,150	390,280	460,607	7,618,037	51,086,464
Total	475,642,437	34,600,352	510,242,789	72,846,749	4,570,150	5,308,717	82,725,616	592,968,405
Number of employees in service Dec. 31, 1938	266,884	26,545	293,429	58,906	3,563	3,007	65,476	358,905

NOTE.—"Large telephone carriers" comprises a group of 90 carriers, each having annual operating revenues of approximately $250,000 or more. "Large telegraph carriers" comprises 3 land-line telegraph carriers, 5 ocean-cable carriers, and 9 radiotelegraph carriers, each having annual operating revenues of approximately $50,000 or more.

NUMBER OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS AS OF DECEMBER 31, 1937, AND DECEMBER 31, 1938

CHART NO. 10



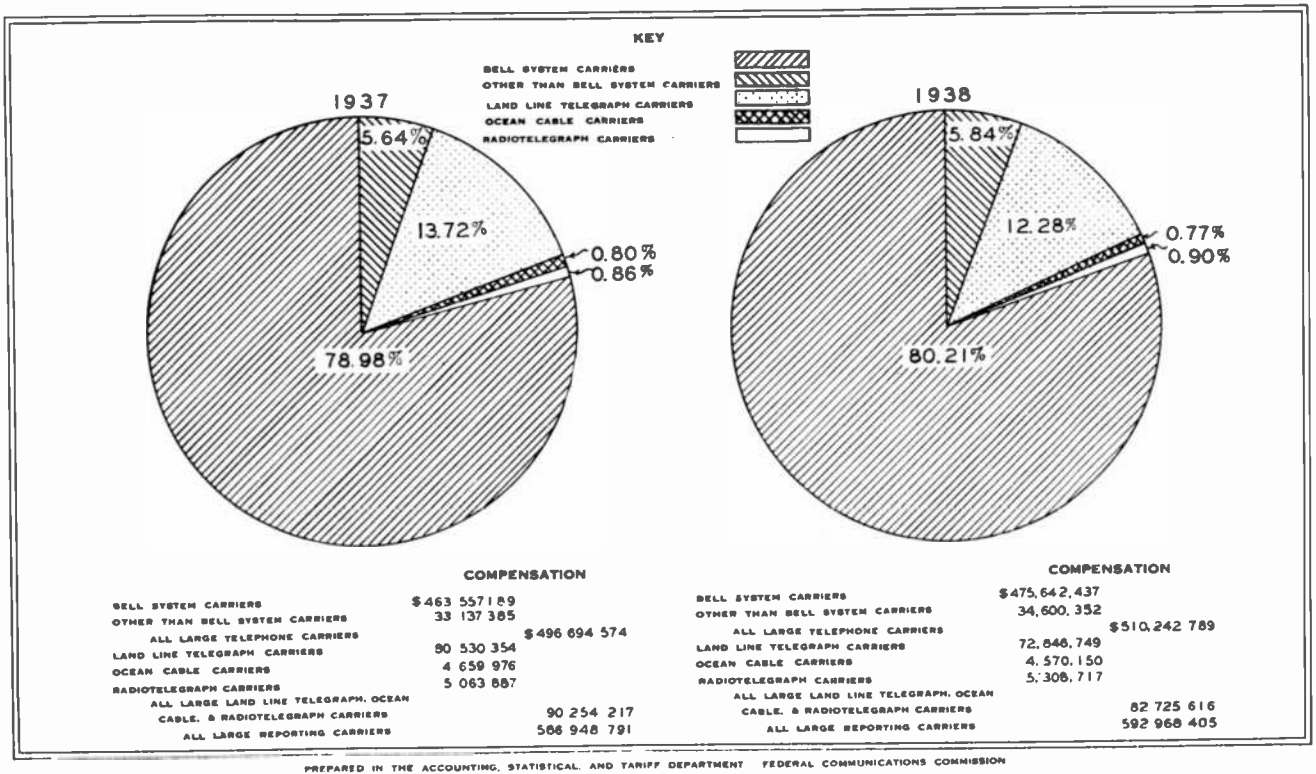
1937 EMPLOYEES		
BELL SYSTEM CARRIERS	275,306	
OTHER THAN BELL SYSTEM CARRIERS	26,465	
ALL LARGE TELEPHONE CARRIERS		301,771
LAND LINE TELEGRAPH CARRIERS	65,850	
OCEAN CABLE CARRIERS	3,758	
RADIOTELEGRAPH CARRIERS	3,077	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		72,685
ALL LARGE REPORTING CARRIERS		374,456

1938 EMPLOYEES		
BELL SYSTEM CARRIERS	266,884	
OTHER THAN BELL SYSTEM CARRIERS	26,545	
ALL LARGE TELEPHONE CARRIERS		293,429
LAND LINE TELEGRAPH CARRIERS	58,806	
OCEAN CABLE CARRIERS	3,563	
RADIOTELEGRAPH CARRIERS	3,007	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		65,476
ALL LARGE REPORTING CARRIERS		358,905

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT, FEDERAL COMMUNICATIONS COMMISSION.

TOTAL ANNUAL COMPENSATION OF EMPLOYEES IN SERVICE OF ALL LARGE REPORTING COMMUNICATION CARRIERS FOR THE YEARS 1937 AND 1938

CHART NO. 11



1937 COMPENSATION		
BELL SYSTEM CARRIERS	$463 557 189	
OTHER THAN BELL SYSTEM CARRIERS	33 137 385	
ALL LARGE TELEPHONE CARRIERS		$496 694 574
LAND LINE TELEGRAPH CARRIERS	80 530 354	
OCEAN CABLE CARRIERS	4 659 976	
RADIOTELEGRAPH CARRIERS	5 063 887	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		90 254 217
ALL LARGE REPORTING CARRIERS		586 948 791

1938 COMPENSATION		
BELL SYSTEM CARRIERS	$475,642,437	
OTHER THAN BELL SYSTEM CARRIERS	34,600,352	
ALL LARGE TELEPHONE CARRIERS		$510,242 789
LAND LINE TELEGRAPH CARRIERS	72,846,749	
OCEAN CABLE CARRIERS	4,570,150	
RADIOTELEGRAPH CARRIERS	5,308,717	
ALL LARGE LAND LINE TELEGRAPH, OCEAN CABLE, & RADIOTELEGRAPH CARRIERS		82 725 616
ALL LARGE REPORTING CARRIERS		592 968 405

PREPARED IN THE ACCOUNTING, STATISTICAL, AND TARIFF DEPARTMENT FEDERAL COMMUNICATIONS COMMISSION

[C] STATISTICS CONCERNING INTERCORPORATE RELATIONS

Intercorporate relations of telephone and telegraph carriers and controlling companies.—The statistical data shown in table XXXVIII relate to the intercorporate relations of all telephone, wire-telegraph, and radiotelegraph carriers, and controlling companies filing reports with the Commission for the year 1938. The independent or top companies are arranged in alphabetical order and are shown flush with the margin. Each subsidiary is indented beneath the controlling company to indicate the intercorporate relationship at the close of the year. The showing of the intercorporate relations between the carriers and the controlling companies is based on ownership of more than 50 percent of the voting capital stock. An alphabetical list of all the companies is shown in the index following this summary. The number shown in the first column of the table preceding the name of each company corresponds with the reference number shown in the index.

The operating revenues of all telephone, wire-telegraph, and radiotelegraph carriers reporting for the year 1938, together with system totals, are shown in the fourth column.

TABLE XXXVIII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938*

No.	Name of company	Type of company [1]	Operating revenues of carriers
1	American Telephone & Telegraph Co	Telephone (A)	$103,374,191
2	Bell Telephone Co. of Pennsylvania, The	do	68,558,521
3	Chesapeake & Potomac Telephone Co., The	do	11,379,850
4	Chesapeake & Potomac Telephone Co. of Baltimore City, The.	do	15,079,088
5	Chesapeake & Potomac Telephone Co. of Virginia, The	do	9,958,733
6	Chesapeake & Potomac Telephone Co. of West Virginia, The.	do	6,392,805
7	Diamond State Telephone Co., The	do	2,308,744
8	Illinois Bell Telephone Co	do	87,186,670
9	Crown Point Telephone Co., The	Telephone (B)	61,454
10	Indiana Bell Telephone Co	Telephone (A)	13,120,905
11	Michigan Bell Telephone Co	do	40,116,216
12	Mountain States Telephone & Telegraph Co., The	do	24,360,802
13	New England Telephone & Telegraph Co	do	74,299,427
14	Eastern Telephone & Telegraph Co. (Maine)	do	128,971
15	Moosehead Telephone & Telegraph Co	Telephone (B)	91,059
16	Westerly Automatic Telephone Co	Telephone (A)	147,972
17	Western New England Telephone Co	Telephone (B)	90,560
18	White River Valley Telephone Co	do	54,072
19	New Jersey Bell Telephone Co	Telephone (A)	48,523,103
20	New York Telephone Co	do	204,929,455
21	Northwestern Bell Telephone Co	do	33,882,948
22	Dakota Central Telephone Co	do	1,226,786
23	Tri-State Telephone & Telegraph Co., The	do	6,343,880
24	Nicollet County Telephone & Telegraph Co	Telephone (B)	58,702
25	Ohio Bell Telephone Co., The	Telephone (A)	41,669,721
26	Pacific Telephone & Telegraph Co., The	do	68,363,290
27	Bell Telephone Co. of Nevada	do	1,080,761
28	Southern California Telephone Co	do	46,532,096
29	Southern Bell Telephone & Telegraph Co	do	64,264,739
30	Christian-Todd Telephone Co	do	206,016
31	Southwestern Bell Telephone Co	do	87,484,339
32	United Telephone Co., The (Kansas) [2]	do	1,731,699
33	Wisconsin Telephone Co	do	17,659,673
	System total		1,080,667,248
34	American Utilities Service Corporation	Holding (N)	
35	Bluefield Telephone Co., The	Telephone (A)	478,342
36	Ashtabula Telephone Co., The [3]	do	183,642
37	Canadian National Railway Co	Holding (N) [4]	
38	Canadian Northern Railway Co., The	do	
39	Canadian National Telegraph Co	do [4]	
40	Great North Western Telegraph Co. of Canada, The. [5]	Wire-telegraph	(6)
41	Minnesota & Manitoba Railroad, The [7]	do	5,628
42	Canadian Pacific Railway Co. (lines in United States)	do	5,189
43	Carolina Telephone & Telegraph Co	Telephone (A)	1,595,724
44	Central Kansas Telephone Co., Inc., The [8]	do	146,879
45	Champaign Telephone Co., The	Telephone (B)	79,734

See footnotes at end of table.

TABLE XXXVIII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938*—Continued

No.	Name of company	Type of company	Operating revenues of carriers
46	Chesapeake & Ohio Railway Co., The	Holding (N)[4]	
47	Pere Marquette Railway Co	do	
48	Central Land Co	do.[4]	
49	Pere Marquette Radio Corporation	Radiotelegraph	$10,172
50	Chicago, Milwaukee, St. Paul & Pacific Railroad Co. (in trusteeship).	Holding (N)	
51	Continental Telegraph Co	Wire-telegraph	11,235
52	Cincinnati & Suburban Bell Telephone Co., The	Telephone (A)	10,296,991
53	Citizens Utilities Co	Holding (N)	
54	Public Utilities California Corporation	Telephone (A)	163,843
55	City of Seattle, Harbor Department	Radiotelegraph	4,625
56	Colorado Fuel Iron Corporation	Holding (N)[4]	
57	Colorado & Wyoming Telegraph Co., The	Wire-telegraph	12,807
58	Columbia Utilities Co	(4)	
59	Interstate Telephone & Telegraph Co. (Oregon)[9]	Wire-telegraph	(6)
60	Colusa County Telephone Co	Telephone (B)	56,832
61	Commercial Pacific Cable Co.[10]	Wire-telegraph	720,081
62	Cuban American Telephone & Telegraph Co.[11]	Telephone (A)	176,947
63	Del Rio & Winter Garden Telephone Co	do	262,286
64	Dollar Co., The Robert	Holding (N)	
65	Globe Wireless Ltd	Radiotelegraph	465,258
66	Firestone Tire & Rubber Co., The	Holding (N)[4]	
67	Firestone Plantations Co	do	
68	United States-Liberia Radio Corporation	Radiotelegraph	72,466
69	First-Chicago Corporation	Holding (N)[4]	
70	North-Western Indiana Telephone Co., The [12]	Telephone (A)	1,798
71	French Telegraph Cable Co., The [13]	Wi e-telegraph	[6] 831,075
72	General & Telephone Investments, Inc	Holding (L)[4]	
73	Gary & Co., Theodore	do	
74	Telephone Bond & Share Co	do	
75	Continental Telephone Co	do	
76	Nebraska Continental Telephone Co.[14]	Telephone (A)	240,351
77	Nebraska Continental Telephone Corporation [15]	do	75,273
78	Home Telephone & Telegraph Co., The (Indiana)	do	1,362,847
79	Imperial Securities Co	Holding (L)	
80	Telephone Securities, Inc	do	
81	Keystone Telephone Co. of Philadelphia	Telephone (A)	1,912,506
82	Eastern Telephone & Telegraph Co. (New Jersey).	do	181,644
	System total		3,772,621
83	General Telephone Corporation	Holding (L)	
84	General Telephone Tri Corporation [16]	do	
85	Interstate Telephone Co	Telephone (A)	847,623
86	Michigan Associated Telephone Co	do	1,247,257
87	Southwestern Associated Telephone Co	do	1,235,771
88	Indiana Associated Telephone Corporation	do	1,522,921
89	Ohio Associated Telephone Co	do	738,889
90	Pennsylvania Telephone Corporation	do	2,371,883
91	United Telephone Co. (Delaware)	Holding (L)	
92	Tri-State Associated Telephone Corporation	Telephone (B)	101,030
	System total		8,065,374
93	Greenville Telephone Co., The	Telephone (B)	105,565
94	Home Telephone & Telegraph Co. of Virginia	do	119,952
95	Huron Portland Cement Co	Holding (N)[4]	
96	Huron Transportation Co	do	
97	Michigan Wireless Telegraph Co.[17]	Radiotelegraph	5,485
98	Inter-Mountain Telephone Co	Telephone (A)	696,907
99	International Telephone & Telegraph Corporation	Holding (L)	
100	All America Cables & Radio, Inc.[18]	Wire-telegraph	4,732,962
101	Postal Telegraph & Cable Corporation (in trusteeship)	Holding (L)	
102	Associated Companies, The (in trusteeship)[19]	do	
103	Commercial Cable Co., The	Wire-telegraph	3,789,381
	Commercial Pacific Cable Co.[10]		
104	Mackay Radio & Telegraph Co. (California)	Radiotelegraph	1,060,591
105	Postal Telegraph-Cable Co. (land-line system)	Wire-telegraph	21,089,095
	Interstate Telephone & Telegraph Co. (Oregon).[20]	do	(6)
106	Radio Communication Co., Inc.[21]	Holding (L)	
107	Mackay Radio & Telegraph Co. (Delaware)	Radiotelegraph	990,855
	System total		31,662,884

See footnotes at end of table.

TABLE XXXVIII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938*—Continued

No.	Name of company	Type of company	Operating revenues of carriers
108	Investments & Utilities Corporation	Holding (L)	
109	Loveland & Co., Ltd	do	
110	West Coast Utilities Corporation	do	
111	West Coast Telephone Co	Telephone (A)	$1,411,034
112	Investors Telephone Co	Holding (L)	
113	Platte Valley Telephone Corporation	Telephone (A)	229,373
114	Kansas State Telephone Co., The	Telephone (B)	48,633
115	Kittanning Telephone Co., The [1]	Telephone (A)	256,724
116	Lee Telephone Co	do	142,733
117	Lincoln Telephone & Telegraph Co., The (Delaware)[3]	do	2,666,315
118	Mayor and City Council of Baltimore, Md	Radiotelegraph	4,351
119	Michigan Alkali Co	Holding (N)[4]	
120	Wyandotte Transportation Co	do	
	Michigan Wireless Telegraph Co.[17]	Radiotelegraph	
121	Mutual Telephone Co.[21]	Telephone (A)	2,034,266
122	Nevada-California Electric Corporation, The	Holding (N)	
123	Interstate Telegraph Co	Telephone (A)	169,550
124	Norfolk & Carolina Telephone & Telegraph Co., The	do	147,679
125	North-West Telephone Co	do	189,603
126	Olympic Radio Co	Radiotelegraph	1,724
127	Oregon-Washington Telephone Co	Telephone (A)	217,892
128	Oxnard Home Telephone Co	Telephone (B)	74,589
129	Ozark Central Telephone Co	Telephone (A)	170,500
130	Palestine Telephone Co	Telephone (B)	78,381
131	Phillips Petroleum Co	Holding (N)	
132	Western Radio Telegraph Co	Radiotelegraph	33,418
133	Press Wireless, Inc	do	482,490
134	Radio Corporation of America	Holding (L)	
135	R. C. A. Communications, Inc	Radiotelegraph	5,367,053
136	Radiomarine Corporation of America	do	1,154,379
	System total		6,521,432
137	Rochester Telephone Corporation [22]	Telephone (A)	5,145,298
138	San Angelo Telephone Co., The	do	543,615
139	Santa Paula Home Telephone Co	Telephone (B)	56,817
140	Socony-Vacuum Oil Co., Incorporated	Holding (N)	
141	Magnolia Petroleum Co	do	
142	Magnolia Radio Corporation	Radiotelegraph	4,868
143	South Porto Rico Sugar Co. (New Jersey)	Holding (N)	
144	South Porto Rico Sugar Co. (of Puerto Rico)	Radiotelegraph	7,190
145	Southeast Missouri Telephone Co	Telephone (A)	758,318
146	Southern New England Telephone Co., The	do	18,036,993
147	Southwest Telephone Co., The (Kansas)	do	179,780
148	Standard Oil Co. (New Jersey)	Holding (N)[4]	
149	Southern Radio Corporation [24]	Radiotelegraph	19,765
150	Standard Power & Light Corporation	Holding (N)[4]	
151	Standard Gas & Electric Co	do.[4]	
152	Northern States Power Co. (Delaware)	do.[4]	
153	Northern States Power Co. (Minnesota)[3]	Telephone (A)	112,971
154	Tidewater Wireless Telegraph Co	Radiotelegraph	4,514
155	Two States Telephone Co	Telephone (A)	323,104
156	United Fruit Co	Holding (N)	
157	Tropical Radio Telegraph Co	Radiotelegraph	659,030
158	United States Rubber Co	Holding (N)[4]	
159	Central Idaho Telegraph & Telephone Co.[25]	Wire-telegraph	873
160	United States Steel Corporation	Holding (N)[4]	
161	Bradley Transportation Co	do	
162	Central Radio Telegraph Co	Radiotelegraph	5,937
163	United Telephone & Electric Co., The (in trusteeship)[26]	Holding (L)	
164	New Jersey Telephone Co	Telephone (A)	152,759
165	United Telephone & Telegraph Co., The	Holding (L)	
166	American Telephone Co., The	Telephone (A)	457,849
167	United Telephone Co., The (Missouri)	do	377,780
168	United Telephone & Telegraph Corporation	Holding (L)	
169	Interstate Telephone & Telegraph Co. (Indiana)	do	
170	Ohio Telephone Service Co	Telephone (A)	232,394
171	United Telephone Companies, Inc	do	727,041
172	United Telephone Investment Corporation, The	Holding (L)	
173	Union Telephone Co. (Indiana)	Telephone (A)	177,914
174	United Telephone Co. of Pennsylvania, The	do	887,595
	System total		3,013,332

See footnotes at end of table.

TABLE XXXVIII.—*Summary showing the intercorporate relations of communication carriers and the controlling companies reporting to the Commission for the year 1938*—Continued

No.	Name of company	Type of company	Operating revenues of carriers
175	United Telephone Co., The (Texas)	Telephone (B)	$97,293
176	Utilities Holding Corporation	Holding (L)	
177	Middle States Utilities Co. (Delaware)	do	
178	Middle States Utilities Co. of Iowa	Telephone (B)	85,392
179	Middle States Utilities Co. of Missouri	Telephone (A)	147,563
	System total		232,955
180	Victor-American Fuel Co., The	Holding (N)	
181	Mountain Telegraph Co., The	Wire-telegraph	4,145
182	Wabash Railway Co. (in receivership)	Holding (N)	
183	Ann Arbor Railroad Co., The (in receivership)	do	
184	Wabash Radio Corporation	Radiotelegraph	12,066
185	Western Arkansas Telephone Co	Telephone (B)	78,740
186	Western Union Telgraph Co., The	Wire-telegraph	91,712,401
	Great North Western Telegraph Co. of Canada, The [37]	do	(6)
187	Mexican Telegraph Co	do	373,591
	System total		92,085,992

[1] Symbols in parentheses indicate:
(A) Class A telepbone carrier baving average annual operating revenues exceeding $100,000.
(B) Class B telephone carrier having average annual operating revenues exceeding $50,000, but not more than $100,000.
(L) Holding company having large interests in carriers engaged in wire or radio communications.
(N) Holding company having nominal interests in the communications industry.

[3] Merged with Southwestern Bell Telephone Co., Dec. 31, 1938.
[3] Subject only to sections 201-205 of the act.
[4] Files no report. Inserted to show intercorporate relation of subsidiary companies.
[5] Leased by Western Union Telegraph Co. (No. 186).
[6] None reported. Lessor company.
[7] Telegrapb facilities leased to and operated by the Canadian Northern Ry. Co.
[8] Formerly The Kansas Telephone Co., which company was reorganized and its name changed to The Central Kansas Telephone Co., Inc., Jan. 1, 1938. Subject only to secs. 201-205 of the act.
[9] Leased by the Postal Telegraph-Cable Co. (land-line system) (No. 195).
[10] The Commercial Pacific Cable Co. is closely affiliated with The Associated Companies.
[11] The Cuban American Telephone & Telegraph Co. owns and operates telephone cables between Havana, Cuba, and Key West, Fla.
[12] Purchased by the Indiana Associated Telephone Corporation Dec. 1, 1937, with the exception of 3 toll circuits, which were purchased by the Illinois Bell Telephone Co. June 15, 1938. Ceased operations June 15, 1938.
[13] Operating revenues for the New York City office, as shown on the December 1938 monthly report, are $367,940.
[14] The Nebraska Continental Telephone Co. acquired and operated, Jan. 1, 1938, part of the property, and on Apr. 1, 1938, the remaining property of the Nebraksa Continental Telephone Corporation.
[15] The Nebraska Continental Telephone Corporation ceased operations Mar. 31, 1938.
[16] Successor to the Indiana Central Telephone Co.
[17] Controlled jointly by the Huron Transportation Co. (No. 96) and the Wyandotte Transportation Co. (No. 120) through ownership of the entire capital stock, each company owning 50 percent.
[18] Formerly the All-America Cables, Inc., which company changed its name Aug. 24, 1938.
[19] Formerly The Mackay Companies, which company changed its name Jan. 4, 1938, due to reorganization.
[20] Operateed under lease by the Postal Telegraph-Cable Co. (land-line ystem). For control see No. 59.
[21] Inactive company; files no report. Inserted to show intercorporate relation of subsidiary carrier.
[22] The Mutual Telephone Co. is located in Hawaii.
[23] Bell interests own 33.5 percent of the common voting stock, 1.47 percent of the first preferred nonvoting stock and the entire second preferred stock, which has equal voting power with the common stock, but cannot vote for election of directors or the adoption or amendment of bylaws, unless or until there is a default in the payment of dividends on the second preferred, in which event it shall have full voting power.
[24] Operating revenues cover full year period, although United States operations ceased May 31, 1938.
[25] Operated by the Union Pacific R. R.
[26] Jointly controlled by the United Trust Co. as trustee for Brown Memorial Foundation and C. L. Brown estate.
[27] Lines in the United States include New England and northern New York State, leased by the Western Union Telegraph Co. For control see No. 40.

INDEX PERTAINING TO INTERCORPORATE RELATIONS

[For use in connection with table XXXVIII]

APPENDIX E

TABLE I–A.—*Report of broadcast section for fiscal year ending June 30, 1939*

APPLICATIONS RECEIVED

Formal:		
Broadcast	1,087	
Relay broadcast (low-frequency)	175	
Relay broadcast (high-frequency)	174	
High-frequency broadcast	79	
Facsimile broadcast	21	
International broadcast	34	
Developmental broadcast	17	
Noncommercial educational broadcast	10	
Television broadcast	55	
Total		1,652
Renewals:		
Broadcast	1,796	
Relay broadcast (low-frequency)	151	
Relay broadcast (high-frequency)	260	
High-frequency broadcast	32	
Facsimile broadcast	9	
International broadcast	10	
Developmental broadcast	12	
Noncommercial educational broadcast	1	
Television broadcast	19	
Total		2,290
Informals:		
Broadcast	1,650	
Relay broadcast (low-frequency)	74	
Relay broadcast (high-frequency)	374	
High-frequency broadcast	76	
Facsimile broadcast	16	
International broadcast	15	
Developmental broadcast	3	
Noncommercial educational broadcast	1	
Television broadcast	7	
Total		2,216
Under order No. 28, paragraph 2		1,176
Grand total		7,334

TABLE II–A.—*Report of broadcast section for fiscal year ending June 30, 1939*

AUTHORIZATIONS ISSUED

Formal:		
Broadcast	642	
Relay broadcast (low-frequency)	122	
Relay broadcast (high-frequency)	136	
High-frequency broadcast	36	
Facsimile broadcast	8	
International broadcast	22	
Developmental broadcast	6	
Noncommercial educational broadcast	5	
Television broadcast	18	
Total		995
		171

TABLE II–A.—*Report of broadcast section for fiscal year ending June 30, 1939*—Continued

AUTHORIZATIONS ISSUED—continued

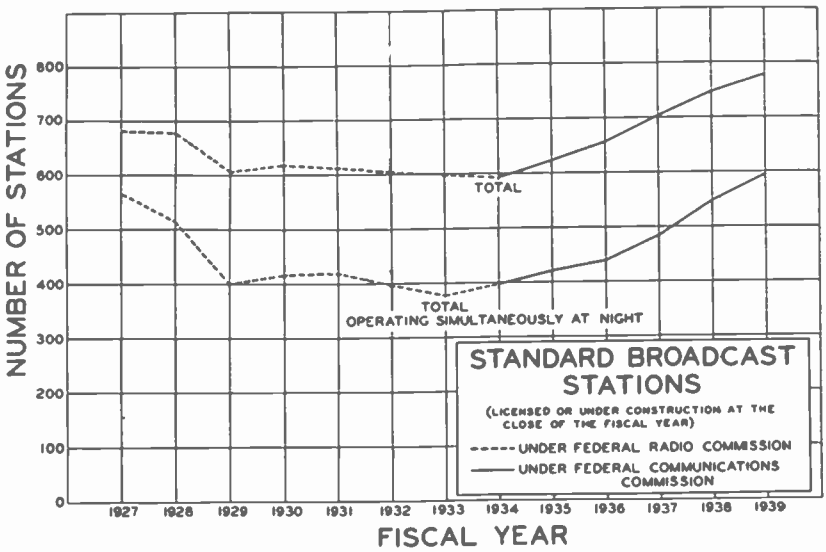
Renewals:		
Broadcast	1,631	
Relay broadcast (low-frequency)	162	
Relay broadcast (high-frequency)	328	
High-frequency broadcast	94	
Facsimile broadcast	10	
International broadcast	17	
Developmental broadcast	17	
Noncommercial educational broadcast	0	
Television broadcast	10	
Total		2,269
Special authorizations:		
Broadcast	1,220	
Relay broadcast (low-frequency)	58	
Relay broadcast (high-frequency)	370	
High-frequency broadcast	75	
Facsimile broadcast	14	
International broadcast	15	
Developmental broadcast	3	
Noncommercial educational broadcast	1	
Television broadcast	4	
Total		1,760
Informals:		
Broadcast	430	
Relay broadcast (low-frequency)	16	
Relay broadcast (high-frequency)	4	
High-frequency broadcast	1	
Facsimile broadcast	2	
International broadcast	0	
Developmental broadcast	0	
Noncommercial educational broadcast	0	
Television broadcast	3	
Total		456
Under order No. 28, paragraph 2		1,176
Grand total		6,656

TABLE III–A.—*Experimental broadcast stations for fiscal year ending June 30, 1939*

Class of station	As of July 1, 1938	New	Deleted	As of July 1, 1939
High-frequency broadcast	48	6	8	46
Developmental broadcast	14	3	5	12
Television	19	7	3	23
International	13	2	1	14
Facsimile	6	7	1	12
Low-frequency relay	143	64	8	199
High-frequency relay	266	47	38	275
Noncommercial educational	1	1	0	2
Total	510	137	64	583

TABLE IV–A.—*Standard broadcast stations (550 to 1600 kc.) licensed or under construction at the close of the fiscal year ending June 30, 1939*

Class of station	As of July 1, 1938	New	Deleted	Total
Broadcast	743	39	8	774
Special broadcast	4	0	0	4
Total	747	39	8	778


NUMBER OF STATIONS
800
700
600
500
400
300
200
100
0
TOTAL
TOTAL
OPERATING SIMULTANEOUSLY AT NIGHT
STANDARD BROADCAST STATIONS
(LICENSED OR UNDER CONSTRUCTION AT THE CLOSE OF THE FISCAL YEAR)
----- UNDER FEDERAL RADIO COMMISSION
—— UNDER FEDERAL COMMUNICATIONS COMMISSION
1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
FISCAL YEAR

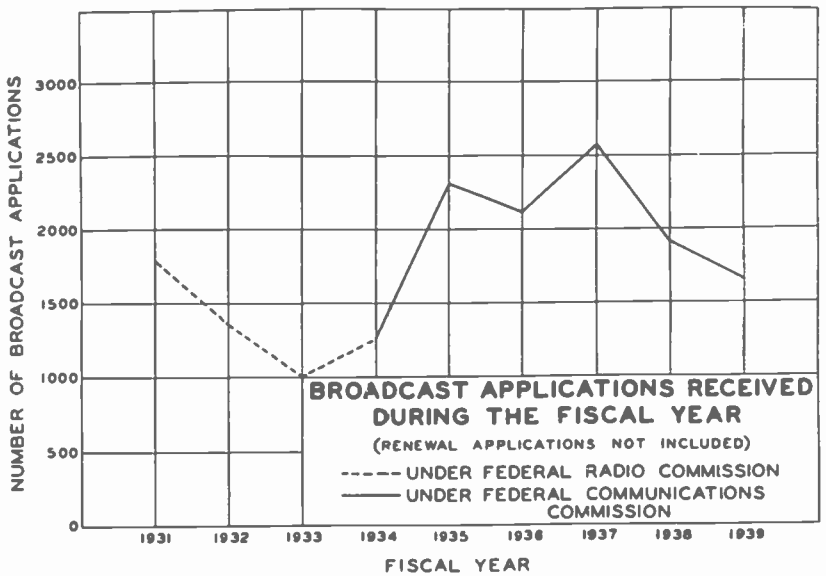

NUMBER OF BROADCAST APPLICATIONS
3000
2500
2000
1500
1000
500
0
BROADCAST APPLICATIONS RECEIVED DURING THE FISCAL YEAR
(RENEWAL APPLICATIONS NOT INCLUDED)
----- UNDER FEDERAL RADIO COMMISSION
—— UNDER FEDERAL COMMUNICATIONS COMMISSION
1931 1932 1933 1934 1935 1936 1937 1938 1939
FISCAL YEAR

TABLE V-A.—*New standard stations authorized for fiscal year ending June 30, 1939*

Call letters	Applicant and location	Frequency	Power	Hours of operation
		Kilocycles	*Watts*	
KDRO....	Albert S. and Robert A. Drohlich, doing business as Drohlich Bros., Sedalia, Mo.	1500	100 250-LS	Unlimited.
KFDA.....	Amarillo Broadcasting Corporation, Amarillo, Tex.	1500	100	Do.
KOVO.....	Clifton A. Tolboe, trading as Citizens Voice and Air Show, Provo, Utah.	1210	100 250-LS	Do.
KTOH....	Garden Island Publishing Co., Ltd., Lihue, T. H.	1500	100 250-LS	Do.
KTSW....	Emporia Broadcasting Co., Inc., Emporia, Kans.	1370	100	Daytime.
KVAN....	Vancouver Radio Corporation, Vancouver, Wash.	880	250	Do.
KVWC....	R. H. Nichols, W. H. Wright and Stewart Hatch, a partnership doing business as The Northwestern Broadcasting Co., Vernon, Tex.	1500	100	Unlimited.
KWAL....	Chester Howarth and Clarence Berger, between Wallace and Kellogg, Idaho.	1420	100 250-LS	Do.
KXOX....	Sweetwater Radio, Inc., Sweetwater, Tex...	1210	250	Daytime.
WBAB....	Press Union Publishing Co., Atlantic City, N. J.	1200	100 250-LS	Unlimited.
WBTH....	Williamson Broadcasting Corporation, Williamson, W. Va.	1370	100	Daytime.
WCNC....	Aubrey G. McCabe and Trim W. Aydlett, doing business as Albemarle Broadcasting Co., Elizabeth City, N. C.	1370	100 250-LS	Unlimited.
WCOS.....	Carolina Advertising Corporation, Columbia, S. C.	1370	100 250-LS	Do.
WFNC....	W. C. Ewing and Harry Layman, doing business as Cumberland Broadcasting Co., Fayetteville, N. C.	1340	250	Daytime.
WFVA....	Fredericksburg Broadcasting Corporation, Fredericksburg, Va.	1260	250	Do.
WGBR....	Eastern Carolina Broadcasting Co., west of Goldsboro, N. C.	1370	100	Unlimited.
WGKV....	Kanawha Valley Broadcasting Co., Charleston, W. Va.	1500	100	Do.
WGNC....	F. C. Todd, Gastonia, N. C.....	1420	100 250-LS	Do.
WHMA...	Harry M. Ayers, Anniston, Ala.....	1420	100	Daytime.
WINN.....	Kentucky Broadcasting Corporation, Louisville, Ky.	1210	100 250-LS	Unlimited.
WISE.....	The Asheville Daily News (Harold H. Thoms, owner), Asheville, N. C.	1370	100	Do.
WJHL.....	W. Hanes Lancaster and J. W. Birdwell, doing business as Johnson City Broadcasting Co., Johnson City, Tenn.	1200	100 250-LS	Do.
WJHP.....	The Metropolis Co., Jacksonville, Fla.....	1290	250	Do.
WJLS.....	Joe L. Smith, Jr., Beckley, W. Va.....	1210	100 250-LS	Do.
WKIN.....	Kingston Broadcasting Corporation, Kingston, N. Y.	1500	100	Daytime.
WLBJ.....	Bowling Green Broadcasting Co., Bowling Green, Ky.	1310	100 250-LS	Unlimited.
WMAM...	M and M Broadcasting Co., Marinette, Wis.	570	250	Daytime
WMOB....	S. B. Quigley, Mobile, Ala.....	1200	100	Do.
WMRO...	Martin R. O'Brien, Aurora, Ill.....	1250	250	Do.
WPIV.....	Petersburg Newspaper Corporation, Petersburg, Va.	1210	100 250-LS	Unlimited—except Sunday, when WBBL operates.
WRAL....	Capitol Broadcasting Co., Inc., Raleigh, N. C.	1210	100 250-LS	Unlimited.
WRKL....	P. W. Spencer, Rock Hill, S. C.....	1500	100	Daytime.
WRSR....	Panama City Broadcasting Co., Panama City, Fla.	1200	100 250-LS	Unlimited.
WSKB....	McComb Broadcasting Corporation, McComb, Miss.	1200	100	Daytime.
WSTP.....	Piedmont Broadcasting Corporation, Salisbury, N. C.	1500	100 250-LS	Unlimited.
WTMA....	Y. W. Scarborough and J. W. Orvin, doing business as Atlantic Coast Broadcasting Co., Charleston, S. C.	1210	100 250-LS	Do.
WTMC....	John T. Alsop, Jr., Ocala, Fla.....	1500	100	Do.
WTRY....	Troy Broadcasting Co., Inc., Troy, N. Y....	950	1k	Daytime.
WTSP.....	Pinellas Broadcasting Co., St. Petersburg, Fla.	1370	100 250-LS	Unlimited.

TABLE VI-A.—*Standard broadcast stations deleted for fiscal year ending June 30, 1939*

Call letters	Grantee and location	Date of deletion
KDNC	Democrat-News Co., Inc., Lewiston, Mont. (Construction permit expired Dec. 3, 1938, and retired to closed files.)	Jan. 24, 1939
KGCI	Clarence A. Berger and Saul S. Freeman, Coeur d'Alene, Idaho. (Application for modified construction permit denied as in default Jan. 16, 1939.)	Feb. 20, 1939
KGVL	Hunt Broadcasting Association, Fred Horton, president, Greenville, Tex. (Application for modified construction permit dismissed as association dissolved Apr. 3, 1939.)	Apr. 23, 1939
WFAB	Dobs Memorial Radio Fund, Inc., New York, N. Y. (Time surrendered to WEVD Nov. 7, 1938.)	Nov. 7, 1938
WHAL	Harold F. Gross and Edmund C. Shields, Lansing, Mich. (Order of Feb. 9, 1937, granting application vacated Nov. 28, 1938, in accordance with mandate of court of appeals.)	Nov. 28, 1938
WHEF	Attala Broadcasting Corporation, Kosciusko, Miss. (Renewal application denied as in default Oct. 31, 1938, Nov. 25, 1938, amended order to make effective date Oct. 25, 1938.)	Nov. 14, 1938
WLMU	Lincoln Memorial University, Middlesboro, Ky. (Construction permit surrendered and application retired to closed files July 6, 1938.)	July 6, 1938
WRKL	P. W. Spencer, Rock Hill, S. C. (Construction permit canceled at request of applicant Apr. 24, 1939.)	Apr. 24, 1939

FURTHER STUDY OF SERVICE RENDERED BY STANDARD BROADCAST STATIONS[1]

(A) GENERAL

(a) CLASSES OF STATIONS

The existing regulations of the Commission provide for four general classes of regular broadcast stations, namely, clear-channel, high-power regional, regional, and local. Within these classes there are stations which are classified as unlimited time, limited time, daytime, and shared time or specified hours. Frequencies are assigned to each major class of station—40 to clear channel stations, 4 to high power regional stations, 40 to regional stations, and 6 to local stations. Shared time or specified hour stations may be of any class, but it also has been the practice to assign limited time and some of the daytime or specified hour stations to channels which are clear at night, and therefore in general these latter should be classified as regional rather than clear channel.

At present, clear-channel stations generally utilize powers as high as 50 kilowatts with the exception of one which is using, experimentally, a power of 500 kilowatts (application for extention denied 2-6-39, effective 3-1-39). Except where duplicated by special experimental authorization, only one clear-channel station operates on each specific frequency assignment at nighttime so as to make possible the rendering of service over a wide area and thus in the aggregate these clear-channel stations reach a large percentage of the population of the country who would not otherwise receive broadcast service. It has been estimated that 40 percent of the population of the country is dependent upon clear-channel stations for service at nighttime. (See Appendix F of the Fourth Annual Report for detailed analysis of the primary service rendered by standard broadcast stations.) In the daytime by reason of propagation conditions with powers even as high as 50 kilowatts the total number of clear-channel stations cannot render service to wide areas. In order to partially overcome this defect the Commission has in the past taken advantage of the propagation conditions in the daytime to assign stations, in various parts of the country, on the same frequencies as clear-channel stations; and this coupled with the fact that regional and local stations are subject to less mutual interference in daytime than at nighttime enables the rural population to receive as much daytime service as it is practicable under the existing limitations of the art and the existing regulations of the Commission as well as the limitations imposed by lack of financial support in small communities.

Regional stations are generally located in cities and towns and render service to the communities in which such stations are located. These stations at the present are limited to power of 1 kilowatt at nighttime and to 5 kilowatts in the

[1] Compiled from the "Report of the Committee on Proposed Rules and Regulations Governing Standard Broadcast Stations, April 1, 1939."

[2] While the information set forth herein is as of May 1, 1938, the changes since that date are insufficient to materially change the conditions or conclusions.

daytime except that eight high-power regional stations utilize powers of 5 kilowatts or more both daytime and nighttime. The service areas of regional stations are necessarily limited at night by reason of mutual interference from stations using the same frequency.

Local stations are stations which use the power of 100 watts at night and 100 or 250 watts in the daytime and are extremely useful for rendering service to smaller communities and portions of the larger metropolitan districts. Their service areas are necessarily very limited by reason of mutual interference at night and in the daytime by reason of lack of power.

It is through the medium of regional and local stations that the various communities throughout the country have an excellent means for local self-expression by radio. Also, it is through the medium of these classes of stations that so much excellent broadcasting service is rendered to the urban and suburban population of this Nation. In addition thereto these regional and local stations render service, particularly in the daytime, to the rural population who live near cities or towns.

Generally speaking, regional and local stations afford a medium of communication readily adapted to the variable needs of many communities throughout the country. Such an application of radio to the service of the public should receive every encouragement possible from the Federal regulatory body because it affords an excellent means of providing numerous communities of the Nation with instrumentalities for local self-expression by radio. However, in accomplishing this result, the Commission should not lose sight of the necessity of providing service to remote or rural listeners in all sections of the Nation in a manner conforming with the variable interests of the public in the different sections of the country. The Commission should also not lose sight of the fact that clear-channel stations which must chiefly be relied upon to furnish rural service, also have their importance as means for self-expression, in terms, however, of larger geographical sections of the country. Some metropolitan centers, furthermore, when nearby urban and suburban centers are taken into consideration, are so large that satisfactory coverage over the entire area cannot ordinarily be had from other than stations of relatively high power.

(B) NETWORKS

The testimony showed that under existing conditions many stations operating as independent units do not have available to the many appreciable sources of talent. If left to their own devices they are dependent upon purely local talent, largely amateur in character, and upon program material available through use of phonograph records or electrical transcriptions made especially for broadcasting use. However, many of these stations procure a substantial portion of their programs over land wire from distant talent points. These latter stations are called "network stations." At the present time there are 3 national chain companites operating 4 coast-to-coast networks, and in addition there are 35 regional network groups. (See annex I.) This figure is subject to change because new networks are constantly being organized and old ones disbanded; and opinions differ as to what comprises a network.

Table I–B gives the estimated number of stations which, according to the Commission files of returns from stations, are affiliated with the 3 national and 35 regional networks. This includes stations owned by chain companies.

TABLE I–B

	Total	Unlimited time	Limited time	Shared time or specified hours	Daytime
Clear	51	[1] 32		19	
Regional	215	[2] 172	10	19	14
Local	105	91		7	7
Total	371	295	10	45	21

[1] Includes KGO, KJP, and WCFL.
[2] Includes KPMC, WBRY, and WBZA.

(C) REBROADCASTING

Another method of distributing programs that is now in the early stages of development is the rebroadcasting of the program of high-power stations. In this advantage is taken of special devices and conditions not available in the ordinary household to present locally the reproduced programs transmitted from a distant station. It is felt that while this method of program distribution has merit, it has not, as yet, sufficiently demonstrated either its practicability or the sustained benefits to be gained by the employment of such a method to discuss in great detail at this time.

(B) PHYSICAL SERVICE

(A) DISTRIBUTION OF CLASSES OF STATIONS

The distribution of facilities by classes of stations is indicated in table II–B which shows that as of May 1, 1938, there are 738 standard broadcasting stations of all classes. This table is self-explanatory.

TABLE II–B

	Total	Unlimited time	Limited time	Shared time or specified hours	Daytime
Clear	52	32	----------	20	----------
Regional	349	210	25	60	54
Local	337	220	----------	62	55
Total	738	462	25	142	109

Of significance to the Commission are the 276 stations which share time, operate only in daytime, or have limited or specified hours of operation. The subject is discussed in detail later in this report.

The present distribution of the various existing classes of stations to cities of various populations is indicated in table VII attached hereto. A summary of this distribution is given in table III–B.

The Commission, of necessity, is interested in the distribution of stations of all classes to States. This is given in table VIII attached hereto.

Chart 1 shows the distribution of broadcast stations by clear, regional, and local classification. All of the stations licensed or holding construction permits, as of May 1, 1938, are shown thereon, without regard to hours of operation, that is, unlimited, limited and share time, specified hours or daytime, except where two stations sharing time are located in the same city, in which event, only one dot indicates both such stations. Chart 2 shows the distribution of the population of the United States in accordance with the 1930 census. A comparison of these two exhibits shows that, in general, the density of stations follows quite closely the density of population and that the expensive higher-power stations are in general located in the larger centers of population. This seems to be the result of the automatic application of economic laws, and perhaps shows the greatest diversity between the application of economic laws pertaining to the business of broadcasting stations and the economic laws relating directly to actual social desirabilities; that is, in the areas where wide rural coverage is necessary generally low-power stations exist, whereas in the more densely populated sections where the necessary coverage is essentially urban and immediately surrounding rural sections, the higher-power stations exist.

TABLE III–B

Size of town	Number of cities in United States	Number of cities with Radio stations	Number of stations, including all classes—unlimited time and others								Total stations for population group	Percentage of total number of stations
			Clear		Regional		Local		Total			
			Unlimited	Others	Unlimited	Others	Unlimited	Others	Unlimited	Others		
Under 10,000	15,616	[1] 99	0	0	13	23	41	24	54	47	101	13.7
10,000 to 24,999	606	[2] 143	0	1	18	24	63	39	81	64	145	19.6
25,000 to 49,999	185	[3] 90	0	1	25	13	44	19	69	33	102	13.8
50,000 to 99,999	98	[3] 68	2	4	31	17	27	8	60	29	89	12.0
100,000 to 199,999	52	[2] [3] 48	4	4	41	15	25	7	70	26	96	13.0
200,000 to 299,999	16	16	3	3	27	7	7	3	37	13	50	6.8
300,000 to 399,999	7	7	3	1	14	7	2	3	19	11	30	4.1
400,000 to 499,999	5	5	3	1	9	3	1	2	12	7	19	2.6
500,000 and over	13	13	17	5	32	30	10	12	59	47	106	14.4
Total	16,598	[4] 489	32	20	210	139	220	117	462	276	738	100.0

[1] 3 cities in Alaska.
[2] 1 city in Hawaiian Islands.
[3] 1 city in Puerto Rico.
[4] In the continental United States there are 982 cities above 10,000, of which 597 have no stations and 385 cities have stations. However, from the tabulation of stations in cities of various population groups we have 390 cities above 10,000, with radio stations. This includes 5 outside the continental limits of the United States. These are Hilo, Hawaii, with a population of 19,468; Mayaguez, P. R., with a population of 37,060; Ponce, P. R., with a population of 53,430; San Juan, P. R., with a population of 114,715; Honolulu, Hawaii, with a population of 137,582.

(B) CITIES WITHOUT ADEQUATE FACILITIES

It was shown in the preliminary engineering report of January 11, 1937, and in the Social and Economic Report of July 1, 1937, that there was a need for improvement of physical service both from the standpoint of signal intensity to practically all areas as well as from the standpoint of availability of transmission facilities in various communities, also while about 62 and 43 percent of the area and 92 and 83 percent of the population of the continental United States has radio reception of some character day and night, respectively, there are many cities and towns which do not have transmission facilities of their own.

In the United States there are approximately 16,598 cities or towns. Of this number 15,616 have a population less than 10,000 each, 606 have a population between 10,000 and 25,000 each, and 376 have a population in excess of 25,000 each. Many of these towns are in metropolitan districts as described by the Bureau of Census and some are adjacent or contiguous to larger towns which are not included in the metropolitan districts, but between which there is some economic interdependence.

Differentiation is made between towns having population of less than 10,000 and those having population greater than 10,000, because the evidence seems to indicate conclusively that, in general, stations located in towns having a population less than 10,000 cannot expect to receive sufficient financial support to sustain a high quality program service over an extended period of time unless they are in the center of a distributed population having a purchasing power greater than the town's population alone would indicate.

As discussed further in this report, the Commission is also confronted with the problem of making an equitable allocation to States as well as communities, and in order that an equitable distribution can be made throughout the Nation, in which from a technical standpoint, each facility is capable of rendering a service to the community in which it is located, the Commission must take into considera-

tion the engineering limitations resulting from the relatively narrow portion of the radio spectrum assigned to broadcasting. This means that not all the cities or towns in the lower population bracket can be assigned radio stations unless the entire structure is to be jeopardized.

Of the foregoing total number (16,598 cities or towns in the continental United States) there are 597 towns each having a population in excess of 10,000 which do not have radio stations. Of this number 464 towns, each with a population between 10,000 and 25,000 and 133 with a population in excess of 25,000 are without radio stations. These towns are listed by States in table X attached hereto.

However, of these towns:

(1) Three hundred and twenty-four, or 54.3 percent, are within one of the 96 "metropolitan districts" specified by the Bureau of Census. Each of these districts has one or more radio stations.

(2) Seven, or 1.2 percent, are adjacent or contiguous to larger towns which have a radio station. These larger towns are not included in "metropolitan districts."

(3) One hundred and fifty-three, or 25.6 percent, not included in (1) and (2) above, are within the 2 millivolt signal intensity coverage of an existing station, which means that such cities already receive fairly good service from a technical standpoint.

(4) The remainder, 113 or 18.9 percent, do not come within the foregoing categories and are located in States as shown in table IV–B.

TABLE IV–B

State	Number of towns in excess of 10,000 population and less than 25,000	Number of towns in excess of 25,000 population	State	Number of towns in excess of 10,000 population and less than 25,000	Number of towns in excess of 25,000 population
Alabama	1		Nevada		
Arizona			New Hampshire	2	1
Arkansas			New Jersey		
California	2		New Mexico		
Colorado	1		New York	6	3
Connecticut	3		North Carolina	3	
Delaware			North Dakota		
District of Columbia			Ohio		
Florida	2		Oklahoma	4	
Georgia	3		Oregon		
Idaho			Pennsylvania	15	1
Illinois	10		Rhode Island	1	
Indiana	1	1	South Carolina	1	
Iowa	2	2	South Dakota	1	
Kansas	3		Tennessee	1	1
Kentucky	1		Texas	4	
Louisiana			Utah	1	
Maine	2	1	Vermont		
Maryland			Virginia	2	
Massachusetts	6		Washington	1	
Michigan	7		West Virginia	1	
Minnesota	2		Wisconsin	2	2
Mississippi	6		Wyoming	1	
Missouri	2		Total	101	12
Montana	1				
Nebraska					

There are now 379 cities and towns in the continental United States which have only 1 radio station. The cities having population in excess of 25,000 and which are not within one of the 96 "metropolitan districts" and which have only 1 broadcast station, are located as shown on table V–B.

TABLE V–B

State	Number of towns above 25,000 population having only 1 radio station and not located within any metropolitan district	State	Number of towns above 25,000 population having only 1 radio station and not located within any metropolitan district
Alabama	2	Nevada	
Arizona		New Hampshire	1
Arkansas	1	New Jersey	
California	1	New Mexico	
Colorado	2	New York	3
Connecticut	1	North Carolina	6
Delaware		North Dakota	1
District of Columbia		Ohio	3
Florida	3	Oklahoma	2
Georgia	3	Oregon	1
Idaho		Pennsylvania	4
Illinois	4	Rhode Island	
Indiana	6	South Carolina	4
Iowa	1	South Dakota	
Kansas	2	Tennessee	
Kentucky	2	Texas	7
Louisiana	2	Utah	1
Maine		Vermont	
Maryland	2	Virginia	1
Massachusetts	1	Washington	2
Michigan	8	West Virginia	2
Minnesota		Wisconsin	4
Mississippi	1	Wyoming	
Missouri	2		
Montana	2	Total	88
Nebraska			

Of the 2,184 cities in the United States having population between 2,500 and 10,000 it is estimated that 725 (population 3,487,101) of these cities do not have adequate signal from at least 1 station during daytime and 854 (population 4,138,658) do not have adequate signal from at least 1 station during nighttime. In addition, there are a considerable number of towns and portions of towns having population of less than 2,500 which do not receive adequate signal from at least 1 station and which could not be expected to support a station even though facilities were available.

(C) SHARED-TIME STATIONS

The evidence indicates that from a social standpoint the public which has to depend upon stations in its community which share time with stations in different communities are, generally speaking, at a disadvantage as compared to the public which depends upon stations sharing time in the same vicinity, because in the latter instance the public in that community is able to receive almost 100 percent continuity in service, whereas in the former case the public receives intermittent service only.

Of the existing facilities:

(1) Forty-three or 5.8 percent of stations share time in the same city.

(2) Seventy-nine or 10.7 percent of stations share time with stations in other cities.

(3) One hundred and thirty-two or 17.9 percent of stations are limited or daytime stations.

(4) Twenty-two or 3.0 percent of stations are specified hours stations.

(5) Four-hundred and sixty-two or 62.6 percent of stations are unlimited-time stations.

These part-time stations are distributed by States as shown by table VI–B.

TABLE VI–B

State	Share time in same city	Share time with stations in other cities	Limited-time or daytime stations	Specified-hours stations
Alabama		1	3	
Alaska				1
Arizona				1
Arkansas		1	4	
California	2	2	12	
Colorado	2	4		1
Connecticut		1	2	
Delaware		1		
District of Columbia				
Florida		2	1	
Georgia			3	
Hawaiian Islands			1	
Idaho			1	
Illinois	[1] 7	5	8	1
Indiana		5	3	2
Iowa	[1] 2	1	2	1
Kansas	2	3	2	
Kentucky				
Louisiana	2	2		
Maine			1	1
Maryland		1	3	
Massachusetts			6	
Michigan	2		3	3
Minnesota		[2] 2	3	
Mississippi			1	
Missouri		4	6	
Montana				
Nebraska		1	4	
Nevada				
New Hampshire			1	
New Jersey		7	2	
New Mexico		3	1	
New York	10	8	7	2
North Carolina		1	5	
North Dakota				
Ohio		3	6	
Oklahoma		2	1	
Oregon	2	1	2	
Pennsylvania	8	7	6	1
Puerto Rico				2
Rhode Island				
South Carolina			2	
South Dakota		1	2	3
Tennessee				
Texas	4	[4] 4	13	1
Utah				
Vermont			3	1
Virgin Islands				
Virginia		1	2	1
Washington		4	4	
West Virginia		1	1	
Wisconsin			5	
Wyoming				
Total (276)	43	79	132	22
Percentage of licensed stations (37.4)	5.8	10.7	17.9	3.0

[1] WCBD and WMBI share a limited assignment.
[2] KGCA and KWLC share a daytime assignment.
[3] WLB and WCAL share a daytime assignment.
[4] WFAA and WBAP licensed for different cities but use same transmitter.

NOTE.—Specified-hours stations actually sharing time with other stations were classified as sharing.

(D) GEOGRAPHICAL DISTRIBUTION OF FACILITIES

In the consideration of the geographical distribution of facilities to States and communities, and the improvements to stations not operating on a full-time basis, the Commission must make assignments under the provisions of section 307 of the Communications Act of 1934, as amended, which are as follows:

"SEC. 307. (a) The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this act, shall grant to any applicant therefor a station license provided for by this act.

"(b) In considering applications for licenses, and modifications and renewals thereof, when and insofar as there is demand for the same, the Commission shall

make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a *fair, efficient,* and *equitable* distribution of radio service to each of the same." (Italic supplied.)

In the consideration of the distribution of facilities in accordance with section 307 (b) the Commission must take cognizance of the technical facts which in general in the frequency band 550 to 1600 kilocycles impose severe difficulties in making a distribution of efficient transmission facilities to every community in every State.

It should also be thoroughly understood that in many States there are persons who live in remote areas, therefore under such circumstances that it would be highly impractical to provide transmission facilities in the specific areas, and hence if these people are to receive the benefits of radio broadcasting service, it is essential that they utilize the transmission of some distant station. One of the most important social services rendered by broadcasting is that of providing to remote areas proper programs with a sufficient signal intensity to be considered good service. It is considered that the number of programs available at any time at any point in the United States should not be less than two. As has been pointed out in the preliminary engineering report of January 11, 1937, and the Social and Economic Report of July 1, 1937, this cannot be accomplished practically by means other than clear channels. Secondary service of acceptable signal strength must be available from at least two clear channel stations in order to provide reasonably consistent reception of a given program at a given point. These stations should be located so that the paths of transmission to the given point are approximately right angles to each other. Thus in order to provide satisfactory selection of two programs at any time listeners in rural areas should have the choice of signals from four clear channel stations at night and from two such stations during the day.

The evidence shows conclusively that existing clear-channel stations render a degree of rural service, and that in many instances it is the only radio service which many rural listeners secure. A clear-channel station is capable of rendering service to the public in several States, and if such stations are distributed throughout the Nation geographically in such a manner as to be near the centers of talent, and at the same time render service to a wide area, it is possible to have one or more program services available to rural listeners throughout the entire country.

From a theoretical scientific standpoint, some of the clear-channel stations might best be distributed geographically so as to be located in sparsely settled regions, but if such a theory were attempted in practice under the existing method of furnishing broadcasting service, it would certainly be doomed to failure by reason of dwindling economic support. Furthermore, such a procedure might be most costly and detrimental, in that it would be impractical to broadcast interesting programs by reason of remoteness from the centers of talent. It would also tend to lessen competition for the choice of programs in rural areas.

Inasmuch as this class of station renders service to so many people in so many States, and inasmuch as its transmissions cannot recognize State borders, the Committee suggests that the State in which the station is located should not be charged with all the facilities.

Stations having classification other than that of "clear channel" are at least somewhat more susceptible to segregation within State borders, because their service is usually limited to a relatively small area by reason of mutual interference occurring when stations operate simultaneously on the same frequency. However, even in this instance many of the stations are located near State borders and serve a population within more than one State.

The evidence shows that different cities have different shapes and sizes, as well as variations in the ability to support transmission facilities, and therefore it is believed that the best method of obtaining equitable distribution to various communities within a State is to adopt a general rule that if a facility is to be licensed in a community, it should be adequate to serve that community and its sphere of economic and social influence. The criterion of whether a certain class of station should be assigned to a particular community must include a consideration of the ability of the community and its social and economic sphere of influence to support a radio station in such a manner that it can render efficiently a good service.

In the Standards of Good Engineering Practice are listed the signal intensities necessary for satisfactory service under various conditions. Due to the extreme variations in reception conditions, particularly with respect to electrical noise levels (both man-made and natural static), it is impossible to accurately determine the areas or the population therein where satisfactory reception is available without obtaining a great deal more information than is now available. However, on the basis of the required signal level set forth in the Standards of Good Engineering Practice and in view of the evidence submitted at the hearing, it is estimated that during the daytime 8.1 percent (9,988,747) of the total population residing in 38.5 percent of the total land area of the United States do not receive satisfactory primary service from even one station and that during nighttime 17.4 percent (21,308,453) of the total population residing in 56.9 percent of the total land area do not receive satisfactory primary service from even one station, that is, entirely dependent upon secondary service from clear channel stations.

The areas receiving satisfactory service from more than one station are materially less. That is, approximately 31 percent of the total land areas receives primary service from one station, 8 percent from two stations and 5 percent from three or more stations.

Attention is also invited to the fact that due to high electrical noises numerous urban areas within the areas above considered to have good primary service do not receive such service at any time and that due to static extensive rural areas do not receive satisfactory service during periods when the static level is above average.

It was pointed out above that large rural areas are dependent entirely on the secondary service rendered by clear channel stations and that in order to satisfactorily receive the choice of either of two programs at least four secondary signals must be available. Table 7 gives an estimation of the areas (in terms of percentage of total land area of the United States) that are entirely dependent on clear channel secondary service and the number of such services of 500 uv/m. 50 percent sky wave or greater. It also shows the clear channel secondary services available in areas within the primary service area of at least one station.

The greatest need for improved signal intensity is in the southern regions of the country where the static level is the highest and extends for a longer portion of the year than in other parts of the country. In the Rocky Mountain States where the population is scattered and radio stations are scarce there is also a greater need for improvement insofar as engineering aspects of radio service are concerned than in other parts of the country. The States considered to be receiving the best radio service from a technical standpoint are: Connecticut, District of Columbia, Illinois, Indiana, Iowa, Kentucky, Massachusetts, New Jersey, New York, and Ohio. The States considered to be most needing improvements in technical service to the listener are: Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Louisiana, Maine, Mississippi, Montana, Nevada, New Mexico, North Carolina, Oregon, South Carolina, Utah, Virginia, and Wyoming.

TABLE VII–B

	Number of clear channel secondary services available [1]						Total
	0	1	2	3	4	5 or more	
Area in percent [2] not within primary service of any station	0.14	1.55	6.05	4.66	10.57	33.94	56.91
Area in percent [2] within primary service of one or more stations	.07	0.30	1.26	2.43	4.99	34.04	43.09
Total	.21	1.85	7.31	7.09	15.56	67.98	100.00

[1] 500 microvolt, 50 percent sky wave or greater.
[2] Percent of total continental United States land area (2,973,776 square miles).

TABLE VIII–B.—*Distribution of classes of broadcasting stations to States*

[Distribution of stations of all classes to States and Possessions]

State or possession	Clear			Regional					Local				Totals				
	Unlimited time	Share time	Total	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Total	Unlimited time	Daytime	Share time and specified hours	Total	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional												
Alabama		[1] 1	1	3					3	5	3		8	8	3		1	12
Alaska				2				1	3					2			1	3
Arizona				3					3	5		1	6	8			1	9
Arkansas		[1] 1	1	2		1			3	3	3		6	5	4		1	10
California	[4] 4		4	23	5		3	2	33	11	4	2	17	38	9	3	4	54
Colorado	1		1	3				4	7	3		3	6	7			7	14
Connecticut		[1] 1	1	5		1			6	1	1		2	6	2		1	9
Delaware				1					1			1	1	1			1	2
District of Columbia				4					4					4				4
Florida				6			1	2	9	7			7	13		1	2	16
Georgia	1		1	3			1		4	7	2		9	11	2	1		14
Hawaii				2			1		3					2		1		3
Idaho				5					5	1	1		2	6	1			7
Illinois	[5] 3	[6] 3	6	2	1	3	[7] 3	1	10	6	[8] 3	7	16	11	7	3	11	32
Indiana		1	1	3	1	1		3	8	6	1	3	10	9	3		7	19
Iowa	1		1	6	1	1		1	11	5		[9] 3	6	12	2		4	18
Kansas				2	1		1	5	9	6			6	8	1	1	5	15
Kentucky	1		1	2					2	5			5	8				8
Louisiana		[10] 2	2	4					4	5		2	7	9			4	13
Maine				2			1		3	2		1	3	4		1	1	6
Maryland		[11] 1	1	2		1	1		4	2	1		3	4	2	1	1	8
Massachusetts	[12] 1		1	[12] 7	1	2	2		12	5	1		6	13	4	2		19
Michigan	1		1	4	1	1		2	8	9	1	3	13	14	3		5	22
Minnesota	1		1	3			1	[14] 2	6	9	2		11	13	2	1	2	18
Mississippi				2		1			3	6			6	8	1			9
Missouri	1		1	6	3	1		3	13	3	2	1	6	10	6		4	20
Montana				5					5	4			4	9				9
Nebraska		[15] 1	1	2	1	1	2		6	3			3	5	2	2	1	10
Nevada				1					1					1				1
New Hampshire				1	1				2	1			1	2	1			3
New Jersey	1	1	2	1		1		5	7		1	1	2	2	2		7	11
New Mexico		1	1	1					1	3	1	2	6	4	1		3	8
New York	5	1	6	10	3	1	1	11	26	8	2	8	18	23	6	1	20	50
North Carolina	1		1	2		1	[16] 1		4	4	3	1	8	7	4	1	1	13
North Dakota				5					5	3			3	8				8
Ohio	2		2	8		2	1	3	14	6	3		9	16	5	1	3	25

Oklahoma		[17] 1	1	4			1	1	5	8	1		9	12	1		2	15
Oregon		1	1	5					6	6	1	2	9	11	1	1	3	16
Pennsylvania	3		3	6	1	3		7	17	8	[18] 2	9	19	17	6		16	39
Puerto Rico				2					2			2	2	2			2	4
Rhode Island				3					3					3				3
South Carolina				3		1			4	1	1		2	4	2			6
South Dakota				2		1	1	3	7	3		1	4	5	1	1	4	11
Tennessee	1		1	6					6	6			6	13				13
Texas	1	[19] 3	4	11		1		2	14	18	12	[20] 4	34	30	13		9	52
Utah	1		1	2					2	4			4	7				7
Vermont						[21] 3			3	1		1	2	1	3		1	5
Virgin Islands																		
Virginia	1		1	3		2			5	4		2	6	8	2		2	12
Washington	[22] 1		1	10		1	[23] 2	2	15	5	1	2	8	16	2	2	4	24
West Virginia		1	1	3			1		4	2			2	5		1	1	7
Wisconsin				6	1	2			9	8	2		10	14	5			19
Wyoming				1					1	2			2	3				3
Total	32	20	52	210	21	33	25	60	351	220	55	62	335	462	109	25	142	738

[1] Includes WAPI, simultaneous day, S-KVOO-N; S. A. Experiment—U.
[2] Includes KTHS, 1,040 kilocycles, S-KRLD; S. A. Experiment—simultaneous day with WBAL, 1,060 kilocycles, S. H.—N.
[3] Includes KGO 790 kilocycles, 7½ kilowatt, U.
[4] Includes WTIC, 1,060 kilocycles, S-WBAL; S. A. Experiment—1,040 kilocycles. simultaneous—KRLD.
[5] Includes WCFL, 970 kilocycles, 5 kilowatts, U.
[6] Includes WBBM, 770 kilocycles, simultaneous day, S-KFAB-N; S. A. Experiment—synchronize KFAB-N.
[7] Includes WCBD, L-WBT, S-WMBI and WMBI, L-WBT, S-WCBD.
[8] Includes WCAZ, 100 watts, day, clear.
[9] Includes KGCA, D-S-KWLC and KWLC, D-S-KGCA.
[10] Includes WWL, 850 kilocycles, S. H. (KWKH); S. A. Experiment—U; and KWKH, 850 kilocycles, S. H. (WWL); S. A. Experiment—U, 1,100 kilocycles.
[11] Includes WBAL, 1,060 kilocycles, S-WTIC; S. A. Experiment—simultaneous day with KTHS, 1,060 kilocycles, S. H. to 9 p. m.; synchronize with WJZ, 760 kilocycles, from 9 p. m.
[12] Includes WBZ, 990 kilocycles, 50 kilowatts, synchronized with WBZA.
[13] Includes WBZA 990 kilocycles, 1 kilowatt, synchronized with WBZ.
[14] Includes WLB, S-WCAL (¾ daytime) and WCAL, S-WLB (¼ daytime).
[15] Includes KFAB, 770 kilocycles, simultaneous day, S-WBBM-N; S. A. Experiment—synchronize WBBM-N.
[16] Includes WPTF, L-KPO; S. A. Experiment—to 11 p. m. E. S. T.
[17] Includes KVOO, simultaneous day, S-WAPI-N; S. A. experiment—U.
[18] Includes WIBG, 100 watts, day, clear.
[19] Includes KRLD, S-KTHS; S. A. Experiment—simultaneous with WTIC.
[20] Includes KTSM, S-WDAH; permanent authority to carry WDAH'S schedule.
[21] Includes WNBX, D-LS at Erie, Pa.; S. A. Experiment—U.
[22] Includes KJR, 970 kilocycles, 5 kilowatts, U.
[23] Includes KIRO, 650 kilocycles, L-WSM; S. A. Experiment—710 kilocycles, U.

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*

[Distribution of classes of stations to cities of various population]

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION UNDER 10,000																
Alabama: Sheffield	6,221								1			1				1
Alaska:																
Anchorage	2,277							1							1	1
Juneau	4,043			1								1				1
Ketchikan	3,796			1												1
Arizona:												1				1
Bisbee	8,023								1			1				1
Globe	7,157								1			1				1
Jerome	4,932								1			1				1
Safford	1,706								1			1				1
Yuma	4,892										1				1	1
Arkansas: Siloam Springs	2,378					1							1			1
California:																
Chico	7,961			1								1				1
El Centro	8,434								1			1				1
Merced	7,066				1								1			1
Monterey	9,141								1			1				1
Redding	4,188								1			1				1
San Luis Obispo	8,276									1			1			1
Visalia	7,263				1					1			1			1
Watsonville	8,344															
Colorado:																
Alamosa	5,107										1					1
Durango	5,400								1			1			1	1
La Junta	7,193								1			1				1
Lamar	4,233										1				1	1
Sterling	7,195										1				1	1
Florida: Miami Beach	6,494								1			1				1
Idaho:																
Coeur d'Alene	8,297									1			1			1
Idaho Falls	9,429			1								1				1
Lewiston	9,403			1								1				1
Nampa	8,206								1			1				1
Twin Falls	8,787			1								1				1

Illinois:																
Carthage	2,240									1			1			1
Tuscola	2,569				1								1			1
Iowa:																
Decorah	4,581										2				2	2
Shenandoah	6,502			1				1				1			1	2
Kansas:																
Abilene	5,658						1							1		1
Garden City	6,121								1			1				1
Great Bend	5,548								1			1				1
Maine: Presque Isle	4,662										1				1	1
Michigan:																
Calumet	1,557										1				1	1
East Lansing	4,389				1								1			1
Lapeer	5,008										1				1	1
Minnesota:																
Fergus Falls	9,389								1			1				1
Moorhead	7,651								1			1				1
Northfield	4,153							1							1	1
Mississippi:																
Granada	4,349								1			1				1
Kosciusko	3,237								1			1				1
Missouri:																
Clayton	9,613							1							1	1
Poplar Bluff	7,551									1			1			1
Montana:																
Bozeman	6,855								1			1				1
Kalispell	6,094								1			1				1
Lewistown	5,358								1			1				1
Wolf Point	1,539			1								1				1
Nebraska:																
Clay Center	933						1									1
Kearney	8,575								1			1	1			1
Scottsbluff	8,465								1			1				1
New Jersey: Zarephath								1							1	1
New Mexico:																
Carlsbad	3,708								1			1				1
Clovis	8,027										1				1	1
Gallup	5,992								1			1				1
Hobbs	598									1			1			1
New York:																
Canton	2,822							1							1	1
Saranac Lake	8,020									1			1			1
North Dakota:																
Devils Lake	5,451								1			1				1
Jamestown	8,187								1			1				1
Mandan	5,037			1								1				1
Valley City	5,268								1			1				1
Oklahoma:																
Elk City	5,666								1			1				1
Norman	5,603							1							1	1

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION UNDER 10,000—con.																
Oregon:																
Corvallis	7,585			1								1				1
La Grande	8,050								1			1				1
Marshfield	5,287								1			1				1
Roseburg	4,362								1			1				1
Pennsylvania: Grove City	6,156										1				1	1
South Dakota:																
Brookings	4,376							1							1	1
Pierre	3,659							1							1	1
Vermillion	2,850							1							1	1
Yankton	6,072			1								1				1
Texas:																
Brady	3,983									1			1			1
College Station (Bryan)	7,814							1					1		1	1
Denton	9,587									1			1			1
Dublin	2,271								1			1				1
Kilgore									1			1				1
Longview	5,036									1		1				1
Lufkin	7,311									1			1			1
Midland	5,484									1			1			1
Pecos	3,304									1			1			1
Weslaco	4,879			1					1			1				1
Utah:												1				1
Cedar City	3,615								1			1				1
Logan	9,979								1			1				1
Price	4,084								1			1				1
Vermont:																
St. Albans	8,020					1							1			1
Springfield	4,943					1							1			1
Waterbury	1,776					1							1			1
Virginia: Harrisonburg	7,232					1							1			1
Washington:																
Centralia	8,058			1								1				1
Chehalis	4,907			1								1				1
Pullman	3,322							1							1	1

Wisconsin:																
Poynette	672								1			1				1
Rice Lake	5,177									1			1			1
Wyoming:																
Rock Spring	8,440								1			1				1
Sheridan	8,536								1			1				1
Total				13	4	5	2	12	41	13	11	54	22	2	23	101
POPULATION 10,000 TO 24,999																
Alabama:																
Decatur	15,593									1			1			1
Dothan	16,046									1			1			1
Gadsden	24,012								1			1				1
Huntsville	11,554								1			1				1
Selma	18,012								1			1				1
Tuscaloosa	20,659									1			1			1
Arkansas:										1			1			1
Blytheville	10,098								1			1				1
Eldorado	16,421														1	1
Hot Springs	20,238		1							1			1			1
Jonesboro	10,326									1			1			1
Pine Bluff	20,760															
California:														1		1
Beverly Hills	17,429						1					1				1
Eureka	15,752			1									1			1
Modesto	13,842				1					1			1			1
Santa Rosa	10,636															
Colorado:									1			1				1
Grand Junction	10,247							1							1	1
Greeley	12,203															
Florida:									1			1				1
Daytona Beach	16,598						1							1		1
Gainesville	10,465								1			1				1
Lakeland	18,554								1			1				1
St. Augustine	12,111								1			1				1
Tallahassee	10,700															
Georgia:									1			1				1
Albany	14,507								1			1				1
Athens	18,192									1			1			1
Griffin	10,321								1			1				1
Rome	21,843									1			1			1
Thomasville	11,733								1			1				1
Waycross	15,510											1				1
Hawaiian Islands: Hilo	19,468			1												
Idaho:												1				1
Boise	21,544			1								1				1
Pocatello	16,471			1												
Illinois:									1			1				1
Champaign	20,348										1				1	1
Harrisburg	11,625												1			1
Urbana	13,060					1										

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 10,000 TO 24,999—continued																
Iowa:																
Ames	10,261				1								1			1
Boone	11,886										1				1	1
Iowa City	15,340			1								1				1
Marshalltown	17,373								1			1				1
Mason City	23,304								1			1				1
Kansas:																
Coffeyville	16,198							1							1	1
Dodge City	10,059			1								1				1
Lawrence	13,726							2							2	2
Manhattan	10,136							1							1	1
Pittsburg	18,145				1								1			1
Salina	20,155								1			1				1
Kentucky:																
Middlesboro	10,350								1			1				1
Owensboro	22,765								1			1				1
Louisiana:																
Alexandria	23,025								1			1				1
Lafayette	14,635								1			1				1
Lake Charles	15,791								1			1				1
Maine: Augusta	17,198								1			1				1
Maryland:																
Frederick	14,434					1							1			1
Salisbury	10,997									1			1			1
Massachusetts: Greenfield	15,500									1			1			1
Michigan:																
Ironwood	14,299								1			1				1
Marquette	14,789										1				1	1
Royal Oak	22,904								1			1				1
Minnesota:																
Albert Lea	10,169									1			1			1
Hibbing	15,666								1			1				1
Mankato	14,038								1			1				1
Rochester	20,621								1			1				1
St. Cloud	21,000								1			1				1

Virginia	11, 963								1			1				1
Winona	20, 850									1			1			1
Mississippi:																
Hattisburg	18, 601								1			1				1
Laurel	18, 017								1			1				1
Gulfport	12, 547								1			1				1
Vicksburg	22, 943					1							1			1
Missouri:																
Cape Girardeau	16, 227										1				1	1
Columbia	14, 967							1							1	1
Jefferson City	21, 596									1			1			1
Montana:																
Billings	16, 380			1								1				1
Helena	11, 803								1			1				1
Missoula	14, 657			1								1				1
Nebraska:																
Norfolk	10, 717						1							1		1
North Platte	12, 061					1							1			1
Nevada: Reno	18, 529			1								1				1
New Hampshire:																
Laconia	12, 471								1			1				1
Portsmouth	14, 495				1								1			1
New Jersey:																
Asbury Park	14, 981							1							1	1
Bridgeton	15, 699									1			1			1
Red Bank	11, 622										1				1	1
New Mexico:																
Roswell	11, 173										1				1	1
Santa Fe	11, 176								1			1				1
New York:																
Freeport	15, 467										1				1	1
Olean	21, 790					1							1			1
Plattsburg	13, 349								1			1				1
North Carolina:																
Kinston	11, 362								1			1				1
Rocky Mount	21, 412										1				1	1
Wilson	12, 613									1			1			1
North Dakota:																
Bismarck	11, 090			1								1				1
Grand Forks	17, 112			1								1				1
Minot	16, 099			1								1				1
Ohio: Ashtabula	23, 301					1							1			1
Oklahoma:																
Ada	11, 261								1			1				1
Ardmore	15, 741								1			1				1
Okmulgee	17, 097									1			1			1
Ponca City	16, 136								1			1				1
Shawnee	23, 283								1			1				1
Oregon:																
Astoria	10, 349									1			1			1
Eugene	18, 901								1			1				1
Klamath Falls	16, 093								1			1				1
Medford	11, 007			1								1				1

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 10,000 TO 24,999—continued																
Pennsylvania:																
Greensburg	16,508					1							1			1
Sunbury	15,626										1				1	1
Uniontown	19,544									1			1			1
South Carolina:																
Anderson	14,383								1			1				1
Florence	14,774									1			1			1
South Dakota:																
Aberdeen	16,465			1								1				1
Huron	10,946					1							1			1
Rapid City	10,404								1		1	1			1	2
Watertown	10,214								1			1				1
Tennessee:																
Bristol	12,005								1			1				1
Jackson	22,172								1			1				1
Texas:																
Abilene	23,175								1			1				1
Big Spring	13,735								1			1				1
Brownsville	22,021								1			1				1
Corsicana	15,202									1			1			1
Greenville	12,407									1			1			1
Lubbock	20,520								1			1				1
Palestine	11,445									1			1			1
Pampa	10,470									1			1			1
Paris	15,649									1			1			1
Sherman	15,713									1			1			1
Temple	15,345									1			1			1
Tyler	17,113								1			1				1
Vermont:																
Burlington	24,789										1				1	1
Rutland	17,315								1			1				1
Virginia:																
Charlottesville	15,245										1				1	1
Danville	22,247								1			1				1
Washington:																
Aberdeen	21,723								1			1				1

Longview	10,652					1							1			1
Olympia	11,733								1			1				1
Walla Walla	15,976								1			1				1
Wenatchee	11,627								1			1				1
Yakima	22,101			1								1				1
West Virginia:																
Bluefield	19,339			1								1				1
Fairmont	23,159			1								1				1
Wisconsin:																
Janesville	21,628								1			1				1
Manitowoc	22,963								1			1				1
Stevens Point	13,623					1							1			1
Wausau	23,758								1			1				1
Wyoming:																
Casper	16,619			1								1				1
Total			1	18	4	10	3	7	63	27	12	80	42	3	20	145
POPULATION, 25,000 TO 49,999																
Arizona:																
Phoenix	48,118			2								2				2
Tucson	32,506			1					1			2				2
Arkansas:																
Fort Smith	31,429								1			1				1
California:																
Bakersfield	26,015			1					1			2				2
San Bernardino	37,481										1				1	1
Santa Ana	30,322								1			1				1
Santa Barbara	33,613			1					1			2				2
Stockton	47,963				1				1			1	1			2
Colorado: Colorado Springs	33,237			1								1				1
Connecticut: New London	29,640									1			1			1
Florida:																
Orlando	27,330			1								1				1
Pensacola	31,579			1												1
St. Petersburg	40,425							1				1			1	1
West Palm Beach	26,610								1			1				1
Georgia: Columbus	43,131								1			1				1
Illinois:																
Bloomington	30,930										1				1	1
Danville	36,765									1			1			1
Galesburg	28,830									1			1			1
Joliet	42,993										1				1	1
Quincy	39,241					1							1			1
Rock Island	37,953								1			1				1
Indiana:																
Anderson	39,804								1			1				1
Elkhart	32,949								1			1				1
La Fayette	26,240							1							1	1
Muncie	46,548								1			1				1
New Albany	25,819									1			1			1
Richmond	32,493										1				1	1

TABLE IX-B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 25,000 TO 49,999—continued																
Iowa: Dubuque	41,679					1			1			1	1			2
Kansas: Hutchinson	27,085								1			1				1
Kentucky:																
Ashland	29,074								1			1				1
Lexington	45,736								1			1				1
Paducah	33,541								1			1				1
Louisiana:																
Baton Rouge	30,729			1								1				1
Monroe	26,028								1			1				1
Maine: Bangor	28,749			1					1			2				2
Maryland:																
Cumberland	37,747						1							1		1
Hagerstown	30,861								1			1				1
Massachusetts:																
Pittsfield	49,677								1			1				1
Michigan:																
Battle Creek	43,573								1			1				1
Bay City	47,355			1								1				1
Muskegon	41,390								1			1				1
Port Huron	31,361									1			1			1
Mississippi:																
Jackson	48,282			1					1			2				2
Meridian	31,954			1								1				1
Missouri:																
Joplin	33,454								1			1				1
Montana:																
Butte	39,532			1								1				1
Great Falls	28,822			1								1				1
New Mexico:																
Albuquerque	26,570		1	1								1			1	2
New York:																
Auburn	36,652								1			1				1
Elmira	47,397				1					1			2			2
Jamestown	45,155								1			1				1
Newburgh	31,275										1				1	1
White Plains	35,830										1				1	1

North Carolina:																
High Point	36,745									1			1			1
Raleigh	37,379						1							1		1
Wilmington	32,270									1			1			1
North Dakota:																
Fargo	28,619			1								1				1
Ohio:																
Lima	42,287									1			1			1
Portsmouth	42,560								1			1				1
Zanesville	36,440								1			1				1
Oklahoma:																
Enid	26,399			1								1				1
Muskogee	32,026								1			1				1
Oregon:																
Salem	26,266								1			1				1
Pennsylvania:																
Easton	34,468										1				1	1
Hazleton	36,765										1				1	1
New Castle	48,674					1							1			1
Sharon	25,908					1							1			1
Williamsport	45,729								1			1				1
Puerto Rico:																
Mayaguez	37,060										1				1	1
South Carolina:																
Greenville	29,154			1								1				1
Spartanburg	28,723					1							1			1
South Dakota:																
Sioux Falls	33,362						1		1			1		1		2
Texas:																
Amarillo	43,132			1								1				1
Corpus Christi	27,741			1								1				1
Laredo	32,618								1			1				1
San Angelo	25,308								1			1				1
Texarkana	27,366								1			1				1
Utah:																
Ogden	40,272			1								1				1
Virginia:																
Lynchburg	40,661								1			1				1
Newport News	34,417								1			1				1
Washington:																
Bellingham	30,823								1			1				1
Everett	30,567										1				1	1
West Virginia:																
Clarksburg	28,866								1			1				1
Parkersburg	29,623								1			1				1
Wisconsin:																
Eau Claire	26,287				1								1			1
Fond du Lac	26,449								1			1				1
Green Bay	37,415			1					1			2				2
La Crosse	39,614			1								1				1

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 25,000 TO 49,999—continued																
Wisconsin—Continued.																
Sheboygan	39,251			1								1				1
Superior	36,113								1			1				1
Total			1	25	3	5	3	2	44	9	10	69	17	3	13	102
POPULATION 50,000 TO 99,999																
Alabama:																
Mobile	68,202			1								1				1
Montgomery	66,079			1								1				1
Arkansas:																
Little Rock	81,679			2					1			3				3
California:																
Berkeley	82,109								1			1				1
Fresno	52,513			1					1			2				2
Glendale	62,736				1								1			1
Pasadena	76,086										1				1	1
Sacramento	93,750			1						1		1	1			2
San Jose	57,651			1								1				1
Colorado:																
Pueblo	50,096			1								1				1
Connecticut:																
New Britain	68,128			1								1				1
Waterbury	99,902			2								2				2
Georgia:																
Augusta	60,342								1			1				1
Macon	53,829						1							1		1
Savannah	85,024			1								1				1
Illinois:																
Cicero	66,602								1			1				1
Decatur	57,510										1				1	1
East St. Louis	74,347								1			1				1
Rockford	85,864			1								1				1
Springfield	71,864								2			2				2

Indiana:																
Hammond	64,560					1					1		1		1	2
Terre Haute	62,810								1			1				1
Iowa:																
Cedar Rapids	56,097			1								1				1
Davenport	60,751								1			1				1
Sioux City	79,183			1					1			2				2
Kansas:																
Topeka	64,120							1							1	1
Kentucky:																
Covington	65,252			1								1				1
Louisiana:																
Shreveport	76,655		1	1					1			2			1	3
Maine:																
Portland	70,810			1			1					1		1		2
Massachusetts:																
Lawrence	85,068				1								1			1
Michigan:																
Jackson	55,187								1			1				1
Kalamazoo	54,786			1								1				1
Lansing	78,397								1			1				1
Saginaw	80,715					1							1			1
Missouri:																
St. Joseph	80,935				1								1			1
Springfield	57,527			1		1						1	1			2
Nebraska:																
Lincoln	75,933		1						1			1			1	2
New Hampshire:																
Manchester	76,834			1								1				1
New Jersey:																
Atlantic City	66,198		1												1	1
New York:																
Binghamton	76,662								1			1				1
Schenectady	95,692	1										1				1
Troy	72,763							1							1	1
North Carolina:																
Asheville	50,193			1								1				1
Charlotte	82,675	1							1			2				2
Durham	52,037								1			1				1
Greensboro	53,569			1								1				1
Winston-Salem	75,274					1			1			1	1			2
Pennsylvania:																
Allentown	92,563							2							2	2
Altoona	82,054										1				1	1
Harrisburg	80,339			1							1	1			1	2
Johnstown	66,993										1				1	1
Lancaster	59,949								1			1				1
Wilkes-Barre	86,626								2			2				2
York	55,254			1								1				1
Puerto Rico:																
Ponce	53,430										1				1	1

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 50,000 TO 99,999—continued																
South Carolina:																
Charleston	62,265			1								1				1
Columbia	51,581			1								1				1
Texas:																
Austin	53,120							1	1			1			1	2
Beaumont	57,732			1					1			2				2
Galveston	52,938								1			1				1
Port Arthur	50,902					1							1			1
Waco	52,848								1			1				1
Virginia: Roanoke	69,206			1								1				1
West Virginia:																
Charleston	60,408			1								1				1
Huntington	75,572						1							1		1
Wheeling	61,659		1												1	1
Wisconsin:																
Madison	57,899			1		1						1	1			2
Racine	67,542								1			1				1
Total		2	4	31	3	6	3	5	27	1	7	60	10	3	16	89
POPULATION 100,000 TO 199,999																
California:																
Long Beach	142,032			2								2				2
San Diego	147,995			2								2				2
Connecticut:																
Bridgeport	146,716			1								1				1
Hartford	164,072		1	1					1			2			1	3
New Haven	162,655					1							1			1
Delaware: Wilmington	106,597			1							1	1			1	2
Florida:																
Jacksonville	129,549			1					1			2				2
Miami	110,637			2								2				2
Tampa	101,161			1				1				1			1	2
Hawaiian Islands: Honolulu	137,582			1			1					1		1		2
Illinois: Peoria	104,969			1								1				1

Indiana:																
Evansville	102, 249							1	1			1			1	2
Fort Wayne	114, 946		1						1			1			1	2
Gary	100, 426			1								1				1
South Bend	104, 193							1			1				2	2
Iowa: Des Moines	142, 559	1		2								3				3
Kansas:																
Kansas City	121, 857								1			1				1
Wichita	111, 110			1					1			2				2
Massachusetts:																
Fall River	115, 274			1								1				1
Lowell	100, 234								1			1				1
New Bedford	112, 597								1			1				1
Springfield	149, 900			1			1		1			2		1		3
Worcester	195, 311			2								2				2
Michigan:																
Flint	156 492								1			1				1
Grand Rapids	168, 592							2							2	2
Minnesota: Duluth	101, 463			1					1			2				2
New Jersey:																
Camden	118, 700							1							1	1
Trenton	123, 356							1							1	1
New York:																
Albany	127, 412			1					1			2				2
Utica	101, 740								1			1				1
Ohio:																
Canton	104, 906								1			1				1
Youngstown	170, 002							1		1			1		1	2
Oklahoma:																
Oklahoma City	185, 389			2					2			4				4
Tulsa	141, 258		1	1								1			1	2
Pennsylvania:																
Erie	115, 967								1			1				1
Reading	111, 171				1				1			1	1			2
Scranton	143, 433							2							2	2
Puerto Rico: San Juan	114, 715			2								2				2
Tennessee:																
Chattanooga	119, 798			1					1			2				2
Knoxville	105, 802			1					1			2				2
Nashville	153, 866	1		1					1			3				3
Texas:																
El Paso	102, 421								1		2	1			2	3
Fort Worth	163, 447		1	2					1			3			1	4
Utah: Salt Lake City	140, 267	1		1					1			3				3
Virginia:																
Norfolk	129, 710			1								1				1
Richmond	182, 929	1		1		1			1		1	3	1		1	5
Washington:																
Spokane	115, 514			3						1		3	1			4
Tacoma	106, 817			2								2				2
Total		4	4	41	1	2	2	10	25	2	5	70	5	2	19	96

TABLE IX–B.—*Distribution of classes of broadcasting stations to cities*—Continued

States and cities	Population	Clear		Regional					Local			Total				
		Unlimited time	Share time	Unlimited time	Daytime		Limited time (clear)	Share time and specified hours	Unlimited time	Daytime	Share time and specified hours	Unlimited time	Daytime	Limited time	Share time and specified hours	Total
					Clear	Regional										
POPULATION 200,000 TO 299,999																
Alabama: Birmingham	259,678		1	1					1			2			1	3
California: Oakland	284,063			3								3				3
Colorado: Denver	287,861	1		1				3				2			3	5
Georgia: Atlanta	270,366	1		2					1			4				4
Minnesota: St. Paul	271,606			1					1			2				2
Nebraska: Omaha	214,006			2	1							2	1			3
New York: Syracuse	209,326			2								2				2
Ohio:																
Akron	255,040			1					1			2				2
Columbus	290,564			1			1	1	1			2		1	1	4
Dayton	200,982			1				1				1			1	2
Toledo	290,718			1						1		1	1			2
Rhode Island: Providence	252,981			3								3				3
Tennessee: Memphis	253,143			3					1			4				4
Texas:																
Dallas	260,475		2	1								1			2	3
Houston	292,352			3								3				3
San Antonio	231,542	1		1					1		2	3			2	5
Total		3	3	27	1	0	1	5	7	1	2	37	2	1	10	50
POPULATION 300,000 TO 399,999																
Indiana: Indianapolis	364,161			2	1							2	1			3
Kentucky: Louisville	307,745	1		1								2				2
Missouri: Kansas City	399,746			3	1				1			4	1			5
New Jersey: Jersey City	316,715			1		1						1	1			2
New York: Rochester	328,132	1		1					1			3				3
Oregon: Portland	301,815		1	3			1				2	3		1	3	7
Washington: Seattle	365,583	1		3			2	1			1	4		2	2	8
Total		3	1	14	2	1	3	1	2	0	3	19	3	3	5	30

POPULATION 400,000 TO 499,999																
District of Columbia: Washington	486,869			4								4				4
Louisiana: New Orleans	458,762		1	2							2	2			3	5
Minnesota: Minneapolis	464,356	1		1			1	1				2		1	1	4
New Jersey: Newark	442,337	1						1				1			1	2
Ohio: Cincinnati	451,160	1		2					1			4				4
Total		3	1	9	0	0	1	2	1	0	2	13	0	1	5	19
POPULATION 500,000 AND OVER																
California:																
Los Angeles	1,238,048	2		6			1	2	1			9		1	2	12
San Francisco	634,394	2		3			1		1			6		1		7
Illinois: Chicago	3,376,438	3	3			1	3	1			3	3	1	3	7	14
Maryland: Baltimore	804,874		1	2					1			3			1	4
Massachusetts: Boston	781,188	1		3		2	1		1			5	2	1		8
Michigan: Detroit	1,568,662	1		2					2			5				5
Missouri: St. Louis	821,960	1		2	1			1	1			4	1		1	6
New York:																
Buffalo	573,076			3					1		2	4			2	6
New York	6,930,446	3	1	3	2		1	9			3	6	2	1	13	22
Ohio: Cleveland	900,429	1		2		1						3	1			4
Pennsylvania:																
Philadelphia	1,950,961	2		2				2	1	1	2	5	1		4	10
Pittsburgh	669,817	1		2				1	1			4			1	5
Wisconsin: Milwaukee	578,249			2						1		2	1			3
Total		17	5	32	3	4	7	16	10	2	10	59	9	7	31	106

TABLE X–B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present*

Alabama:	
Anniston	22,345
*Bessemer	20,721
*Fairfield	11,059
†Florence	11,729
†Phenix City	13,862
Arkansas:	
*North Little Rock	19,418
California:	
*Anaheim	10,995
Brawley	10,439
*Burbank	16,662
*Burlingame	13,270
*Compton	12,516
*Fullerton	10,860
*Gardena Township	15,969
*Huntington Park	24,591
*Inglewood	19,480
*Monrovia	10,890
*Ontario	13,583
*Palo Alto	13,652
*Pomona	20,804
†Redlands	14,177
*Richmond	20,093
Salinas	10,263
*San Leandro	11,455
*San Mateo	13,444
Santa Cruz	14,395
*South Gate	19,632
*South Pasadena	13,730
*Vallejo	14,476
Ventura	11,603
*Whittier	14,822
Colorado:	
Boulder	11,223
Fort Collins	11,489
Trinidad	11,732
Connecticut:	
*Ansonia	19,898
Danbury	22,261
*Derby	10,788
*East Hartford (town)	17,125
*Middletown	24,554
*Naugatuck	14,315
Norwich	23,021
*Shelton	10,113
*Stratford (town)	19,212
*Wallingford	11,170
*West Hartford (town)	24,941
Willimantic	12,102
Florida:	
Key West	12,831
Sanford	10,100
Georgia:	
Brunswick	14,022
*Decatur	13,276
Lagrange	20,131
Valdosta	13,482
Illinois:	
*Blue Island	16,534
*Brookfield	10,035
Cairo	13,532
*Calumet City	12,298
Canton	11,718
Centralia	12,583
*Chicago Heights	22,321
*East Moline	10,107
*Elmhurst	14,055
*Elmwood Park	11,270
*Forest Park	14,555
Freeport	22,045
*Harvey	16,374
*Highland Park	12,203
Jacksonville	17,747
Kankakee	20,620
Kewanee	17,093
*La Grange	10,103
La Salle	13,149
Lincoln	12,855
Mattoon	14,631
*Melrose Park	10,741
Mount Vernon	12,375
Ottawa	15,094
Illinois—Continued.	
*Park ridge	10,417
*Pekin	16,129
Sterling	10,012
Streator	14,728
West Frankfort	14,683
*Wilmette	15,233
*Winnetka	12,166
Indiana:	
Bedford	13,208
Bloomington	18,227
Connersville	12,795
Crawfordsville	10,355
Elwood	10,685
Frankfort	12,196
Goshen	10,397
Huntington	13,420
*Jeffersonville	11,946
La Porte	15,755
Logansport	18,508
Marion	24,496
New Castle	14,027
Peru	12,730
Shelbyville	10,618
Vincennes	17,564
*Whiting	10,880
Iowa:	
Fort Dodge	21,895
Fort Madison	13,779
Keokuk	15,106
Muscatine	16,778
Newton	11,560
Oskaloosa	10,123
Kansas:	
Arkansas City	13,946
Atchison	13,024
Chanute	10,277
El Dorado	10,311
Emporia	14,067
Fort Scott	10,763
Independence	12,782
Leavenworth	17,466
Newton	11,034
Parsons	14,903
Kentucky:	
Bowling Green	12,348
*Fort Thomas	10,008
Frankfort	11,626
*Henderson	11,668
Hopkinsville	10,746
Louisiana:	
Bogalusa	14,029
Maine:	
Auburn	18,571
Biddeford	17,633
South Portland	13,840
Waterville	15,454
Westbrook	10,807
Maryland:	
*Annapolis	12,531
Massachusetts:	
Adamstown	12,697
*Amesbury (town)	11,899
Athol (town)	10,677
*Attleboro	21,769
*Belmont (town)	21,748
*Braintree (town)	15,712
*Clinton (town)	12,817
*Danvers (town)	12,957
*Dedham (town)	15,136
*Easthampton (town)	11,323
*Fairhaven (town)	10,951
*Framingham (town)	22,210
Gardner	19,399
*Gloucester	24,204
Leominster	21,810
*Marlborough	15,587
*Melrose	23,170
*Methuen (town)	21,069
Milford (town)	14,741
*Milton (town)	16,434
*Natick (town)	13,589
*Needham (town)	10,845

*Within 1 of the 96 metropolitan districts defined by the Bureau of Census.
†Contiguous to a larger city in which a station is located.

TABLE X-B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present*—Continued

Massachusetts—Continued.	
*Newburyport	15,084
North Adams	21,621
*Northampton	24,381
*North Attleborough (town)	10,197
*Norwood (town)	15,049
*Peabody	21,345
Plymouth (town)	13,042
*Saugus (town)	14,700
Southbridge (town)	14,264
*Stoneham (town)	10,060
*Swampscott (town)	10,346
*Wakefield (town)	16,318
Webster (town)	12,992
*Wellesley (town)	11,439
*Westfield	19,775
*West Springfield (town)	16,684
*Weymouth (town)	20,882
*Winchester (town)	12,719
*Winthrop (town)	16,852
*Woburn	19,434
Michigan:	
Adrian	13,004
Alpena	12,166
Benton Harbor	15,434
*Ecorse	12,716
Escanaba	14,524
*Ferndale	20,855
*Grosse Pointe Park	11,174
Holland	14,346
Iron Mountain	11,652
*Lincoln Park	12,336
Menominee	10,320
Monroe	18,110
*Mount Clemens	13,497
†Muskegon Heights	15,584
Niles	11,326
Owosso	14,496
*River Rouge	17,314
Sault Ste. Marie	13,755
Traverse City	12,539
Ypsilanti	10,143
Minnesota:	
Austin	12,276
Brainerd	10,221
Faribault	12,767
*South St. Paul	10,009
Mississippi:	
Biloxi	14,850
Clarksdale	10,043
Columbus	10,743
Greenville	14,807
Greenwood	11,123
McComb	10,057
Natchez	13,422
Missouri:	
Hannibal	22,761
*Independence	15,296
*Maplewood	12,657
Moberly	13,772
*St. Charles	10,491
Sedalia	20,806
*Webster Groves	16,487
Montana:	
Anaconda	12,494
Nebraska:	
Beatrice	10,297
Fremont	11,407
Grand Island	18,041
Hastings	15,490
New Hampshire:	
Berlin	20,018
Claremont (town)	12,377
Dover	13,573
Keene	13,794
Rochester	10,209
New Jersey:	
*Burlington	10,844
*Carteret	13,339
*Cliffside Park	15,267
*Collingswood	12,723
*Cranford Township	11,126
Dover	10,031
New Jersey—Continued.	
*Englewood	17,805
*Gloucester	13,796
*Hackensack	24,568
*Harrison	15,601
*Hawthorne	11,868
*Hillside Township	17,601
*Linden	21,206
*Lodi	11,549
*Long Branch	18,399
*Lyndhurst Township	17,362
*Maplewood Township	21,321
Millville	14,705
*Morristown	15,197
*Neptune Township	10,625
*Nutley	20,572
*Pensauken Township	16,915
*Phillipsburg	19,255
*Pleasantville	11,580
*Rahway	16,011
*Ridgefield Park	10,764
*Ridgewood	12,188
*Roselle	13,021
*Rutherford	14,915
*South Orange	13,630
*South River	10,759
*Summit	14,556
*Teaneck Township	16,513
*Union Township	16,472
*Weekawken Township	14,807
*Westfield	15,801
*West Orange	24,327
New York:	
Batavia	17,375
†Beacon	11,933
*Cohoes	23,226
Corning	15,777
Cortland	15,043
Dunkirk	17,802
*Endicott	16,231
*Floral Park	10,016
Fulton	12,462
Geneva	16,053
*Glen Cove	11,430
Glens Falls	18,531
Gloversville	23,099
*Hempstead	12,650
*Herkimer	10,446
Hornell	16,250
Hudson	12,337
Irondequoit (town)	18,024
Ithaca	20,708
*Johnson City	13,567
Johnstown	10,801
*Kenmore	16,482
*Lackawanna	23,948
Little Falls	11,105
Lockport	23,160
*Lynbrook	11,993
*Mamaroneck	11,766
Massena	10,637
Middletown	21,276
*North Tonawanda	19,019
Ogdensburg	16,915
Oneida	10,558
Oneonta	12,536
*Ossining	15,241
Oswego	22,652
*Peekskill	17,125
*Port Chester	22,662
Port Jervis	10,243
*Rensselaer	11,223
*Rockville Centre	13,718
Saratoga Springs	13,169
*Towanada	12,681
*Valley Stream	11,790
*Watervliet	16,083
North Carolina:	
Concord	11,820
Elizabeth City	10,037
Fayetteville	13,049
Gastonia	17,093

*Within 1 of the 96 metropolitan districts defined by the Bureau of Census.
†Contiguous to a larger city in which a station is located.

TABLE X-B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio stations at present*—Continued

North Carolina—Continued.	
Goldsboro	14,985
New Bern	11,981
Salisbury	16,951
Shelby	10,789
Statesville	10,490
Thomasville	10,090
Ohio:	
*Alliance	23,047
Ashland	11,141
*Barberton	23,934
*Bellaire	13,327
Bucyrus	10,027
Cambridge	16,129
*Campbell	14,673
Chillicothe	18,340
Coshocton	10,908
*Cuyohoga Falls	19,797
East Liverpool	23,329
*Euclid	12,751
Findlay	19,363
Fostoria	12,790
Fremont	13,422
*Garfield Heights	15,589
*Ironton	16,621
Lancaster	18,716
Marietta	14,285
*Martins Ferry	14,524
New Philadelphia	12,365
*Niles	16,314
Painesville	10,944
*Parma	13,899
Piqua	16,009
Salem	10,622
Sandusky	24,622
*Shaker Heights	17,783
*Struthers	11,249
Tiffin	16,428
Wooster	10,742
Xenia	10,507
Oklahoma:	
Bartlesville	14,763
Chickasha	14,099
Lawton	12,121
McAlester	11,804
Okmulgee	17,097
*Sapulpa	10,533
Seminole	11,459
Wewoka	10,401
Pennsylvania:	
*Abington Township	18,648
*Ambridge	20,227
*Arnold	10,575
Beaver Falls	17,147
*Bellevue	10,252
Berwick	12,660
*Braddock	19,329
Bradford	19,306
*Bristol	11,799
Butler	23,568
*Canonsburg	12,558
*Carbondale	20,061
Carlisle	12,596
*Carnegie	12,497
Chambersburg	13,788
*Charleroi	11,260
*Cheltenham Township	15,731
*Clairton	15,291
Coatesville	14,582
*Columbia	11,349
Connellsville	13,290
*Conshohocken	10,815
*Corsopolis	10,724
*Dickson City	12,395
*Donora	13,905
*Dormont	13,190
Du Bois	11,695
*Dunmore	22,627
*Duquesne	21,396
Pennsylvania—Continued.	
Ellwood City	12,323
*Farrell	14,359
Franklin	10,254
Hanover	11,805
*Hanover Township	17,770
*Harrison Township	12,387
*Haverford Township	21,362
*Homestead	20,141
*Jeannette	15,126
*Kingston	21,600
*Latrobe	10,644
Lewiston	13,357
*McKees Rocks	18,116
Mahanoy City	14,784
Meadville	16,698
*Monessen	20,268
Mount Carmel	17,967
*Mount Lebanon Township	13,403
*Munhall	12,995
*New Kensington	16,762
*North Braddock	6,782
Oil City	22,075
*Old Forge	12,661
*Olyphant	10,743
*Phoenixville	12,029
*Pittston	18,246
*Plains Township	16,044
*Plymouth	16,543
Pottstown	19,430
Pottsville	24,300
Shamokin	20,724
Shenandoah	21,782
*Steelton	13,291
*Stowe Township	13,368
*Swissvale	16,029
Tamaqua	12,936
*Taylor	10,428
*Turtle Creek	10,690
Vandergrift	11,479
Warren	14,863
*Washington	24,545
Waynesboro	10,167
West Chester	12,325
Rhode Island:	
*Bristol (town)	11,953
*Cumberland (town)	10,304
*Lincoln (town)	10,421
*North Providence (town)	11,104
*Warwick (town)	23,196
Westerly (town)	10,997
*West Warwick (town)	17,696
South Carolina:	
Greenwood	11,020
Rock Hill	11,322
Sumter	11,780
South Dakota:	
Mitchell	10,942
Tennessee:	
Kingsport	11,914
Texas:	
Brownwood	12,789
Cleburne	11,539
Del Rio	11,693
Denison	13,850
Harlingen	12,124
Marshall	16,203
San Benito	10,753
Sweetwater	10,848
Utah:	
Provo	14,766
Vermont:	
Barre	11,307
Virginia:	
*Alexandria	24,149
Hopewell	11,327
Staunton	11,990
Suffolk	10,271
Winchester	10,855

* Within 1 of the 96 metrolitan districts defined by the Bureau of Census.

TABLE X-B.—*Cities in the United States having, in 1930, from 10,000 to 25,000 inhabitants and no radio station at present*—Continued

Washington:	
Bremerton	10,170
†Hoquiam	12,766
Port Angeles	10,188
*Vancouver	15,766
West Virginia:	
Martinsburg	14,857
Morgantown	16,186
*Moundsville	14,411
Wisconsin:	
Ashland	10,622
Beloit	23,611
Wisconsin—Continued.	
*Cudahy	10,631
Marinette	13,734
*Shorewood	13,479
*South Milwaukee	10,706
Two Rivers	10,063
Watertown	10,613
*Waukesha	17,176
*Wauwatosa	21,194
Wyoming:	
Cheyenne	17,361

TABLE XI-B.—*Cities in the United States having, in 1930, in excess of 25,000 inhabitants, and no radio stations at present*

California:	
*Alameda	35,033
*Alhambra	29,472
*Belvedere Township	33,023
Riverside	29,906
*Santa Monica	37,146
Connecticut:	
*Bristol	28,451
*Meriden	38,481
*Norwalk	36,019
*Stamford	46,346
Torrington	26,040
*West Haven (town)	25,808
Illinois:	
*Alton	30,151
Aurora	46,589
*Belleville	28,425
*Berwyn	47,027
Elgin	35,929
*Evanston	63,338
*Granite City	25,130
*Maywood	25,829
*Moline	32,236
*Oak Park	63,962
Waukegan	33,499
Indiana:	
*East Chicago	54,784
Kokomo	32,843
Michigan City	26,735
*Mishawaka	28,630
Iowa:	
Burlington	26,755
Clinton	25,726
*Council Bluffs	42,048
Ottumwa	28,075
Waterloo	46,191
Kentucky:	
*Newport	29,744
Maine:	
Lewiston	34,948
Massachusetts:	
*Arlington (town)	36,094
*Beverly	25,086
*Brockton	63,797
*Brookline (town)	47,490
*Cambridge	113,643
*Chelsea	45,816
*Chicopee	43,930
*Everett	48,424
Fitchburg	40,692
*Haverhill	48,710
*Holyoke	56,537
*Lynn	102,320
*Malden	58,036
*Medford	59,714
*Newton	65,276
*Quincy	71,983
*Revere	35,680
*Salem	43,353
*Somerville	103,908
Taunton	37,355
*Waltham	39,247
*Watertown (town)	34,913
Michigan:	
Ann Arbor	26,944
*Dearborn	50,358
*Hamtramck	56,268
Highland Park	52,959
*Pontiac	64,928
*Wyandotte	28,368
Missouri:	
*University City	25,809
New Hampshire:	
Concord	25,228
Nasbua	31,463
New Jersey:	
*Bayonne	88,979
*Belleville	26,974
*Bloomfield	38,077
*Clifton	46,875
*East Orange	68,020
*Elizabeth	114,589
*Garfield	29,739
*Hoboken	59,261
*Irvington	56,733
*Kearny	40,716
*Montclair	42,017
*New Brunswick	34,555
*North Bergen Township	40,714
*Orange	35,399
*Passaic	62,959
*Paterson	138,513
*Perth Amboy	43,516
*Plainfield	34,422
*Union City	58,659
*West New York	37,107
*Woodbridge Township	25,266
New York:	
Amsterdam	34,817
Kingston	28,088
*Mount Vernon	61,499
*New Rochelle	54,000
*Niagara Falls	75,460
Poughkeepsie	40,288
*Rome	32,338
Watertown	32,205
*Yonkers	134,646
Ohio:	
*Cleveland Heights	50,945
*East Cleveland	39,667
Elyria	25,633
Hamilton	52,176
*Lakewood	70,509
Lorain	44,512
Mansfield	33,525
Marion	31,084
*Massillon	26,400
Middletown	29,992
Newark	30,596
*Norwood	33,411
Springfield	68,743
Steubenville	35,422
*Warren	41,062
Pennsylvania:	
*Aliquippa	27,116
*Bethlehem	57,892

* Within 1 of the 96 metropolitan districts defined by the Bureau of Census.
† Contiguous to a larger city in which a station is located.

TABLE XI-B.—*Cities in the United States having, in 1930, in excess of 25,000 inhabitants, and no radio stations at present*—Continued

Pennsylvania—Continued.	
*Chester	59,164
Lebanon	25,561
*Lower Marion Township	35,166
*McKeesport	54,632
*Nanticoke	26,043
*Norristown	35,853
*Upper Darby Township	46,626
*Wilkinsburg	29,639
Rhode Island:	
*Central Falls	25,898
*Cranston	42,911
*East Providence (town)	29,995
*Newport	27,612
*Pawtucket	77,149
Rhode Island—Continued.	
*Woonsocket	49,376
Tennessee:	
Johnson City	25,080
Texas:	
Wichita Falls	43,690
Virginia:	
Petersburg	28,564
*Portsmouth	45,704
Wisconsin:	
Appleton	25,267
*Kenosha	50,262
Oshkosh	40,108
*West Allis	34,671

* Within 1 of the 96 metropolitan districts defined by the Bureau of Census.

AMATEURS

Numbers of amateur radio applications, examinations, and licenses continued to show substantial increase although changes in governing regulations eliminated numerous applications and licenses, notably when holders of class C privileges moved to locations ineligible for that class.

Amateur radio applications

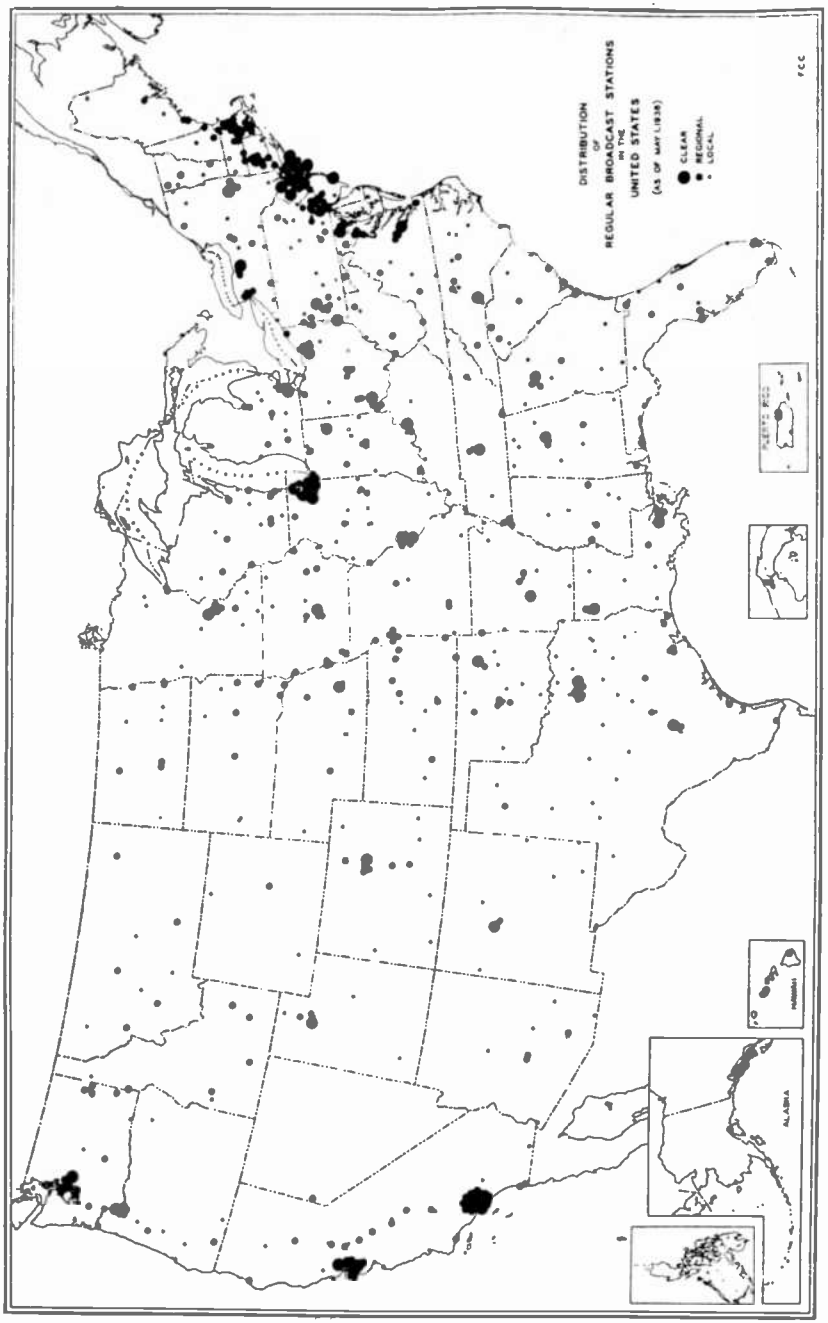
Received:	
Pending July 1, 1938	890
Received during the fiscal year	38,655
Total	39,545
Disposed:	
Approved	25,737
Returned to applicants	6,303
Referred to other Federal agencies, etc	398
Failed required examinations	5,878
Total	38,316
Pending, close of June 30, 1939	1,229

Ordinarily an amateur uses a joint form for two applications—for his license as an amateur operator and for license of his transmitter as an amateur station. The two applications are not counted separately unless filed separately, but in smaller number an application is counted twice if filed twice and otherwise one individual may within the year make several applications for license issues, renewals, or modifications. Similarly the figures for examinations include more than one for those who fail and later repeat, or who pass and later try for higher class of privileges.

Amateur radio examinations

Nature	Number	Passed	Failed	Percent failed
Code tests	12,314	8,311	4,003	33
Written tests:				
Class A envelope [1]	2,219	1,701	518	23
Class B envelope [1]	5,602	4,601	1,001	18
Class C envelope	2,145	1,770	375	17
Abridged (rules 405 and 406, now 151.20)	1,159	1,007	152	13
Total	11,125	9,079	2,046	18

[1] In 329 instances the examination included both A and B envelopes.


DISTRIBUTION OF REGULAR BROADCAST STATIONS IN THE UNITED STATES
(AS OF MAY 1, 1938)
CLEAR
REGIONAL
LOCAL
FCC
HAWAII
ALASKA

Heretofore an amateur gaining higher class of privileges received an endorsement on his license card without extending its term. Under the amended regulations the practice was changed so that in most instances such qualifications for change of operating privileges was recognized as basis for beginning a full license term. This is reflected in the distribution of figures in the following tabulation as compared to the previous year, increasing license issues and decreasing endorsements.

Amateur radio authorizations

Station licenses:	
New	6,762
Renewed	7,900
Modified and reissued	9,675
Total	24,337
Operator licenses	24,353
Operator license endorsements	662
Duplicates of lost or destroyed licenses	477
Total	25,492
Grand total	49,829

The net effect of issues and eliminations was an increase in the number of outstanding amateur licenses, as shown in terms of stations. The number of licensed amateur operators is somewhat less, but also passed 50,000 during the year.

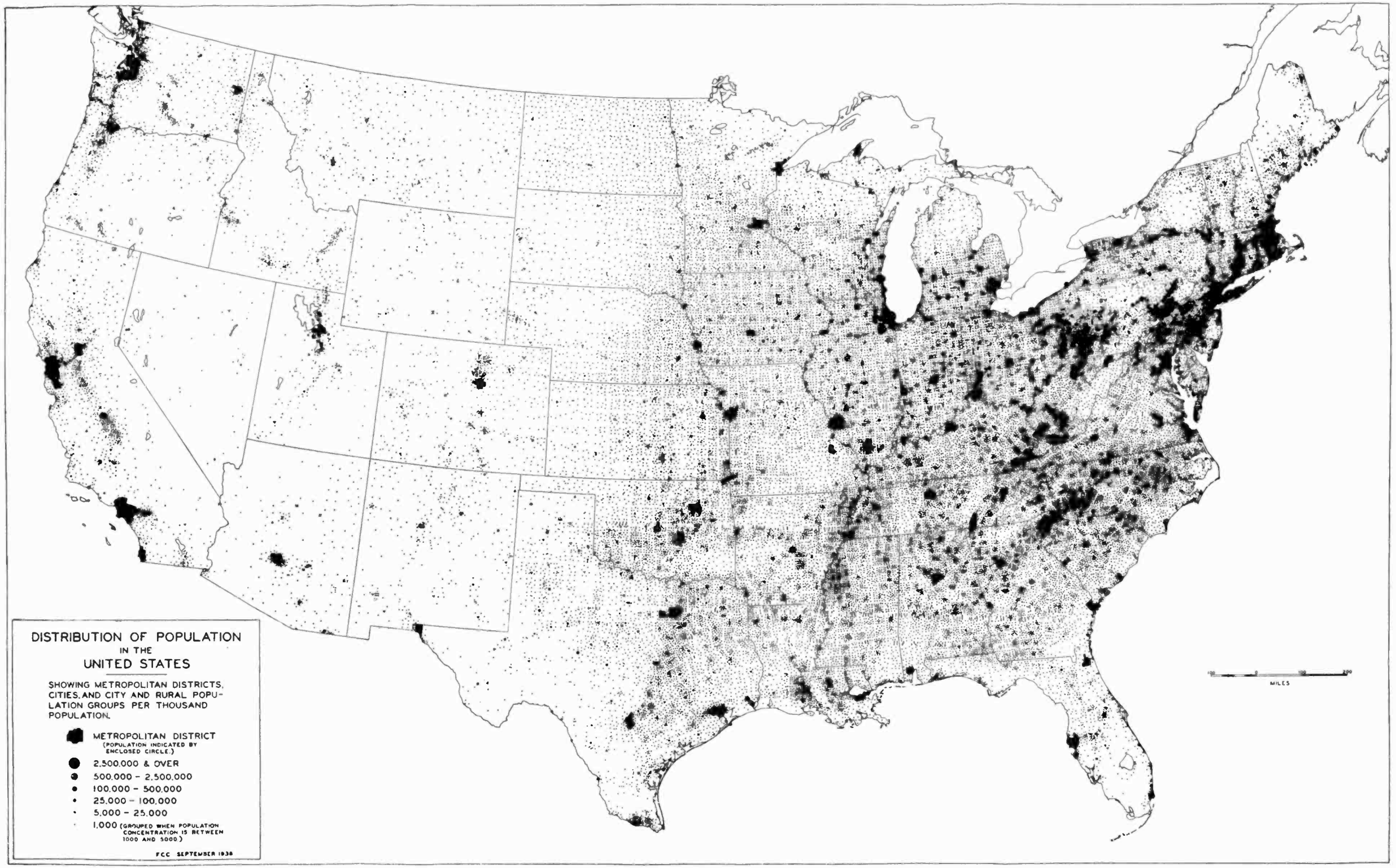
Amateur radio station licenses

Valid at close of fiscal year 1938	49,911
Plus:	
Expired but not deleted June 30, 1938	1,073
New issues, fiscal year 1939	6,762
Total	7,835
Total valid	57,746
Less eliminations, fiscal year 1939:	
Revocations	0
Cancelations	124
Deletions	2,953
Expirations (renewal yet possible)	1,111
Total	4,188
Valid of record close of June 30, 1939	53,558

COMMERCIAL RADIO OPERATORS

To permit quick service in qualifying operators for land, sea, and air radio stations, such licensing is largely decentralized, with 27 offices of issue. License issues and related items are reported for a central record and during the year aggregated 31,585. This was an increase of nearly 50 percent over the previous year, reflecting increased use of radio facilities for police purposes and other services. (See also Field inspections, Investigations, and Other activities in these appendices.)

A detailed report arranged according to service appears in the following table:



192443—40 (Face p. 208)

Commercial licenses

	Applications received	Authorizations issued	New stations authorized	Stations deleted	Total stations June 30, 1939
EMERGENCY					
Municipal police	3,154	2,229	468	20	787
State police	455	312	68	77	227
Interzone police	70	45	5	0	26
Zone police	161	111	16	0	53
Marine fire	29	13	1	0	4
Forestry	542	457	247	0	247
Special emergency	492	397	99	3	192
AVIATION					
Aircraft	2,286	2,255	506	215	1,237
Aeronautical	808	653	68	14	378
Aeronautical point to point	320	251	23	8	152
Airport	120	80	4	0	57
FIXED PUBLIC					
Point to point:					
Telegraph	945	864	35	12	457
Telegraph-press	274	103	11	0	69
Telephone	359	357	58	11	274
FIXED PRIVATE					
Point to point:					
Telegraph	None	None	None	None	None
Telephone	None	None	None	None	None
PUBLIC COASTAL					
Coastal harbor	158	161	24	0	126
Coastal telegraph	174	132	0	8	106
Coastal telephone	5	5	0	0	4
Marine relay	47	45	1	0	41
PRIVATE COASTAL					
Coastal harbor	0	0	0	0	0
Coastal telegraph	3	3	0	0	3
AGRICULTURE					
Point to point:					
Telegraph	7	7	0	0	7
EXPERIMENTAL					
General experimental	650	707	18	0	372
Special experimental	370	357	10	0	----------
Class I	69	0	0	0	----------
Class II	73	0	0	0	----------
Class III	0	0	0	0	----------
MISCELLANEOUS GEOPHYSICAL					
Geological	410	345	111	49	280
INTERMITTENT					
Motion picture	25	24	6	0	10
Provisional	8	5	2	0	2
SPECIAL PRESS					
Relay press	15	6	5	0	5
Mobile press	5	3	0	0	3
Ship	5,532	5,281	962	860	3,756
Total	17,566	15,208	2,748	1,277	8,875

Wire certificates, telephone—received, 46, granted, 41; telegraph—received, 14, granted, 16.
Grand total applications received, 17,626; grand total applications granted, 15,265.

APPENDIX F

FINANCIAL AND OTHER STATISTICAL DATA RELATING TO STANDARD BROADCAST STATIONS

Tables I to X, and charts 1 to 3, shown in this appendix, contain financial, operating, program, employment, and other statistical data relating to the broadcasting industry in 1938. These data are, for the most part, based upon annual reports from licensees of standard broadcast stations, filed pursuant to section 15.11 (now section 1.361) of the Commission's Rules of Practice and Procedure, and upon the responses of the three major networks to the Commission's requests for certain information.

The following statment shows the status of the returns from stations as of June 28, 1939, when the data mentioned were compiled:

Commercial broadcast stations included in the summaries	660
Noncommercial stations (not included in the summaries)	[1] 38
Extraterritorial stations (not included in the summaries)	10
Stations filing incomplete reports (not included in the summaries)	14
Construction permits for new stations	42
	764

[1] Includes 24 stations operated by educational institutions, 12 by religious groups, and 2 by miscellaneous organizations.

Geographical groupings.—All broadcast stations operating in the United States have been grouped geographically for statistical purposes into three districts. These districts have been further subdivided into seven regions as follows:

NORTHERN DISTRICT

Northeastern region.—Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Great Lakes region.—Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia, and Wisconsin.

Midwest region.—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

SOUTHERN DISTRICT

Southeastern region.—Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

South Central region.—Oklahoma and Texas.

WESTERN DISTRICT

Mountain region.—Arizona, Colorado, Idaho, Montana, Nevada, New Mexico Utah, and Wyoming.

Pacific region.—California, Oregon, and Washington.

Investment of networks and stations.—As shown in tables IV and V, the investment, after depreciation, of the major networks and commercial stations in broadcast property (exclusive of goodwill) aggregated $33,826,792 at the end of 1938. This investment is made up as follows:

Investment of networks:	
In network plant	$6, 917, 630
In managed and operated stations	2, 358, 390
Investment of stations (excluding network-owned stations detailed above)	24, 550, 772
Total	33, 826, 792

Revenue and expenses of network and stations.—The broadcasting industry in 1938 sold time for which advertisers and others paid $117,379,459 (after trade discounts). After deducting certain sales commissions to agencies, representatives, and brokers and adding miscellaneous revenues, the balance, termed total revenues, was $111,358,378. Broadcast expenses were $92,503,594, leaving broadcast income in the amount of $18,854,784. (See table I.)

The financial data shown above are divided between the networks and the stations as follows:

	Networks (excluding owned and operated stations)	660 stations
Time sales	$35,455,510	$81,923,949
Total revenues	32,229,616	79,128,760
Broadcast expenses	27,880,172	64,623,422
Broadcast income	4,349,446	14,505,338

Program service of broadcast stations.—The annual reports from licensees of standard broadcast stations, mentioned above, contained a schedule showing the types of programs broadcast during the week beginning December 11, 1938. During that week the 660 commercial stations mentioned herein operated a total of 67,283 station-hours. Of this total time, 22,780 hours (or 33.9 percent) were commercially sponsored, while 44,503 hours (or 66.1 percent) were furnished by the stations on a sustaining basis. (See table VIII.)

These station hours are further classified as follows:

	Station hours	Percent of total
Personal rendition:		
Taken from national networks	19,644	29.2
Taken from regional networks	2,896	4.3
Originated and broadcast locally	22,616	33.6
Subtotal	45,156	67.1
Mechanical rendition:		
Transcriptions	14,773	22.0
Phonograph records	7,354	10.9
Subtotal	22,127	32.9
Grand total	67,283	100.0

Employment in the broadcasting industry.—During the week beginning December 11, 1938, the major networks and 660 commercial broadcast stations had 18,359 full-time employees and 4,377 part-time employees. These employees received $830,003 and $103,134, respectively, in the form of compensation during that week, or an average of $45.20 and $23.55, respectively. At December 31, 1938, there were 23,060 employees in the service of the above-indicated networks and stations, and the total compensation in 1938 of all employees, including officers, was $45,663,757. (See table IX.)

Tables and charts.—Tables I to X and charts 1 to 3, referred to above, follow:

TABLE I.—*Combined income statement of 3 major networks and licensees of 660 broadcast stations (including 1 major network not the licensee of any such station)*

[Year ended Dec. 31, 1938]

Item	Network operations [1]	23 stations [2]	637 stations	Networks and stations
Revenues:				
Network time sales	$35,455,510	$5,347,388	$15,810,027	$56,612,925
Other time sales (less payments to other stations of $745,452)		7,837,258	52,929,276	60,766,534
Total time sales by networks and stations	35,455,510	13,184,646	68,739,303	117,379,459
Deduct: Commission to agencies, representatives, and brokers	8,165,742	1,102,486	7,218,972	16,487,200
Net revenue received from sale of time	27,289,768	12,082,160	61,520,331	100,892,259
Sale and placing of talent	2,381,964	388,818	3,310,562	6,081,344
Other incidental broadcast revenues	2,537,416	161,971	1,664,918	4,364,305
Sustaining programs sold to stations	20,470			20,470
Total revenues of networks and stations	32,229,618	12,632,949	66,495,811	111,358,378
Expenses:				
Technical expenses	2,301,069	1,597,133	9,150,386	13,048,588
Program, talent, and communication-line expense (including sustaining programs purchased, royalties, and similar items)	14,872,981	3,060,424	20,163,589	38,196,994
Advertising, promotional, and selling expenses	2,715,298	906,664	6,341,174	9,963,136
General and administrative expenses	3,635,724	861,360	10,591,634	15,088,718
Unallocated direct broadcast expenses	481,163	142,640	4,585,296	5,209,099
Indirect broadcast expenses (depreciation, amortization, taxes, uncollectible revenue, and rents)	3,873,937	1,106,439	6,016,683	10,997,059
Total broadcast expenses	27,880,172	7,674,660	56,948,762	92,503,594
Broadcast income	4,349,446	4,958,289	9,547,049	18,854,784
Income from broadcast assets leased to others				277,155
Income from others who use licensee stations for their own time sales				928,218
Income from general services to licensees				92,958
Total income derived from activities related to broadcasting				20,153,115

[1] Excludes stations managed and operated by networks.
[2] Represents stations managed and operated by networks.

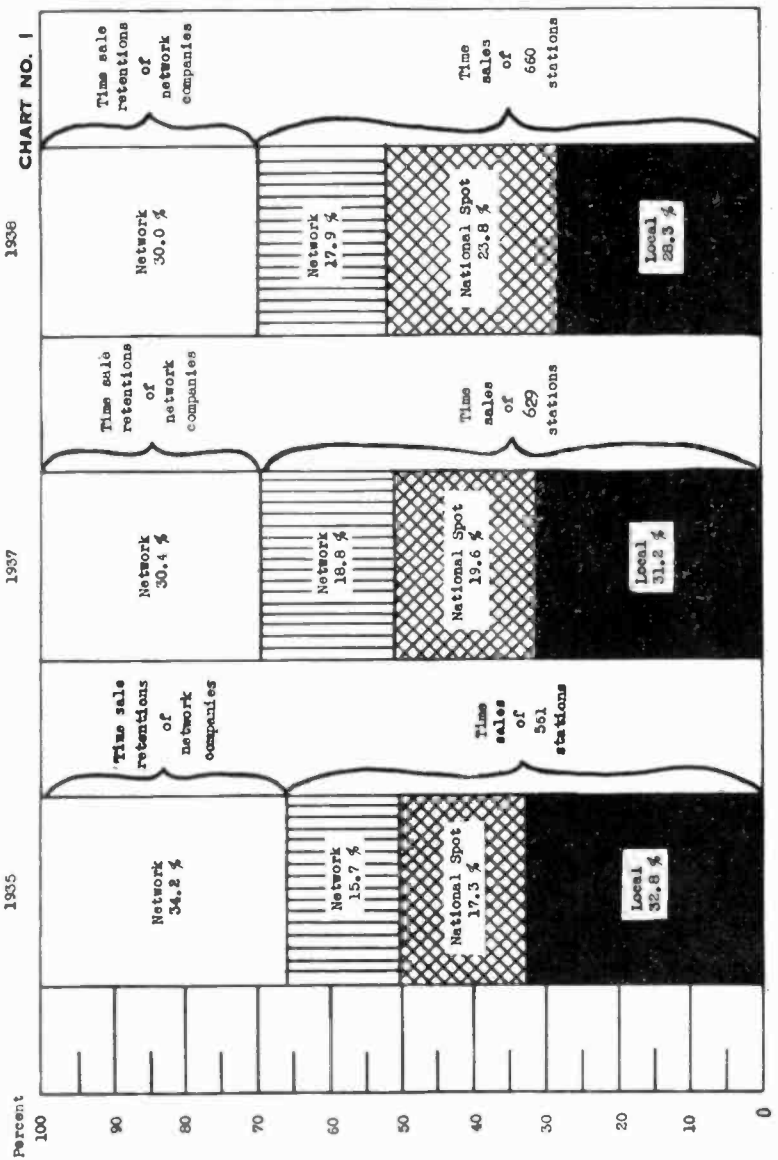


CHART NO. 1
PERCENTAGE DISTRIBUTION OF TIME SALES OF NETWORKS AND COMMERCIAL STATIONS
Percent
100
90
80
70
60
50
40
30
20
10
0
1935
1937
1938
Network 34.2 %
Time sale retentions of network companies
Network 15.7 %
National Spot 17.3 %
Local 32.8 %
Time sales of 561 stations
Network 30.4 %
Time sale retentions of network companies
Network 18.8 %
National Spot 19.6 %
Local 31.2 %
Time sales of 629 stations
Network 30.0 %
Time sale retentions of network companies
Network 17.9 %
National Spot 23.8 %
Local 28.3 %
Time sales of 660 stations

TABLE II.—*Broadcast income items of stations by class and network affiliation, 1938*

STATIONS AFFILIATED WITH NATIONAL NETWORKS

Item	Clear channel				Regional				Local		Grand total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part-time	Unlimited	Day and part-time	
	Unlimited	Part-time	Unlimited	Part-time	High-power	Other					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stations with time sales of $25,000 or more:											
Number of stations	31	4	14	4	8	161	11	14	64	5	316
Revenue from sale of station time:											
To national networks	$9,302,760	$341,822	$926,070	$45,355	$645,132	$7,661,101	$20,559	$373,672	$318,108	$10,868	$19,645,447
To regional networks	53,695		6,968	319	21,577	874,712	3,805	13,956	89,902	21,307	1,086,241
To stations	67,023			4,240	6,467	187,281	5,368	17,949	8,785	210	297,323
To national and regional users	12,139,067	977,970	1,213,512	252,350	670,167	8,676,102	225,943	401,801	597,259	10,444	25,164,615
To local users	3,363,589	325,844	837,960	216,159	672,203	11,250,916	661,439	649,776	2,674,165	139,422	20,791,473
Sale of other station time	73,597	1		2,435		308,579	14,154	986	44,090		443,842
Total sale of station time	24,999,731	1,645,637	2,984,510	520,858	2,015,546	28,958,691	931,268	1,458,140	3,732,309	182,251	67,428,941
Deductions:											
Payments to networks and stations (from sale of time)	320,679	65,222	6,515	649	5,881	222,055	14,961	16,470	16,805	3,822	673,059
Commissions to regularly established agencies	2,551,376	27,251	236,104	37,044	163,654	1,872,341	41,352	68,863	87,292	4,339	5,089,616
Commissions to representatives, brokers, and others	538,068	34,673	97,641	12,996	42,852	994,696	23,917	36,427	82,503	2,351	1,866,114
Total deductions from sale of station time	3,410,113	127,146	340,260	50,689	212,387	3,089,092	80,230	121,760	186,600	10,512	7,628,789
Balance, net time sales	21,589,618	1,518,491	2,644,250	470,169	1,803,159	25,869,599	851,038	1,336,380	3,545,709	171,739	59,800,152
Incidental broadcast revenues:											
Revenue from the sale and placing of talent	1,299,904	190,609	89,173	35,673	58,063	1,286,271	36,607	62,251	68,027		3,126,668
Miscellaneous sales	434,394	39,781	208,464	23,362	28,514	668,213	38,814	25,823	75,774	197	1,543,336
Total incidental broadcast revenues	1,734,298	230,480	297,637	59,035	86,577	1,954,484	75,421	88,074	143,801	197	4,670,004
Total broadcase revenues	23,323,916	1,748,971	2,941,887	529,204	1,889,736	27,824,083	926,459	1,424,454	3,689,510	171,936	64,470,156

Expenses:											
Technical expenses	3,245,187	164,690	506,407	90,155	264,348	3,684,077	138,689	190,193	553,170	27,431	8,862,347
Program expenses	6,646,934	607,077	834,559	157,401	548,287	7,999,576	379,005	425,446	1,120,510	57,782	18,776,577
Advertising, promotional, and selling expenses	1,397,967	112,304	316,704	64,622	199,614	2,875,614	146,923	178,960	529,973	26,330	5,849,011
General and administrative expenses	2,304,038	213,162	411,479	108,626	294,901	4,411,071	151,220	239,912	712,442	26,165	8,873,016
Other broadcast expenses	386,385	94,609	92,100	10,691	67,080	908,251	26,142	49,386	117,577	4,440	1,756,701
Total broadcast expenses	13,980,511	1,191,842	2,161,249	431,495	1,374,230	19,878,589	839,979	1,083,897	3,033,672	142,188	44,117,652
Net broadcast revenues	9,343,405	557,129	780,638	97,709	515,506	7,945,494	86,480	340,557	655,838	29,748	20,352,504
Deductions from net broadcast revenues [1]	1,700,960	173,034	347,552	43,782	197,871	2,617,358	94,088	102,317	314,291	3,342	5,594,595
Broadcast income	7,642,445	384,095	433,086	53,927	317,635	5,328,136	−7,608	238,240	341,547	26,406	14,757,909
All commercial stations:											
Number of stations	31	4	14	4	8	161	12	15	91	10	350
Broadcast revenues	$23,323,916	$1,748,971	$2,941,887	$529,204	$1,889,736	$27,824,083	$945,381	$1,447,701	$4,109,908	$251,850	$65,012,637
Broadcast expenses	13,980,511	1,191,842	2,161,249	431,495	1,374,230	19,878,589	872,125	1,107,584	3,466,133	203,456	44,667,214
Net broadcast revenues	9,343,405	557,129	780,638	97,709	515,506	7,945,494	73,256	340,117	643,775	48,394	20,345,423
Deductions from net broadcast revenues [1]	1,700,960	173,034	347,552	43,782	197,871	2,617,358	98,723	103,308	367,538	40,852	5,690,978
Broadcast income	7,642,445	384,095	433,086	53,927	317,635	5,328,136	−25,467	236,809	276,237	7,542	14,654,445

STATIONS AFFILIATED WITH REGIONAL NETWORKS ONLY

Stations with time sales of $25,000 or more:											
Number of stations						4	5		5	3	17
Revenue from sale of station time:											
To national networks						$478					$478
To regional networks						26,582	$13,256		$10,655	$18,028	68,521
To stations						280	1,230		5,709	1,695	8,914
To national and regional users						44,022	56,295		54,210	25,459	179,986
To local users						398,501	135,333		210,234	78,713	822,781
Sale of other station time							5,240				5,240
Total sale of station time						469,863	211,354		280,808	123,895	1,085,920
Deductions:											
Payments to networks and stations (from sale of time)						5,309			732	8,255	14,296
Commissions to regularly established agencies						41,624	5,850		6,197	3,067	56,738

See footnotes at end of table.

TABLE II.—*Broadcast income items of stations by class and network affiliation, 1938*—Continued

STATIONS AFFILIATED WITH REGIONAL NETWORKS ONLY—Continued

Item	Clear channel				Regional				Local		Grand total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part-time	Unlimited	Day and part-time	
	Unlimited	Part-time	Unlimited	Part-time	High-power	Other					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stations with time sales of $25,000 or more—Continued.											
Deductions—Continued.											
Commissions to representatives, brokers, and others						$28,817	$2,932		$100	$2,400	$34,249
Total deductions from sale of station time						75,750	8,782		7,029	13,722	105,283
Balance, net time sales						394,113	202,572		273,779	110,173	980,637
Incidental broadcast revenues:											
Revenue from the sale and placing of talent						106,363	1,111				107,474
Miscellaneous sales						98,862	3,630			935	103,427
Total incidental broadcast revenues						205,225	4,741			935	210,901
Total broadcast revenues						599,338	207,313		273,779	111,108	1,191,538
Expenses:											
Technical expenses						95,510	34,545		46,939	15,716	192,710
Program expenses						384,114	63,115		78,835	27,613	553,677
Advertising, promotional, and selling expenses						48,647	19,342		59,588	16,481	144,058
General and administrative expenses						135,870	43,249		21,488	26,214	226,821
Other broadcast expenses						10,342	9,212		20,331	2,601	42,486
Total broadcast expenses						674,483	169,463		227,181	88,625	1,159,752
Net broadcast revenues						−75,145	37,850		46,598	22,483	31,786

Deductions from net broadcast revenues [1]						66, 074	22, 781		31, 791	23, 485	144, 131
Broadcast income						−141, 219	15, 069		14, 807	−1, 002	−112. 345
All commercial stations:											
Number of stations						4	5		8	3	20
Broadcast revenues						$599, 338	$207, 313		$337, 659	$111, 108	$1, 255, 418
Broadcast expenses						674, 483	169, 463		284, 371	88, 625	1, 216, 942
Net broadcast revenues						−75, 145	37, 850		53, 288	22, 483	38, 476
Deductions from net broadcast revenues [1]						66, 074	22, 781		38, 560	23, 485	150, 900
Broadcast income						−141, 219	15, 069		14, 728	−1, 002	−112, 424

STATIONS NOT AFFILIATED WITH NETWORKS

Stations with time sales of $25,000 or more: Number of stations						23	33	13	63	20	152
Revenue from the sale of station time:											
To national networks						$12, 133			$690		$12, 823
To regional networks						28, 658	$1, 384		494	$298	30, 834
To stations						5, 634			1, 200		6, 834
To national and regional users						951, 131	740, 564	$497, 097	525, 285	50, 507	2, 764, 584
To local users						2, 271, 471	1, 739, 493	1, 137, 499	2, 817, 463	769, 399	8, 735, 325
Sale of other station time						12, 269	28, 041	37, 328	5, 746	730	84, 114
Total sale of station time						3, 281, 296	2, 509, 482	1, 671, 924	3, 350, 878	820, 934	11, 634, 514
Deductions:											
Payments to networks and stations (from sale of time)						52, 847		5, 250			58, 097
Commissions to regularly established agencies						368, 331	174, 937	124, 762	68, 999	14, 541	751, 570
Commissions to representatives, brokers, and others						151, 207	154, 736	90, 445	107, 862	18, 921	523, 171
Total deductions from sale of station time						572, 385	329, 673	220, 457	176, 861	33, 462	1, 332, 838
Balance, net time sales						2, 708, 911	2, 179, 809	1, 451, 467	3, 174, 017	787, 472	10, 301, 676
Incidental broadcast revenues:											
Revenue from the sale and placing of talent						222, 802	117, 899	61, 184	60, 212	3, 141	465, 238

See footnotes at end of table.

TABLE II.—*Broadcast income items of stations by class and network affiliation, 1938*—Continued

STATIONS NOT AFFILIATED WITH NETWORKS—Continued

Item	Clear channel				Regional				Local		Grand total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part-time	Unlimited	Day and part-time	
	Unlimited	Part-time	Unlimited	Part-time	High-power	Other					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stations with time sales of $25,000 or more—Continued.											
Incidental broadcast revenues—Con.											
Miscellaneous sales						$94,446	$27,524	$8,740	$46,038	$3,378	$180,126
Total incidental broadcast revenues						317,248	145,423	69,924	106,250	6,519	645,364
Total broadcast revenues						3,026,159	2,325,232	1,521,391	3,280,267	793,991	10,947,040
Expenses:											
Technical expenses						474,252	396,974	233,671	469,052	119,513	1,692,462
Program expenses						1,253,901	840,056	569,245	1,094,595	235,962	3,993,759
Advertising, promotional, and selling expenses						270,312	273,951	159,816	430,988	119,702	1,254,769
General and administrative expenses						680,375	483,406	280,315	764,094	144,967	2,353,157
Other broadcast expenses						82,050	70,315	83,140	151,194	21,535	408,234
Total broadcast expenses						2,760,890	2,003,702	1,326,187	2,909,923	641,679	9,702,381
Net broadcast revenues						265,269	261,530	195,204	370,344	152,312	1,244,659
Deductions from net broadcast revenues [1]						305,050	232,371	114,300	299,423	83,038	1,034,182
Broadcast income						−39,781	29,159	80,904	70,921	69,274	210,477
All commercial stations:											
Number of stations						30	51	18	128	63	290
Broadcast revenues						$3,159,662	$2,579,573	$1,598,336	$4,157,396	$1,365,738	$12,860,705

Broadcast expenses						2,875,061	2,390,066	1,410,257	3,748,962	1,191,778	11,616,144
Net broadcast revenues						284,601	189,507	188,079	408,414	173,960	1,244,561
Deductions from net broadcast revenues [1]						320,523	267,944	123,054	416,254	153,469	1,281,244
Broadcast income						−35,922	−78,437	65,025	−7,840	20,491	−36,683

TOTAL STATIONS

Stations with time sales of $25,000 or more: Number of stations	31	4	14	4	8	188	49	27	132	28	485
Revenue from the sale of station time:											
To national networks	$9,302,760	$341,822	$926,070	$45,355	$645,132	$7,673,712	$20,559	$373,672	$318,798	$10,868	$19,658,748
To regional networks	53,695		6,968	319	21,577	929,952	18,445	13,956	101,051	39,633	1,185,596
To stations	67,023			4,240	6,467	193,195	6,598	17,949	15,694	1,905	313,071
To national and regional users	12,139,067	977,970	1,213,512	252,350	670,167	9,671,255	1,022,802	898,898	1,176,754	86,410	28,109,185
To local users	3,383,589	326,844	837,960	216,159	672,203	13,990,868	2,536,265	1,787,275	5,701,862	987,534	30,349,579
Sale of other station time	73,597	1		2,435		320,848	47,435	38,314	49,836	730	533,196
Total sale of station time	24,999,731	1,645,637	2,984,510	520,858	2,015,546	32,709,850	3,652,104	3,130,064	7,363,995	1,127,080	80,149,375
Deductions:											
Payments to networks and stations (from sale of time)	320,679	65,222	6,515	649	5,881	280,211	14,961	21,720	17,537	12,077	745,452
Commissions to regularly established agencies	2,551,376	27,251	236,104	37,044	163,654	2,282,296	222,139	193,625	162,488	21,947	5,897,924
Commissions to representatives, brokers, and others	538,058	34,673	97,641	12,996	42,852	1,174,720	181,585	126,872	190,465	23,672	2,423,534
Total deductions from sale of station time	3,410,113	127,146	340,260	50,689	212,387	3,737,227	418,685	342,217	370,490	57,696	9,066,910
Balance, net time sales	21,589,618	1,518,491	2,644,250	470,169	1,803,159	28,972,623	3,233,419	2,787,847	6,993,505	1,069,384	71,082,465
Incidental broadcast revenues:											
Revenue from the sale and placing of talent	1,299,904	190,699	89,173	35,673	58,063	1,615,436	155,617	123,435	128,239	3,141	3,699,380
Miscellaneous sales	434,394	39,781	208,464	23,362	28,514	861,521	69,968	34,563	121,812	4,510	1,826,889
Total incidental broadcast revenues	1,734,298	230,480	297,637	59,035	86,577	2,476,957	225,585	157,998	250,051	7,651	5,526,269
Total broadcast revenues	23,323,916	1,748,971	2,941,887	529,204	1,889,736	31,449,580	3,459,004	2,945,845	7,243,556	1,077,035	76,608,734

See footnotes at end of table.

TABLE II.—*Broadcast income items of stations by class and network affiliation, 1938*—Continued

TOTAL STATIONS—Continued

Item	Clear channel				Regional				Local		Grant total
	50,000 watts or more		5,000 to 25,000 watts		Unlimited		Limited and day	Part-time	Unlimited	Day and part-time	
	Unlimited	Part-time	Unlimited	Part-time	High-power	Other					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stations with time sales of $25,000 or more:—Continued.											
Expenses:											
Technical expenses	$3,245,187	$164,690	$506,407	$90,155	$264,348	$4,253,839	$567,208	$423,864	$1,069,161	$162,660	$10,747,519
Program expenses	6,646,934	607,077	834,559	157,401	548,287	9,637,591	1,282,176	994,691	2,293,940	321,357	23,324,013
Advertising, promotional, and selling expenses	1,397,967	112,304	316,704	64,622	199,614	3,194,573	440,216	338,776	1,020,549	162,513	7,247,838
General and administrative expenses	2,304,038	213,162	411,479	108,626	294,901	5,227,316	677,875	520,227	1,498,024	197,346	11,452,994
Other broadcast expenses	386,385	94,609	92,100	10,691	67,080	1,000,643	105,669	132,526	289,102	28,616	2,207,421
Total broadcast expenses	13,980,511	1,191,842	2,161,249	431,495	1,374,230	23,313,962	3,073,144	2,410,084	6,170,776	872,492	54,979,785
Net broadcast revenues	9,343,405	557,129	780,638	97,709	515,506	8,135,618	385,860	535,761	1,072,780	204,543	21,628,949
Deductions from net broadcast revenues [1]	1,700,960	173,034	347,552	43,782	197,871	2,988,482	349,240	216,617	645,505	109,865	6,772,908
Broadcast income	7,642,445	384,095	433,086	53,927	317,635	5,147,136	36,620	319,144	427,275	94,678	14,856,041
All commercial stations:											
Number of stations	31	4	14	4	8	195	68	33	227	76	660
Broadcast revennes	$23,323,916	$1,748,971	$2,941,887	$529,204	$1,889,736	$31,583,063	$3,732,267	$3,046,037	$8,604,963	$1,728,696	$79,128,760
Broadcast expenses	13,980,511	1,191,842	2,161,249	431,495	1,374,230	23,428,133	3,431,654	2,517,841	7,499,486	1,483,859	57,500,300
Net broadcast revenues	9,343,405	557,129	780,638	97,709	515,506	8,154,950	300,613	528,196	1,105,477	244,837	21,628,460
Deductions from net broadcast revenues [1]	1,700,960	173,034	347,552	43,782	197,871	3,003,955	389,448	226,362	822,352	217,806	7,123,122
Broadcast income	7,642,445	384,095	433,086	53,927	317,635	5,150,995	−88,835	301,834	283,125	27,031	14,505,338

[1] Includes depreciation, amortization, plant losses, taxes, uncollectible revenue, and rents, all assignable to broadcast services.

NOTE A.—The term "part-time" as used in this table refers to share-time and specified-hour stations.
NOTE B.—Dash [—] indicates a deficit or other reverse item.

TABLE III.—*Income items of broadcast stations by broadcast region and State*

Broadcast region and State	Stations with time sales of $25,000 or more									
	Number of stations	Time sales						Deductions from time sales [1]	Incidental broadcast revenues [2]	Broadcast revenues
		Network			Spot	To local users	Total			
		To national networks	To regional networks	To other networks and stations	To national and regional users					
NORTHERN DISTRICT										
Northeastern region:										
Connecticut	9	$318,054	$97,126	$528	$355,062	$396,732	$1,167,502	$99,949	$39,314	$1,106,867
Delaware, Maryland, Maine, New Hampshire, Vermont	8	423,925	9,784	1,178	365,117	571,108	1,371,012	143,456	193,949	1,421,505
	5	120,607	37,745	----------	115,647	177,754	451,753	32,373	20,258	439,638
Massachusetts	19	861,582	158,768	1,318	879,707	1,274,881	3,176,256	369,031	81,389	2,888,614
New Jersey	5	448,517	----------	----------	1,889,973	693,533	3,032,023	513,509	341,965	2,860,479
New York	34	2,630,230	4,354	4,298	2,878,997	3,341,470	8,859,349	996,825	487,752	8,350,276
Pennsylvania	29	1,314,228	62,342	82,637	1,915,273	2,057,661	5,432,141	571,143	336,216	5,197,214
Rhode Island	3	234,109	42,340	----------	131,581	244,790	652,820	65,494	7,071	594,397
District of Columbia	4	308,110	3,175	----------	284,788	483,599	1,079,672	126,019	37,134	990,787
Total, Northeastern region	116	6,659,262	415,634	89,959	8,816,145	9,241,528	25,222,528	2,917,799	1,545,048	23,849,777
Great Lakes region:										
Illinois	25	1,124,098	8,352	----------	2,778,465	2,033,303	5,944,218	601,946	498,060	5,840,332
Indiana	14	237,683	----------	245	371,198	702,691	1,311,817	72,165	68,872	1,308,524
Kentucky	6	350,724	----------	4,318	310,671	377,164	1,042,877	105,785	42,206	979,298
Michigan	16	755,003	57,630	280	1,468,156	1,186,080	3,467,159	552,074	464,156	3,379,241
Ohio	21	2,999,473	----------	22,590	2,712,295	1,327,152	7,061,510	1,349,704	496,834	6,208,640
West Virginia	6	39,730	----------	1,900	189,278	344,930	575,838	49,823	29,151	555,166
Wisconsin	12	190,893	319	576	318,926	872,471	1,383,175	79,196	100,101	1,404,080
Total, Great Lakes region	100	5,697,594	66,301	29,909	8,148,989	6,843,801	20,786,594	2,810,693	1,699,380	19,675,281

See footnotes at end of table.

TABLE III.—*Income items of broadcast stations by broadcast region and State*—Continued

Broadcast region and State	Stations with time sales of $25,000 or more									
	Number of stations	Time sales						Deductions from time sales	Incidental broadcast revenues	Broadcast revenues
		Network			Spot	To local users	Total			
		To national networks	To regional networks	To other networks and stations	To national and regional users					
NORTHERN DISTRICT—continued										
Midwest region:										
Iowa	$19	$414,915			$853,668	$524,206	$1,792,789	$189,303	$143,437	$1,746,923
Kansas	0	123,792	$1,423		219,875	398,947	744,037	37,171	55,733	762,599
Minnesota	12	434,972		$726	742,162	1,000,415	2,178,275	194,679	167,868	2,151,464
Missouri	18	898,516		4,050	1,268,979	1,327,386	3,498,931	337,361	361,006	3,522,576
Nebraska	7	353,935			413,888	299,886	1,067,709	145,797	64,339	986,251
North Dakota	4	53,828			157,577	144,089	355,494	38,467	4,945	321,972
South Dakota	3	22,830			121,978	101,535	246,343	22,968	1,359	224,754
Total, Midwest region	63	2,302,788	1,423	4,776	3,778,127	3,796,464	9,883,578	965,746	798,707	9,716,539
Total, Northern district	279	14,659,644	483,358	124,044	20,743,261	19,881,793	55,892,700	6,694,238	4,043,135	53,241,597
SOUTHERN DISTRICT										
Southeastern region:										
Alabama	6	78,996		649	148,182	340,329	568,156	29,600	33,489	572,045
Arkansas, Mississippi	5	78,466	319	2,925	135,563	145,659	362,932	36,624	43,038	369,346
Florida	11	297,942		300	289,981	594,266	1,182,489	71,150	9,843	1,121,182
Georgia	8	216,972		8,316	414,256	443,884	1,083,458	121,574	26,123	988,007
Louisiana	9	238,538		5,300	299,423	424,864	968,125	109,412	30,343	889,026
North Carolina	10	185,487			486,293	406,418	1,078,198	91,768	83,817	1,070,247
South Carolina	4	28,667		1,373	111,918	125,448	267,406	30,098	10,794	248,102
Tennessee	13	351,927		4,573	569,935	654,268	1,580,703	158,752	79,193	1,501,144
Virginia	10	193,175	778	2,684	291,269	430,792	918,698	86,600	43,225	875,323
Total, Southeastern region	76	1,670,170	1,097	26,150	2,746,820	3,565,928	8,010,165	735,608	359,865	7,634,422

South Central region:										
Oklahoma	7	265,048	555	43	417,877	387,392	1,070,915	113,441	46,831	1,003,805
Texas	30	639,175	36,514	153,180	1,165,682	1,761,035	3,755,586	387,195	247,228	3,615,619
Total, South Central region	37	904,223	37,069	153,223	1,583,559	2,148,427	4,826,501	500,636	293,559	4,619,424
Total, Southern district	113	2,574,393	38,166	179,373	4,330,379	5,714,355	12,836,666	1,236,244	653,424	12,253,846
WESTERN DISTRICT										
Mountain region:										
Arizona	3	47,799	806	----------	57,122	188,061	293,788	23,802	80,333	300,319
Colorado	6	276,164	----------	8,900	208,901	444,093	998,058	98,120	106,544	1,006,482
Wyoming										
Idaho	4	522	----------	----------	33,012	127,783	166,317	7,096	204	159,425
Montana	4	20,527	----------	----------	122,807	159,652	302,986	8,086	33,094	327,994
Nevada	3	16,175	----------	----------	43,217	124,248	183,640	8,712	5,579	180,507
New Mexico										
Utah	3	260,386	----------	----------	191,824	287,795	740,005	50,804	8,850	698,051
Total, Mountain region	23	621,573	806	8,900	721,883	1,331,632	2,684,794	196,620	184,604	2,672,778
Pacific region:										
California	45	1,106,835	639,043	----------	1,766,522	2,607,197	6,119,597	760,880	423,697	5,782,414
Oregon	8	273,077	17,769	----------	211,908	457,707	960,461	61,884	31,923	930,500
Washington	17	423,226	6,454	154	335,232	890,091	1,655,157	117,044	189,486	1,727,599
Total, Pacific region	70	1,803,138	663,266	154	2,313,662	3,954,995	8,735,215	939,808	645,106	8,440,513
Total, Western district	93	2,424,711	664,072	9,054	3,035,545	5,286,627	11,420,009	1,136,428	829,710	11,113,291
Total, United States	485	19,658,748	1,185,596	313,071	28,109,185	30,882,775	80,149,375	9,066,910	5,526,269	76,608,734

[1] Includes payments to networks and stations (from sale of time), commissions to regularly established agencies, commissions to representatives, brokers, and others.

[2] Includes revenue from the sale and placing of talent, and miscellaneous sales.

NOTE—Dash [—] indicates deficit or other reverse item.

TABLE III.—*Income items of broadcast stations by broadcast region and State*—Continued

Broadcast region and State	Stations with time sales of $25,000 or more—Con.				All commercial stations					
	Broadcast expenses	Net broadcast revenues	Deductions from net broadcast revenue [3]	Broadcast income	Number of stations	Broadcast revenues	Broadcast expenses	Net broadcast revenues	Deductions from net broadcast revenues [3]	Broadcast income
NORTHERN DISTRICT										
Northeastern region:										
Connecticut	$871,375	$235,492	$137,975	$97,517	9	$1,106,867	$871,375	$235,492	$137,975	$97,517
Delaware, Maryland	931,469	490,036	88,452	401,584	9	1,423,010	933,062	489,948	88,714	401,234
Maine, New Hampshire, Vermont	290,195	149,443	32,461	116,982	15	603,452	485,876	117,576	54,767	62,809
Massachusetts	2,007,884	880,730	459,659	421,071	19	2,888,614	2,007,884	880,730	459,659	421,071
New Jersey	2,288,726	571,753	187,239	384,514	10	2,940,199	2,369,706	570,493	195,539	374,954
New York	6,021,681	2,328,595	763,018	1,565,577	41	8,435,976	6,119,263	2,316,713	786,769	1,529,944
Pennsylvania	3,159,269	2,037,945	573,751	1,464,194	36	5,309,412	3,265,361	2,044,051	588,508	1,455,543
Rhode Island	355,892	238,505	57,920	180,585	3	594,397	355,892	238,505	57,920	180,585
District of Columbia	718,393	272,394	210,509	61,885	4	990,787	718,393	272,394	210,509	61,885
Total, Northeastern region	16,644,884	7,204,893	2,510,984	4,693,909	146	24,292,714	17,126,812	7,165,902	2,580,360	4,585,542
Great Lakes region:										
Illinois	4,283,608	1,556,724	436,526	1,120,198	31	5,937,304	4,402,881	1,534,423	445,970	1,088,453
Indiana	1,053,615	254,909	92,816	162,093	18	1,351,713	1,101,476	250,237	104,630	145,607
Kentucky	712,569	266,729	97,173	169,556	7	999,548	735,583	263,965	101,974	161,991
Michigan	2,610,421	768,820	257,558	511,262	19	3,456,693	2,676,009	780,684	263,690	516,994
Ohio	3,926,907	2,281,733	455,272	1,826,461	23	6,222,602	3,944,343	2,278,259	459,371	1,818,888
West Virginia	470,848	84,318	59,334	24,984	7	578,692	493,943	84,749	64,439	20,310
Wisconsin	1,067,380	336,700	113,906	222,794	15	1,445,864	1,105,244	340,620	118,263	222,357
Total, Great Lakes region	14,125,348	5,549,933	1,512,585	4,037,348	120	19,992,416	14,459,479	5,532,937	1,558,337	3,974,600
Midwest region:										
Iowa	1,238,855	508,068	174,271	333,797	11	1,777,741	1,277,100	500,641	181,487	319,154
Kansas	680,749	81,850	56,651	25,199	13	803,835	716,774	87,061	60,703	26,358
Minnesota	1,490,606	660,858	156,189	504,669	16	2,230,098	1,572,340	657,758	165,677	492,081
Missouri	2,540,764	981,812	243,124	738,688	19	3,533,469	2,549,530	983,939	243,124	740,815
Nebraska	762,057	224,194	82,123	142,071	10	1,038,676	811,597	227,079	86,924	140,155
North Dakota	239,206	82,766	32,403	50,363	8	366,558	286,095	80,463	40,532	39,931

South Dakota	199,573	25,181	23,503	1,678	6	270,439	254,851	15,588	27,554	−11,966
Total, Midwest region	7,151,810	2,564,729	768,264	1,796,465	83	10,020,816	7,468,287	2,552,529	806,001	1,746,528
Total, Northern district	37,922,042	15,319,555	4,791,833	10,527,722	349	54,305,946	39,054,578	15,251,368	4,944,698	10,306,670
SOUTHERN DISTRICT										
Southeastern region:										
Alabama	457,311	114,734	36,509	78,225	12	653,031	524,664	128,367	47,597	80,770
Arkansas	280,749	88,597	17,855	70,742	17	521,575	428,156	93,419	43,034	50,385
Mississippi										
Florida	821,748	299,434	69,962	229,472	15	1,168,683	910,590	258,093	72,981	185,112
Georgia	619,084	368,923	84,935	283,988	14	1,065,823	677,538	388,285	94,247	294,038
Louisiana	580,334	308,692	63,712	244,980	12	939,857	617,138	322,719	67,096	255,623
North Carolina	767,547	302,700	94,504	208,196	13	1,120,944	815,963	304,981	96,035	208,946
South Carolina	212,977	35,125	12,341	22,784	5	267,350	227,936	39,414	14,529	24,885
Tennessee	1,210,094	291,050	99,589	191,461	13	1,501,144	1,210,094	291,050	99,589	191,461
Virginia	639,407	235,916	98,796	137,120	11	897,020	691,573	205,447	98,796	106,651
Total, Southeastern region	5,589,251	2,045,171	578,203	1,466,968	112	8,135,427	6,103,652	2,031,775	633,904	1,397,871
South Central region:										
Oklahoma	712,755	291,050	95,691	195,359	14	1,117,443	844,643	272,800	112,081	160,719
Texas	2,376,809	1,238,810	283,445	955,365	45	3,801,185	2,551,952	1,249,233	311,122	938,111
Total, South Central region	3,089,564	1,529,860	379,136	1,150,724	59	4,918,628	3,396,595	1,522,033	423,203	1,098,830
Total, Southern district	8,678,815	3,575,031	957,339	2,617,692	171	13,054,055	9,500,247	3,553,808	1,057,107	2,496,701
WESTERN DISTRICT										
Mountain region:										
Arizona	258,537	41,782	16,675	25,107	8	347,578	294,920	52,658	21,535	31,123
Colorado	734,627	271,855	182,033	89,822	13	1,098,915	815,848	283,067	187,556	95,511
Wyoming					3	53,803	40,562	13,241	5,756	7,485
Idaho	134,614	24,811	13,061	11,750	6	207,165	173,089	34,076	21,332	12,744
Montana	231,110	96,884	28,753	68,131	7	376,458	264,787	111,671	37,404	74,267
Nevada	143,668	36,839	26,600	10,239	9	252,413	205,348	47,065	36,650	10,415
New Mexico										
Utah	559,712	138,339	43,624	94,715	6	728,212	588,746	139,466	47,763	91,703
Total, Mountain region	2,062,268	610,510	310,746	299,764	52	3,064,544	2,383,300	681,244	357,996	323,248
Pacific region:										
California	4,442,164	1,340,250	515,620	824,630	52	5,881,632	4,528,139	1,353,493	553,116	800,377
Oregon	588,104	342,396	59,101	283,295	14	1,019,899	680,378	339,521	65,864	273,657
Washington	1,286,392	441,207	138,269	302,938	22	1,802,684	1,353,658	449,026	144,341	304,685
Total, Pacific region	6,316,660	2,123,853	712,990	1,410,863	88	8,704,215	6,562,175	2,142,040	763,321	1,378,719
Total, Western district	8,378,928	2,734,363	1,023,736	1,710,627	140	11,768,759	8,945,475	2,823,284	1,121,317	1,701,967
Total, United States	54,979,785	21,628,949	6,772,908	14,856,041	660	70,128,760	57,500,300	21,628,460	7,123,122	14,505,338

[1] Includes depreciation, amortization, plant losses, taxes, uncollectible revenue and rents, all assignable to broadcast services.

TABLE IV.—*Analysis of investment of broadcast stations assignable to broadcast service (including 23 stations managed and operated by networks)*

[Year ended Dec. 31, 1938]

Item	Replacement value new	Cost to the licensee	Depreciation to date under ownership by the licensee	Depreciated value at close of year
Broadcast plant in service of the licensee [1]	$45,732,227	$46,273,936	$21,510,828	$24,763,108
Broadcast plant leased to others [2]	10,290	10,540	2,617	7,923
Improvements and replacements of broadcast plant leased from others [3]	1,757,873	1,494,386	380,661	1,113,725
Leaseholds and other intangibles in broadcast service of licensee [4]	----------	1,341,064	316,658	1,024,406
Total	47,500,390	49,119,926	22,210,764	26,909,162

[1] Represents data for 651 stations.
[2] Represents data for 2 stations.
[3] Represents data for 44 stations.
[4] Represents data for 106 stations.

NOTE.—Data shown for 655 stations, 5 stations reporting no owned plant.

TABLE V.—*Investment in plant assignable to broadcast service of major networks as at the close of the year*

[Year ended Dec. 31, 1938]

Item	Allocated to network service	Allocated to 23 managed and operated stations		Total
		9 key stations	14 non-key stations	
Owned broadcast plant in service of licensee (depreciated value)	$5,571,332	$862,912	$628,572	$7,062,816
Improvements and replacements of broadcast plant leased from others (depreciated value)	772,650	38,798	828,106	1,639,563
Broadcast plant leased to others (depreciated value)	89,921	----------	2	89,923
Subtotal	6,433,912	901,710	1,456,680	8,792,302
Plant under construction	483,718	----------	----------	483,718
Goodwill	4,135,082	----------	----------	4,135,082
Grand total	11,052,712	901,710	1,456,680	13,411,102

NOTE.—Aggregate cost to the present owners of all the foregoing items before depreciation, $22,116,096.

TABLE VI.—*Analysis of total population, total families; families owning radios, total retail sales of all retail stores, and total broadcast revenues (time sales, talent, etc.) of commercial broadcast stations, in the United States, by States and broadcast regions*

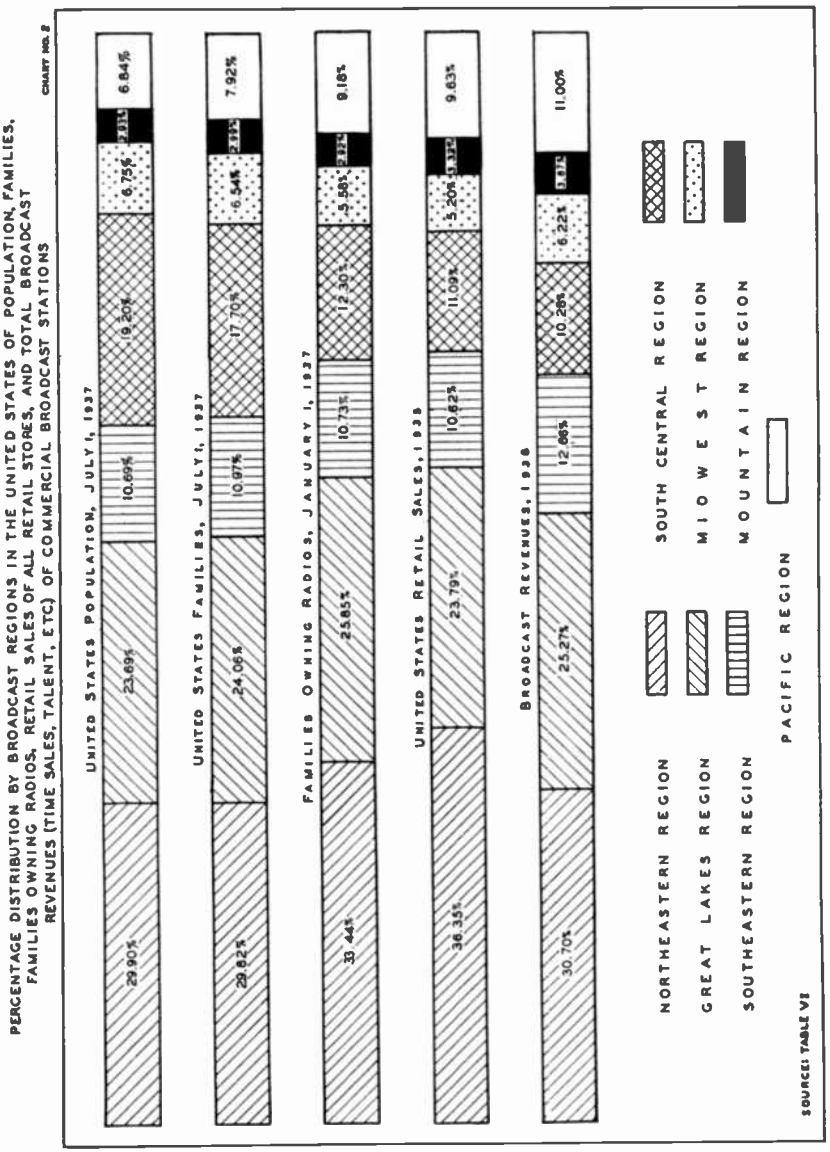
Broadcast region and State	Total United States population July 1, 1937 [1]	Total United Statesfamilies July 1937 [2]	Families owning radios Jan. 1, 1938 [3]			Retail sales of all United States retail stores, 1935 [3]		Total broadcast revenues (time sales, talent, etc.) of commercial stations, 1938 [4]		
			Number	Ratio to total United States families	Percent of total	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
NORTHERN DISTRICT										
Northeastern region:										
Connecticut	1,741,000	437,000	402,100	92.00	1.51	$556,722	1.68	$1,106,867	1.40	$2.75
Delaware	261,000	67,000	57,600	86.00	.22	76,877	.23	1,423,010	1.80	3.45
Maryland	1,679,000	410,000	355,100	87.00	1.33	462,874	1.40			
Maine	856,000	221,000	201,100	91.00	.75	232,599	.70			
New Hampshire	510,000	136,000	124,400	92.00	.47	132,883	.46	603,452	.76	1.46
Vermont	383,000	99,000	89,600	90.00	.33	99,121	.30			
Massachusetts	4,426,000	1,104,000	1,019,200	92.00	3.82	1,461,180	4.41	2,888,614	3.65	2.83
New Jersey	4,343,000	1,098,000	1,022,500	93.00	3.84	1,220,299	3.68	2,940,199	3.72	2.88
New York	12,959,000	3,372,000	3,132,300	93.00	11.75	4,749,708	14.32	8,435,976	10.66	2.69
Pennsylvania	10,176,000	2,452,000	2,206,400	90.00	8.27	2,490,910	7.51	5,309,412	6.71	2.41
Rhode Island	681,000	169,000	155,500	92.00	.58	219,706	.66	594,397	.75	3.82
District of Columbia	627,000	168,000	152,900	91.00	.57	330,813	1.00	990,787	1.25	6.48
Total	38,642,000	9,733,000	8,917,700	92.00	33.44	12,053,392	36.35	24,292,714	30.70	2.72
Great Lakes region:										
Illinois	7,878,000	2,063,000	1,857,100	90.00	6.96	2,173,089	6.55	5,937,304	7.50	3.20
Indiana	3,474,000	934,000	816,800	87.00	3.06	780,508	2.35	1,351,713	1.71	1.65
Kentucky	2,920,000	708,000	494,900	70.00	1.86	388,278	1.17	999,548	1.26	2.02
Michigan	4,830,000	1,220,000	1,122,200	92.00	4.21	1,388,236	4.19	3,456,693	4.37	3.08
Ohio	6,733,000	1,777,000	1,641,500	92.00	6.15	1,956,941	5.90	6,222,602	7.87	3.79
West Virginia	1,865,000	417,000	348,300	84.00	1.31	332,190	1.00	578,692	.73	1.66
Wisconsin	2,926,000	735,000	612,700	83.00	2.30	871,832	2.63	1,445,864	1.83	2.36
Total	30,626,000	7,854,000	6,893,500	88.00	25.85	7,891,054	23.79	19,992,416	25.27	2.90

TABLE VI.—*Analysis of total population, total families, families owning radios, total retail sales of all retail stores, and total broadcast revenues (time sales, talent, etc.) of commercial broadcast stations, in the United States, by States and broadcast regions*—Continued

Broadcast region and State	Total United States population July 1, 1937	Total United States families July, 1937	Families owning radios Jan. 1, 1938			Retail sales of all United States retail stores, 1935		Total broadcast revenue ((time sales, talent, etc.) of commercial stations, 1938		
			Number	Ratio to total United States families	Percent of total	Amount (thousands)	Percent of total	Amount	Percent of total	Average per radio family
NORTHERN DISTRICT—continued										
Midwest region:										
Iowa	$2,552,000	$680,000	$577,800	$85.00	$2.17	$650,029	$1.96	$1,777,741	$2.25	$3.08
Kansas	1,864,000	501,000	367,800	73.00	1.38	448,261	1.35	803,835	1.02	2.19
Minnesota	2,652,000	652,000	556,900	85.00	2.09	820,010	2.47	2,230,098	2.82	4.00
Missouri	3,989,000	1,072,000	822,800	77.00	3.08	946,125	2.85	3,533,469	4.46	4.29
Nebraska	1,364,000	352,000	284,100	81.00	1.06	359,757	1.09	1,038,676	1.31	3.66
North Dakota	706,000	156,000	119,600	77.00	.45	150,208	.45	366,558	.46	3.06
South Dakota	692,000	167,000	132,900	80.00	.50	147,564	.45	270,439	.34	2.03
Total	13,819,000	3,580,000	2,861,900	80.00	10.73	3,521,954	10.62	10,020,816	12.66	3.50
Total, Northern district	83,087,000	21,167,000	18,673,100	88.00	70.02	23,466,400	70.76	54,305,946	68.63	2.91
SOUTHERN DISTRICT										
Southeastern region:										
Alabama	2,895,000	670,000	375,200	56.00	1.41	337,217	1.02	653,031	.82	1.74
Arkansas	2,048,000	501,000	254,800	51.00	.96	240,724	.73	521,575	.66	1.13
Mississippi	2,023,000	494,000	207,000	42.00	.78	178,348	.54			
Florida	1,670,000	443,000	297,900	67.00	1.12	425,807	1.28	1,168,683	1.48	3.92
Georgia	3,085,000	716,000	370,800	52.00	1.39	484,693	1.46	1,065,823	1.35	2.87
Louisiana	2,132,000	510,000	297,400	58.00	1.11	344,393	1.04	939,857	1.19	3.16
North Carolina	3,492,000	736,000	408,600	55.00	1.53	463,219	1.40	1,120,944	1.41	2.74
South Carolina	1,875,000	407,000	207,300	51.00	.78	248,206	.75	267,350	.34	1.29
Tennessee	2,893,000	689,000	459,900	67.00	1.72	482,586	1.45	1,501,144	1.90	3.26
Virginia	2,706,000	613,000	400,200	65.00	1.50	471,329	1.42	897,020	1.13	2.24
Total	24,819,000	5,779,000	3,279,100	57.00	12.30	3,676,522	11.09	8,135,427	10.28	2.48

South Central region:										
Oklahoma	2,548,000	619,000	454,300	73.00	1.70	434,793	1.31	1,117,443	1.41	2.46
Texas	6,172,000	1,516,000	1,033,500	68.00	3.88	1,289,264	3.89	3,801,185	4.81	3.68
Total	8,720,000	2,135,000	1,487,800	70.00	5.58	1,724,057	5.20	4,918,628	6.22	3.31
Total, Southern district	33,539,000	7,914,000	4,766,900	60.00	17.88	5,400,579	16.29	13,054,055	16.50	2.74
WESTERN DISTRICT										
Mountain region:										
Arizona	412,000	104,000	79,600	77.00	.30	121,083	.37	347,578	.44	4.37
Colorado	1,071,000	288,000	233,500	81.00	.87	302,559	.91	1,098,915	1.39	4.71
Wyoming	235,000	62,000	49,800	80.00	.19	82,681	.25	53,803	.07	1.08
Idaho	493,000	124,000	98,700	80.00	.37	140,167	.42	207,165	.26	2.10
Montana	539,000	142,000	114,600	81.00	.43	189,457	.57	376,458	.47	3.28
Nevada	101,000	30,000	28,500	95.00	.11	43,932	.13	252,413	.32	2.78
New Mexico	422,000	102,000	62,300	61.00	.23	88,751	.27			
Utah	519,000	123,000	111,000	90.00	.42	132,098	.40	728,212	.92	6.56
Total	3,792,000	975,000	778,000	80.00	2.92	1,100,728	3.32	3,064,544	3.87	3.94
Pacific region:										
California	6,154,000	1,818,000	1,719,800	95.00	6.45	2,329,009	7.02	5,881,632	7.43	3.42
Oregon	1,027,000	299,000	285,400	95.00	1.07	335,851	1.01	1,019,899	1.29	3.57
Washington	1,658,000	468,000	443,300	95.00	1.66	528,709	1.60	1,802,684	2.28	4.07
Total	8,839,000	2,585,000	2,448,500	95.00	9.18	3,193,569	9.63	8,704,215	11.00	3.55
Total, Western district	12,631,000	3,560,000	3,226,500	91.00	12.10	4,294,297	12.95	11,768,759	14.87	3.65
United States	129,257,000	32,641,000	26,666,500	82.00	100.00	33,161,276	100.00	79,128,760	100.00	2.97

[1] Estimated by U. S. Census Bureau.
[2] Estimated by the Joint Committee on Radio Research.
[3] U. S. Census of Business, 1935: Retail Distribution.
[4] From information furnished by licensees of standard broadcast stations on forms 705 and 706 for 1938.


PERCENTAGE DISTRIBUTION BY BROADCAST REGIONS IN THE UNITED STATES OF POPULATION, FAMILIES, FAMILIES OWNING RADIOS, RETAIL SALES OF ALL RETAIL STORES, AND TOTAL BROADCAST REVENUES (TIME SALES, TALENT, ETC.) OF COMMERCIAL BROADCAST STATIONS
CHART NO. 2
UNITED STATES POPULATION, JULY 1, 1937
29.90%
23.69%
10.69%
19.20%
6.75%
2.31%
6.84%
UNITED STATES FAMILIES, JULY 1, 1937
29.82%
24.06%
10.97%
17.70%
6.54%
2.21%
7.92%
FAMILIES OWNING RADIOS, JANUARY 1, 1937
33.44%
25.85%
10.73%
12.30%
5.58%
2.22%
9.18%
UNITED STATES RETAIL SALES, 1935
36.35%
23.79%
10.82%
11.09%
5.20%
3.32%
9.63%
BROADCAST REVENUES, 1936
30.70%
25.27%
12.66%
10.26%
6.22%
3.11%
11.00%
NORTHEASTERN REGION
GREAT LAKES REGION
SOUTHEASTERN REGION
SOUTH CENTRAL REGION
MIDWEST REGION
MOUNTAIN REGION
PACIFIC REGION
SOURCE: TABLE VI

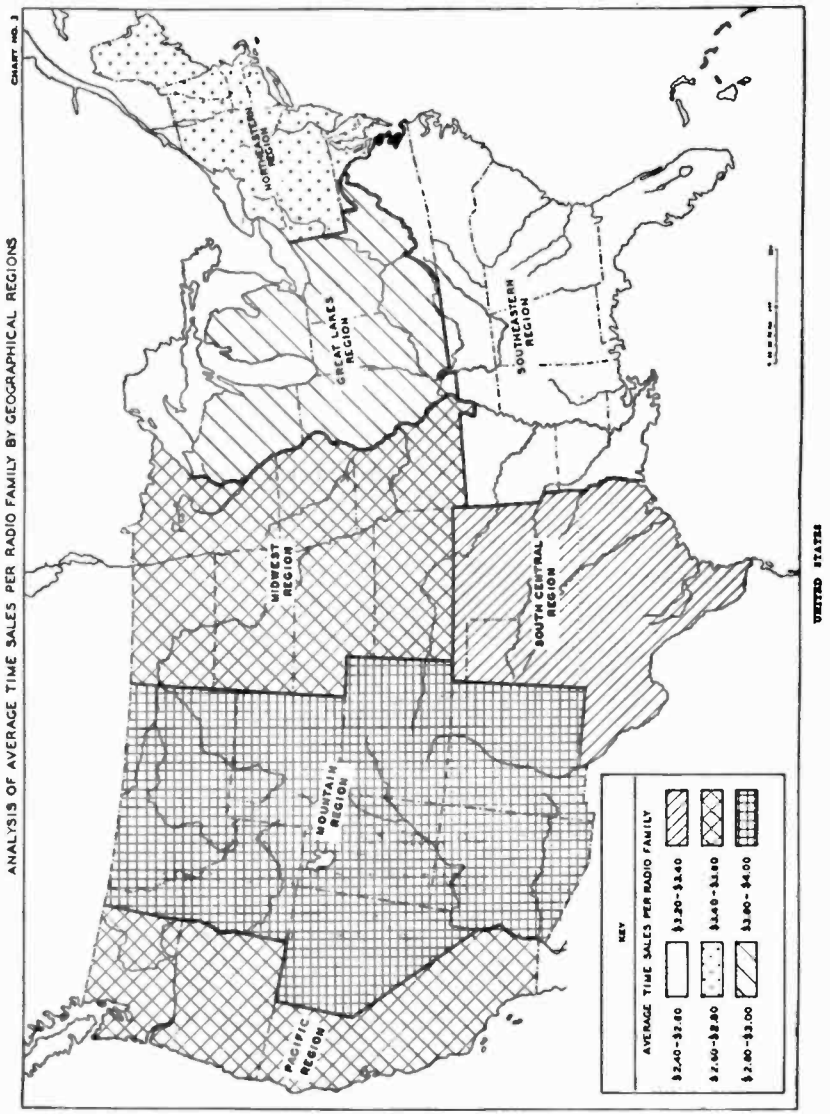


CHART NO. 3
ANALYSIS OF AVERAGE TIME SALES PER RADIO FAMILY BY GEOGRAPHICAL REGIONS
NORTHEASTERN REGION
GREAT LAKES REGION
SOUTHEASTERN REGION
MIDWEST REGION
SOUTH CENTRAL REGION
MOUNTAIN REGION
PACIFIC REGION
KEY
AVERAGE TIME SALES PER RADIO FAMILY
$2.40-$3.80
$3.20-$3.40
$2.60-$2.80
$2.40-$2.60
$2.80-$3.00
$3.80-$4.00
UNITED STATES

TABLE VII.— *Type of program broadcast for the week beginning Dec. 11, 1938, on a percentage basis*

[Class of station and time designation]

Type of program	Clear channel				Regional				Local			All classes
	50,000 watts or more		5,000 to 25,000 watts		Unlimited							
	Unlimited	Part-time	Unlimited	Part-time	High-power	Other	Limited and day	Part-time	Unlimited	Limited and day	Part-time	
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Commercial:												
Music	9.94	7.73	11.90	10.02	6.62	9.99	15.27	17.29	9.90	8.31	15.56	10.72
Dramatic	22.24	17.86	10.57	5.99	14.99	9.28	1.64	5.48	2.40	1.41	2.47	6.42
Variety	7.91	11.14	5.58	2.40	5.53	5.14	2.25	4.79	1.92	1.55	2.93	3.72
Talks and dialogs	5.26	4.21	3.26	5.07	4.37	3.72	2.75	3.05	2.19	1.83	2.04	3.03
News	3.13	2.11	2.96	1.93	3.15	2.95	2.83	2.22	2.91	2.18	2.83	2.87
Religious and devotional	.87	1.51	2.68	8.45	1.11	1.77	3.67	2.55	1.99	2.47	2.89	2.09
Special events	.34	.35	.35	.28	.55	.58	.34	.51	.96	1.07	1.58	.72
Announcements	1.29	1.58	1.89	4.26	2.57	3.30	6.69	4.26	4.61	5.69	7.31	4.13
Miscellaneous	.07	------	.46	------	.05	.17	.34	.22	.09	.27	.13	.16
Total	51.05	46.49	39.65	38.40	38.94	36.90	35.78	40.37	26.97	24.78	37.74	33.86
Sustaining:												
Music	28.71	24.35	36.37	35.62	36.20	37.85	37.31	34.47	47.10	47.54	40.73	40.86
Dramatic	2.51	2.61	3.37	3.91	2.25	3.62	3.20	3.03	4.31	3.40	2.46	3.68
Variety	3.08	5.06	4.07	6.31	3.07	4.12	2.96	4.25	3.42	3.05	2.21	3.61
Talks and dialogs	7.39	8.78	9.77	6.85	10.01	8.45	7.21	7.59	6.81	6.53	4.60	7.52
News	3.49	7.06	3.20	4.77	4.44	4.55	7.10	5.78	6.10	7.69	6.15	5.44
Religious and devotional	2.06	2.02	1.95	2.10	2.90	2.44	3.81	2.60	3.01	4.87	3.82	2.86
Special events	1.24	1.26	1.28	1.76	1.50	1.39	1.46	1.14	1.42	.87	1.08	1.36
Announcements	.31	2.02	.22	.28	.64	.44	.82	.47	.63	1.05	1.09	.58
Miscellaneous	.16	.35	.12	------	.05	.24	.35	.30	.23	.22	.12	.23
Total	48.95	53.51	60.35	61.60	61.06	63.10	64.22	59.63	73.03	75.22	62.26	66.14
Total:												
Music	38.65	32.08	48.27	45.64	42.82	47.84	52.58	51.76	57.00	55.85	56.29	51.58
Dramatic	24.75	20.47	13.94	9.90	17.24	12.90	4.84	8.51	6.71	4.81	4.93	10.10
Variety	10.99	16.20	9.65	8.71	8.60	9.26	5.21	9.04	5.34	4.60	5.14	7.33
Talks and dialogs	12.65	12.99	13.03	11.92	14.38	12.17	9.96	10.64	9.00	8.36	6.64	10.55
News	6.62	9.17	6.16	6.70	7.59	7.50	9.93	8.00	9.01	9.87	8.98	8.31
Religious and devotional	2.93	3.53	4.63	10.55	4.01	4.21	7.48	5.15	5.00	7.34	6.71	4.95
Special events	1.58	1.61	1.63	2.04	2.05	1.97	1.80	1.65	2.38	1.94	2.66	2.08
Announcements	1.60	3.60	2.11	4.54	3.21	3.74	7.51	4.73	5.24	6.74	8.40	4.71
Miscellaneous	.23	.35	.58	------	.10	.41	.69	.52	.32	.49	.25	.39
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE VIII.—*Analysis of total program time broadcast according to media of rendition*

[During the week beginning Dec. 11, 1938]

Media of rendition	329 stations in metropolitan districts		331 stations in other places		Total, 660 stations	
	Station hours	Percent	Station hours	Percent	Station hours	Percent
Commercial time:						
Personal rendition:						
Taken from national networks	4,808	13.5	1,021	3.2	5,829	8.7
Taken from regional networks	329	.9	353	1.1	682	1.0
Originated and broadcast locally	5,269	14.9	4,506	14.1	9,775	14.5
Mechanical rendition:						
Electrical transcriptions	2,061	5.8	2,207	7.0	4,268	6.4
Phonograph records	1,570	4.4	656	2.1	2,226	3.3
Total, commercial	14,037	39.5	8,743	27.5	22,780	33.9
Sustaining time:						
Personal rendition:						
Taken from national networks	8,177	23.1	5,638	17.8	13,815	20.5
Taken from regional networks	779	2.2	1,435	4.5	2,214	3.3
Originated and broadcast locally	6,295	17.7	6,546	20.6	12,841	19.1
Mechanical rendition:						
Electrical transcriptions	3,664	10.3	6,841	21.5	10,505	15.6
Phonograph records	2,553	7.2	2,575	8.1	5,128	7.6
Total, sustaining	21,468	60.5	23,035	72.5	44,503	66.1
Total time:						
Personal rendition:						
Taken from national networks	12,985	36.6	6,659	21.0	19,644	29.2
Taken from regional networks	1,108	3.1	1,788	5.6	2,896	4.3
Originated and broadcast locally	11,564	32.6	11,052	34.7	22,616	33.6
Mechanical rendition:						
Electrical transcriptions	5,725	16.1	9,048	28.5	14,773	22.0
Phonograph records	4,123	11.6	3,231	10.2	7,354	10.9
Grand total	35,505	100.0	31,778	100.0	67,283	100.0

TABLE IX.—*Employee and compensation data for networks and stations*

Item	Stations and networks	660 stations
Employees, and their compensation for the week beginning Dec. 11, 1938:		
Full-time employees:		
Number	18,359	14,879
Compensation	$830,003	$612,609
Average weekly compensation	$45.20	$41.17
Part-time employees:		
Number	4,377	3,716
Compensation	$103,134	$67,867
Average weekly compensation	$23.55	$1,826
Number of employees in service Dec. 31, 1938	23,060	18,638
Total compensation of employees for 1938	[1] $45,663,757	[2] $33,451,884

[1] Includes $4,239,470 paid to officers of licensee companies.
[2] Includes $3,626,871 paid to officers of licensee companies.

TABLE X.—*Functional employment and pay-roll data for the week beginning Dec. 11, 1938*

[660 commercial stations]

Class of employee	Full-time employees				Part-time employees			
	Compensated			Number not compensated	Compensated			Number not compensated
	Number	Compensation	Average weekly compensation		Number	Compensation	Average weekly compensation	
Executives:								
General managerial	646	$72,414	$112.10	36	129	$10,015	$77.64	42
Technical	443	23,423	52.87	1	21	612	29.14	3
Program	357	19,425	54.41	1	8	193	24.13	3
Commercial	281	22,875	81.41	2	6	215	35.83	.....
Publicity	88	5,100	57.95	1	2	45	22.50	8
Miscellaneous	46	2,862	62.22	3	12	584	48.67	4
Total, executives	1,861	146,099	78.51	44	178	11,664	65.53	60
Employees (other than executive):								
Technical:								
Research and development	105	4,649	44.28	.....	5	103	20.60	4
Operating	2,704	105,654	39.07	1	139	1,950	14.03	20
Miscellaneous	126	3,462	27.48	.....	15	175	11.67	.....
Total	2,935	113,769	38.76	1	159	2,228	14.01	24
Program:								
Production	499	19,047	38.17	.....	59	1,120	18.98	7
Writers	463	14,906	32.39	2	51	1,433	28.10	15
Announcers	2,016	64,889	32.19	4	206	2,532	12.29	33
Staff musicians	1,942	87,533	45.07	2	664	12,913	19.45	220
Other artists	703	25,446	36.20	11	1,815	29,135	16.05	169
Miscellaneous	354	11,067	31.26	.....	126	1,604	12.73	21
Total	5,977	222,978	37.31	19	2,921	48,737	16.69	465
Commercial:								
Outside salesman	1,298	62,830	48.41	8	71	1,734	24.42	6
Promotion and merchandising	187	7,383	39.48	1	16	188	11.75	2
Miscellaneous	115	3,624	31.51	.....	7	83	11.86	1
Total	1,600	73,837	46.15	9	94	2,005	21.33	9
General and administrative:								
Accounting	435	13,031	29.96	2	80	1,145	14.31	30
Clerical	677	14,077	20.79	2	37	298	8.05	10
Stenographic	742	15,917	21.45	.....	50	494	9.88	3
Miscellaneous	481	9,274	19.28	.....	117	807	6.90	3
Total	2,335	52,299	22.40	4	284	2,744	9.66	46
Miscellaneous [1]	171	3,627	21.21	.....	80	489	6.11	.....
Total, employees	13,018	466,510	35.84	33	3,538	56,203	15.89	544
Total, executives and employees	14,879	612,609	41.17	77	3,716	67,867	18.26	604

[1] Includes all employees not previously classified.

APPENDIX G

FIELD INSPECTIONS, INVESTIGATIONS, AND OTHER ACTIVITIES

During the past year there was marked increase in the number of commercial radio-operator examinations and licenses issued by the 22 offices of the Field Division. There were 24,837 such examinations as compared with 17,203 the year previous, or an increase of 7,624. The number of such licenses issued jumped from 16,966 to 29,601, an increase of 12,635.

There were 12,677 amateur radio operators' field examinations during the year, which was an increase of 1,665 over the year previous.

Inspection of ship radio installations was made in 16,431 instances, compared with the previous figure of 13,949, an increase of 2,482.

Land stations inspected last year numbered 5,917, an increase of 603.

During the year the following volume of work was handled by the Monitoring Section:

Frequency measurement reports received	15,879
Violation reports received (Forms 792–793)	3,559
Reports of infractions; International Telecommunication Convention	1,243
Reports of unsatisfactory condition of radio installation other than ship stations	159
Inspection record reports (Form 813)	2,540
Reports of unlicensed operation	129
Total	23,509

Violation notices served as a result of inspection were 969, an increase of 43.

Investigation of unlicensed stations and interference complaints numbered 3,728, an increase of 179.

There is noted the following decreases in work performed and the reasons therefor:

Notices served for violation of law, treaty, and regulations as a result of inspections were 1,623, a decrease of 122. This decrease is due to stricter compliance with the laws and regulations as a result of increased inspections, and familiarity on the part of the licensees with the laws and regulations as well as improvements in new apparatus installed.

Advisory notices of unsatisfactory conditions were served in 2,001 cases, a decrease of 108. This decrease is due to the same conditions explained in preceding paragraph.

Frequency measurements, all classes of stations, including Government and foreign, totaled 35,822, a decrease of 8,844. This decrease is due to the fact that some of the inspectors ordinarily engaged in monitoring work were assigned to special projects, gathering data for ship power hearing, continuous recording of field and noise intensities, and analyses of records.

Notices served for deviations beyond the prescribed frequence tolerance amounted to 744, a decrease of 371. This decrease is due to improved performance of stations in the art of frequency maintenance, and method of measurements of frequency on the part of licensees.

Violation and harmonic notices served as a result of monitoring last year were 2,603, a decrease of 329. This decrease is due to the same condition as shown in the previous paragraph.

More detailed statistical information concerning the activities of the Field Division is shown in the following tables:

TABLE I.—*Applicants for radio operator licenses examined*

District No. and location	Commercial							Amateur except class C	
	First telegraph	Second telegraph	Third telegraph	First telephone	Second telephone	Third telephone	Code test only	Class A	Class B
1. Boston, Mass.	18	112	3	276	13	1,407	138	217	686
2. New York, N. Y.	23	164	20	339	52	2,885	151	418	1,319
3. Philadelphia, Pa.	9	47	2	78	36	646	55	115	357
4. Baltimore, Md.	3	37	9	71	16	277	51	49	116
5. Norfolk, Va.	15	9	2	45	29	336	27	71	170
6. Atlanta, Ga.	2	29	5	90	45	239	33	107	253
7. Miami, Fla.	16	66	9	73	33	693	29	73	136
8. New Orleans, La.	10	109	7	126	29	884	46	80	120
9. Galveston, Tex.	3	53	5	97	16	204	114	62	116
10. Dallas, Tex.	5	48	27	127	57	520	48	126	425
11. Los Angeles, Calif.	55	93	16	358	49	2,455	106	246	753
12. San Francisco, Calif.	27	85	7	202	71	908	81	165	407
13. Portland, Oreg.	10	24	5	104	17	367	22	72	171
14. Seattle, Wash.	34	49	21	93	59	850	30	115	293
15. Denver, Colo.	0	14	5	58	29	147	30	107	150
16. St. Paul, Minn.	7	35	11	102	25	897	10	82	220
17. Kansas City, Mo.	5	86	30	364	90	484	96	253	706
18. Chicago, Ill.	2	90	14	276	76	1,760	114	321	831
19. Detroit, Mich.	13	96	45	288	91	1,354	63	328	1,358
20. Buffalo, N. Y.	5	80	10	193	37	612	37	145	760
21. Honolulu, T. H.	4	8	6	9	2	83	26	37	118
22. San Juan, P. R.	2	5	1	4	0	7	4	10	13
Total	268	1,339	260	3,372	872	17,415	1,311	3,199	9,478

TABLE II.—*Commercial operators licensed*

District No. and location	First telegraph	First telegraph with first telephone endorsement	First telegraph with second telephone endorsement	First telegraph with third telephone endorsement	Second telegraph	Second telegraph with first telephone endorsement	Second telegraph with second telephone endorsement	Second telegraph with third telephone endorsement	Third telegraph	Third telegraph with first telephone endorsement	Third telegraph with second telephone endorsement	Third telegraph with third telephone endorsement	First telephone	First telephone with telegraph endorsement	Second telephone	Second telephone with telegraph endorsement	Third telephone	Third telephone with telegraph endorsement
1. Boston, Mass	166	32	0	0	135	42	0	0	4	0	0	0	263	0	14	0	1,557	8
2. New York, N. Y	393	100	3	1	150	80	5	0	21	9	4	2	346	10	60	2	3,286	15
3. Philadelphia, Pa	69	15	1	1	54	28	1	0	2	0	0	0	99	2	37	1	655	7
4. Baltimore, Md	96	33	1	0	52	23	1	0	10	6	2	0	106	3	20	5	358	14
5. Norfolk, Va	33	9	1	0	15	6	0	1	1	1	0	0	63	5	26	1	350	1
6. Atlanta, Ga	37	9	6	0	48	32	4	0	3	1	1	0	119	2	43	0	277	0
7. Miami, Fla	47	25	7	0	57	33	2	0	4	2	2	0	62	2	22	0	755	7
8. New Orleans, La	170	41	1	0	113	51	5	0	14	3	2	0	142	0	29	0	263	0
9. Galveston, Tex	70	15	0	0	76	47	2	0	6	1	2	0	105	55	18	1	210	3
10. Dallas, Tex	10	13	2	0	21	33	5	1	9	10	3	0	187	4	48	2	598	2
11. Los Angeles, Calif	160	72	3	0	127	79	4	1	8	7	0	1	377	5	62	4	2,568	14
12. San Francisco, Calif	186	37	0	0	95	55	3	0	11	5	3	0	220	3	93	1	1,028	1
13. Portland, Oreg	41	8	1	0	19	12	0	0	1	3	0	0	119	1	15	0	383	0
14. Seattle, Wash	101	18	1	0	41	23	5	3	19	4	4	5	95	1	51	0	949	6
15. Denver, Colo	0	12	0	0	3	25	0	0	1	2	0	0	89	1	46	0	201	0
16. St. Paul, Minn	11	6	0	0	39	22	6	0	10	8	0	0	118	0	20	0	916	0
17. Kansas City, Mo	26	21	0	0	95	86	4	0	23	17	3	0	367	8	66	8	674	20
18. Chicago, Ill	63	43	5	0	137	129	8	1	17	11	2	1	350	11	85	1	2,212	16
19. Detroit, Mich	28	31	2	0	44	85	8	1	7	22	13	3	334	2	83	2	1,579	1
20. Buffalo, N. Y	24	15	1	0	67	50	4	1	6	5	0	1	154	0	32	0	638	2
21. Honolulu, T. H	30	9	1	0	14	2	0	0	5	2	0	0	11	1	2	0	84	9
22. San Juan, P. R	12	1	0	0	5	0	0	0	1	1	0	0	5	0	0	0	8	0
Total	1,773	565	36	2	1,407	943	67	9	183	120	41	13	3,731	116	872	28	19,569	126

TABLE III.—*Ship stations, inspections, and notices*

District No. and location	United States ships						Foreign ships					
	Stations inspected		Notices served				Stations inspected		Notices served			
	Compulsorily equipped	Voluntarily equipped	Violation of laws	Violation of regulations	Advisory notices	Violations cleared during inspection	Compulsorily equipped	Voluntarily equipped	Violation of law and S. Conv.	Violation of treaty	Advisory notices	Violations cleared during inspection
1. Boston, Mass	940	106	64	66	169	46	629	2	88	0	4	10
2. New York, N. Y	1,736	7	147	18	313	667	1,051	7	18	3	7	75
3. Philadelphia, Pa	613	14	24	21	128	266	321	0	40	7	7	20
4. Baltimore, Md	1,206	10	50	19	231	145	577	6	107	7	129	16
5. Norfolk, Va	484	7	20	11	79	232	266	3	60	0	0	34
6. Atlanta, Ga	231	1	19	6	19	194	97	0	11	0	0	0
7. Miami, Fla	552	65	44	45	168	194	186	1	14	0	21	16
8. New Orleans, La	539	10	40	8	108	373	585	1	40	3	12	105
9. Galveston, Tex	740	8	27	24	142	197	223	0	24	0	7	11
11. Los Angeles, Calif	1,011	276	44	158	141	297	849	1	92	0	1	71
12. San Francisco, Calif	679	12	61	39	105	84	272	0	11	0	0	7
13. Portland, Oreg	337	2	10	11	61	42	191	0	22	0	34	4
14. Seattle, Wash	497	61	17	17	42	356	229	0	2	0	0	1
17. Kansas City, Mo	0	10	0	0	0	0	0	0	0	0	0	0
18. Chicago, Ill	13	1	0	0	0	0	0	0	0	0	0	0
19. Detroit, Mich	10	18	0	0	0	0	0	0	0	0	0	0
20. Buffalo, N. Y	7	61	0	0	0	0	0	0	0	0	0	0
21. Honolulu, T. H	230	14	7	18	54	24	129	0	1	0	2	15
22. San Juan, P. R	222	3	24	4	15	183	68	4	8	2	2	22
Total	10,047	686	598	465	1,775	3,300	5,673	25	538	22	226	407

TABLE IV.—*Land station inspections*

District No. and location	Telegraph													Telephone				Broadcast							Violation noticed served as result of inspection
	Aircraft	Emergency	Special emergency	Coastal	Marine relay	Aeronautical	Amateur	Forestry	Marine fire	Experimental	Point-to-point	Coastal	Coastal harbor	Ship	Experimental	Point-to-point	Regular	International	High-frequency	Experimental	Relay	Television	Facsimile	
1. Boston, Mass.	29	58	0	6	4	18	7	3	1	1	1	0	1	0	0	0	90	3	3	4	10	1	0	42
2. New York, N. Y.	133	66	10	5	2	11	24	1	2	13	2	0	3	0	0	0	55	6	3	0	40	6	4	150
3. Philadelphia, Pa.	35	51	2	2	1	7	5	11	0	28	0	0	1	0	0	0	56	1	3	3	19	5	0	28
4. Baltimore, Md.	16	19	1	1	0	17	8	7	0	3	0	0	0	0	0	0	25	0	3	0	13	0	0	4
5. Norfolk, Va.	6	12	0	0	0	5	1	0	0	21	4	0	1	0	0	0	39	0	4	0	13	0	0	39
6. Atlanta, Ga.	29	61	12	4	4	62	9	0	0	32	0	0	1	0	4	0	112	0	0	0	23	0	0	33
7. Miami, Fla.	33	32	15	5	5	23	6	0	0	15	20	0	1	0	0	0	30	0	4	0	9	0	0	28
8. New Orleans, La.	11	32	5	2	3	19	4	0	0	2	1	0	1	0	0	1	59	0	0	0	7	0	0	28
9. Galveston, Tex.	18	16	1	0	4	16	1	0	0	0	0	0	0	0	0	0	19	0	0	0	2	0	0	27
10. Dallas, Tex.	127	87	1	0	0	39	7	0	0	26	5	0	0	0	0	0	121	1	4	0	27	3	0	103
11. Los Angeles, Calif.	63	58	17	5	3	27	5	0	0	33	5	0	0	104	0	3	63	0	5	0	34	0	0	72
12. San Francisco, Calif.	53	66	10	5	2	10	3	0	0	2	0	0	1	35	0	0	51	1	0	0	7	0	0	57
13. Portland, Oreg.	4	15	2	2	2	44	1	0	0	4	0	0	0	0	4	0	36	0	0	0	1	0	0	4
14. Seattle, Wash.	33	66	3	17	2	26	10	0	0	7	33	0	20	0	0	43	69	0	1	0	18	0	0	57
15. Denver, Colo.	18	5	2	0	0	20	1	10	0	7	3	0	0	0	0	0	52	0	8	0	25	0	0	13
16. St. Paul, Minn.	12	23	2	6	1	16	2	0	0	11	0	0	0	0	0	0	102	0	0	0	33	0	0	27
17. Kansas City, Mo.	41	74	1	1	0	31	5	0	0	63	6	0	2	0	0	0	111	0	11	0	43	3	2	9
18. Chicago, Ill.	73	169	7	8	6	34	21	6	1	11	15	0	1	0	0	0	123	2	6	0	101	3	2	84
19. Detroit, Mich.	88	156	6	8	1	8	6	0	0	3	3	0	0	0	0	0	100	2	7	0	123	1	3	67
20. Buffalo, N. Y.	9	25	7	1	1	4	2	0	0	2	39	0	0	0	0	17	130	4	3	0	22	0	0	28
21. Honolulu, T. H.	6	5	0	2	2	4	2	0	0	2	2	0	0	0	4	0	7	0	0	0	0	0	0	21
22. San Juan, P. R.	5	0	3	1	0	4	2	0	0	6	2	0	0	1	0	0	9	0	0	0	1	0	0	5
Total	942	1,098	106	82	46	463	130	38	4	360	134	0	33	140	17	64	1,479	20	66	81	576	27	11	960

TABLE V.—*Complaints and investigations*

District No. and location	Cases received						Cases closed						Outstanding cases
	Amateur	Unlicensed broadcast	Unlicensed other	Electric and power	Broadcast	Miscellaneous	Amateur	Unlicensed broadcast	Unlicensed other	Electric and power	Broadcast	Miscellaneous	
1. Boston, Mass	173	0	11	74	6	45	173	0	10	74	6	45	1
2. New York, N. Y	294	23	26	70	44	46	294	23	26	70	44	46	0
3. Philadelphia, Pa	86	1	9	12	9	53	82	1	7	12	8	51	10
4. Baltimore, Md	42	0	7	9	1	18	42	0	6	9	1	15	4
5. Norfolk, Va	30	3	4	28	0	13	29	3	4	28	0	12	2
6. Atlanta, Ga	54	12	16	6	2	12	52	11	15	6	2	12	4
7. Miami, Fla	24	1	0	33	17	25	23	1	0	33	17	23	3
8. New Orleans, La	57	0	8	28	5	12	56	0	8	28	5	12	1
9. Galveston, Tex	7	1	2	1	0	6	7	1	2	1	0	6	0
10. Dallas, Tex	40	4	8	1	4	20	40	4	7	1	4	19	2
11. Los Angeles, Calif	303	1	42	108	11	144	290	0	21	107	11	136	54
12. San Francisco, Calif	127	0	1	173	5	1	120	0	1	173	5	1	7
13. Portland, Oreg	38	0	0	6	6	7	38	0	0	6	6	7	0
14. Seattle, Wash	55	0	8	9	9	15	52	0	4	9	9	14	8
15. Denver, Colo	23	0	1	0	0	0	23	0	1	0	0	0	0
16. St. Paul, Minn	30	0	2	3	0	1	28	0	2	2	0	1	3
17. Kansas City, Mo	60	4	21	10	0	7	54	2	9	8	0	5	24
18. Chicago, Ill	281	1	81	24	0	6	278	1	69	24	0	5	16
19. Detroit, Mich	194	2	134	52	5	53	185	1	115	50	4	53	32
20. Buffalo, N. Y	129	2	26	1	3	48	118	2	19	1	3	46	20
21. Honolulu, T. H	42	0	0	29	9	8	42	0	0	29	9	8	0
22. San Juan, P. R	1	1	1	2	0	0	1	0	1	2	0	0	1
Total	2,090	56	408	679	136	540	2,027	50	327	673	134	517	192

TABLE VI.—*Frequency measurements*

District No. and location	Telegraph											Telephone						Broadcast								
	Ship	Aircraft	Special emergency and emergency	Coastal	Aeronautical	Amateur	Forestry	Point-to-point	Government	Foreign	Deviations beyond tolerance	Point-to-point	Coastal	Coastal harbor	Ship	Experimental	Deviations beyond tolerance	Regular	International	High frequency	Relay	Experimental	Deviations beyond tolerance	Violation notices served as result of monitoring	Harmonic notices served as result of monitoring
1. Boston, Mass	0	154	724	368	331	1	0	133	279	8	33	0	0	19	0	3	0	1,527	1	0	1	0	1	130	9
2. New York, N. Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0
3. Philadelphia, Pa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
4. Baltimore, Md	87	373	560	893	618	18	0	402	175	17	168	0	17	33	0	1	0	2,186	8	11	0	0	3	877	2
5. Norfolk, Va	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Atlanta, Ga	1	82	479	51	1,002	38	0	13	49	29	41	0	0	0	0	0	0	1,624	0	0	0	0	0	40	1
7. Miami, Fla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8. New Orleans, La	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
9. Galveston, Tex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0
10. Dallas, Tex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
11. Los Angeles, Calif	126	62	140	222	120	125	0	70	153	135	123	0	0	9	205	2	53	972	24	13	4	8	3	225	4
12. San Francisco, Calif	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
13. Portland, Oreg	511	309	1,633	376	860	60	0	1,156	304	186	117	23	11	13	190	13	0	1,126	33	3	0	8	0	881	3
14. Seattle, Wash	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	18	0
15. Denver, Colo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
16. St. Paul, Minn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0
17. Kansas City, Mo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18. Chicago, Ill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0
19. Detroit, Mich	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
20. Buffalo, N. Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
21. Honolulu, T. H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
22. San Juan, P. R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Great Lakes, Ill	24	53	347	81	179	45	0	18	292	28	38	0	0	0	18	0	0	3,010	11	0	7	6	4	72	6
Grand Island, Nebr	191	563	750	567	1,794	229	0	1,588	29	134	134	40	6	1	37	6	0	4,052	153	7	0	0	6	136	49
Total	940	1,596	4,633	2,558	4,904	516	0	3,380	1,281	537	655	72	34	93	457	25	53	14,497	230	34	12	23	36	2,528	75

APPENDIX H

RADIOTELEPHONE SERVICES TO FOREIGN COUNTRIES AND DISTANT TERRITORIES AND POSSESSIONS OF THE UNITED STATES

[As of Jan. 1, 1939. Circuits inaugurated in 1938 indicated by *]

	A. Direct radio circuit or first link beyond the United States landlines system	B. Extension from A to place listed or to the terminal of a second radio circuit	C. Extension from B to place listed
1. NORTH AMERICA			
Alaska	Seattle-Juneau		
Canada	Land wires		
Cuba	Submarine cables		
Mexico	Land wires		
Costa Rica	Miami-San Jose		
Dominican Republic	Miami-Trujillo		
El Salvador	Miami-San Salvador		
Guatemala	Miami-Guatemala		
Haiti	Miami-Port-au-Prince		
Honduras	Miami-Tegucigalpa Miami-La Lima		
Jamaica	Miami-Kingston		
Nicaragua	Miami-Managua		
Panama and Canal Zone	Miami-Panama		
Puerto Rico	Miami-San Juan		
Bahamas	Miami-Nassau		
Bermuda	New York-Hamilton		
2. EUROPE			
Austria	New York-London	Submarine cable and land wires	
Balearic Islands	do	do	Radio*-Barcelona-Palma.
Belgium	do	Submarine cable	
Bulgaria	do	Submarine cable and land wires	
Czechoslovakia	do	do	
Danzig	do	do	
Denmark	do	do	
Finland	do	do	
France	New York-Paris		
Germany	New York-London	do	
Gibraltar	do	do	
Great Britain (also Northern Ireland)	do		
Hungary	do	do	
Iceland	do	London-Reykjavik	
Ireland	do	Submarine cable	
Italy	do	Submarine cable and land wires	
Jugoslavia	do	do	
Latvia	do	do	
Lithuania	do	do	
Luxembourg	do	do	
Netherlands	do	Submarine cable	
Norway	do	Submarine cable and land wires	
Poland	do	do	
Portugal	do	do	
Rumania	do	do	
Spain	do	do	
Sweden	do	do	
Switzerland	do	do	
3. SOUTH AMERICA			
Argentina	New York-Buenos Aires		
Brazil	New York-Rio de Janeiro		
Chile	New York-Buenos Aires	Land wires	
Colombia	Miami-Bogota Miami-Barranquilla Miami-El Centro		
Paraguay	New York-Buenos Aires	do	
Peru	New York-Lima		
Uruguay	New York-Buenos Aires	do	
Venezuela	Miami-Caracas		

RADIOTELEPHONE SERVICES TO FOREIGN COUNTRIES AND DISTANT TERRITORIES AND POSSESSIONS OF THE UNITED STATES—Continued

	A. Direct radio circuit or first link beyond the United States land-lines system	B. Extension from A to place listed or to the terminal of a second radio circuit	C. Extension from B to place listed
4. ASIA			
China	San Francisco-Shanghai	Canton	
French Indo-China	New York-Paris	Paris-Saigon	
India	New York-London	London-Bombay	
Iraq	do	London-Cairo	Land wires.
Japan	San Francisco-Tokyo	do	do.
Palestine	New York-London	do	Berlin-Bangkok.
Siam	do	Submarine cable and land wires to Berlin.	
Syria	do	London-Cairo	Land wires.
5. OCEANIA			
Australia (including Tasmania).	San Francisco-Sydney		
Hawaiian Islands	San Francisco-Honolulu		
Netherlands Indies:			
Java	San Francisco-Bandoeng		
Sumatra	do	Bandoeng-Medan	
Madeira	do	Submarine cable	
Bali	do	do	
Celebes	do	Bandoeng-Makassar	
Philippine Islands	San Francisco-Manila		
6. AFRICA			
Canary Islands	New York-London	Submarine cable and land wires to Madrid.	Madrid-Teneriffe.
Algeria	New York-Paris	Paris-Algiers	
Egypt	New York-London	London-Cairo	
French Morocco	New York-Paris	Paris-Rabat	
Kenya	New York-London	London-Nairobi	
Spanish Morocco	do	Submarine cables and land wires	
Tunisia	New York-Paris	Paris-Algiers	Land wires.
Union of South Africa	New York-London	London-Cape Town	

TABLE I.—*Countries and points to which direct communications or direct circuits are available for international communications through the facilities of the American common carriers* [1]

[Legend: X=direct communication; C=direct circuits; W=direct land-wire circuits]

Countries	Radiotelegraph							Cable and wire telegraph [2]						Radiotelephone [3]		
	R.C.A. Communications, Inc.	MacKay Radio & Telegraph Co. (Del. and Calif.)	Globe Wireless, Ltd.	Press Wireless, Inc.	Tropical Radio Telegraph Co.	United States-Liberia Radio Corporation	South Puerto Rico Sugar Co.'	All America Cable & Radio, Inc.	Commercial Cable Co.	Postal Telegraph Co.	Commercial Pacific Cable Co.	Western Union Telegraph Co.	French Telegraph Co.	American Telephone & Telegraph Co.	Radio Corporation of Puerto Rico	R.C.A. Communications, Inc.
Alaska [4]				[5] X												
Argentina	X	X		X				C				C		X		
Australia	[5] X													[6] X		
Austria (Germany)	[5] X	X		[5] X												
Bahama Islands, British West Indies					X									X		
Belgium	X															
Bermuda														X		
Bolivia				[7] X				C								
Brazil	X	X		[7] X				C				C		X		
British Honduras					X											
Canada	X			[7] X						W		XCW		W		
Chile	X	X		[7] X				C								
China	X	X		[7] X							X			X		
Colombia	X	X		[7] X	X			X						X		
Costa Rica	[5] X			[7] X	X			X						X		
Cuba	X	X		X	X			XC				XC		W		
Curaçao, Dutch West Indies	X			[7] X			X									
Czechoslovakia	X	X														
Denmark	[5] X	X														
Dominican Republic	X			[7] X			X	X						X	[3] X	
El Salvador		X												X		
Dutch Guiana	X						[5] X									
Ecuador				[7] X				XC								
England	X			X					XC			XC	C	X		
Fiji Islands	X															
France	X	[5] X		X					C			C	XC	X		
French Indochina	X															
Germany	X	[5] X		[7] X					C			C		[6] X		
Guadaloupe, French West Indies							X									
Guam			X								XC					
Guatemala	[5] X			[7] X	X									X		

Haiti	X	X					X	XC			XC			X	[3] X		
Hawaii	X	X	X	X										X			
Holland	X			[7] X					C			C					
Honduras					X									X			
Hungary		X															
Iceland	X													[6] X			
Italy	X			X													
Italy (Vatican City)	[5] X	X												X	[5] X		
Japan	X	X		X							X			X			
Jamaica, British West Indies				[7] X								X		X			
Java	X																
Liberia	X					X											
Manchukuo	X			[6] X													
Martinique, French West Indies							[5] X							W			
Mexico	X			X	X					W		XCW		X			
Nicaragua	[5] X				X												
Newfoundland									X			X					
Norway	X																
Panama	X			[7] X	X			XC						X			
Persia	[5] X																
Peru		X		[7] X				C						X			
Philippine Islands	X	X	X	[7] X							X			X	[5] [6] X		
Poland	X																
Portugal	X																
Puerto Rico	X			[7] X	X			C				C		X			
Siam	[5] X																
Spain	X	[5] X		[6] X													
Sweden	X																
Switzerland	X											C		[6] X			
Syria	X																
Tahiti	X																
Trinidad				[7] X													
Turkey	X																
Union of Soviet Socialist Republics	X			X													
Union South Africa				[7] X													
Uruguay				X													
Venezuela	X			[7] X			X							X			

[1] As a practical matter American carriers in general offer service to practically any point either through their own facilities (direct or indirect) or the facilities of associated or connecting carriers.
[2] Includes wire line communication to Mexico, Canada, and Cuba.
[3] Operates from Puerto Rico only.
[4] Direct radio telephone and telegraph service available via facilities of the Alaska Communications System (U. S. Government operated).
[5] Inactive points of communication.
[6] Service not yet inaugurated.
[7] Multiple addressed press service only (blind reception).
[8] Operates from Hawaii only.

APPENDIX I

LIST OF APPROVED TYPES OF MARINE RADIO EQUIPMENT

AUTOMATIC ALARMS:

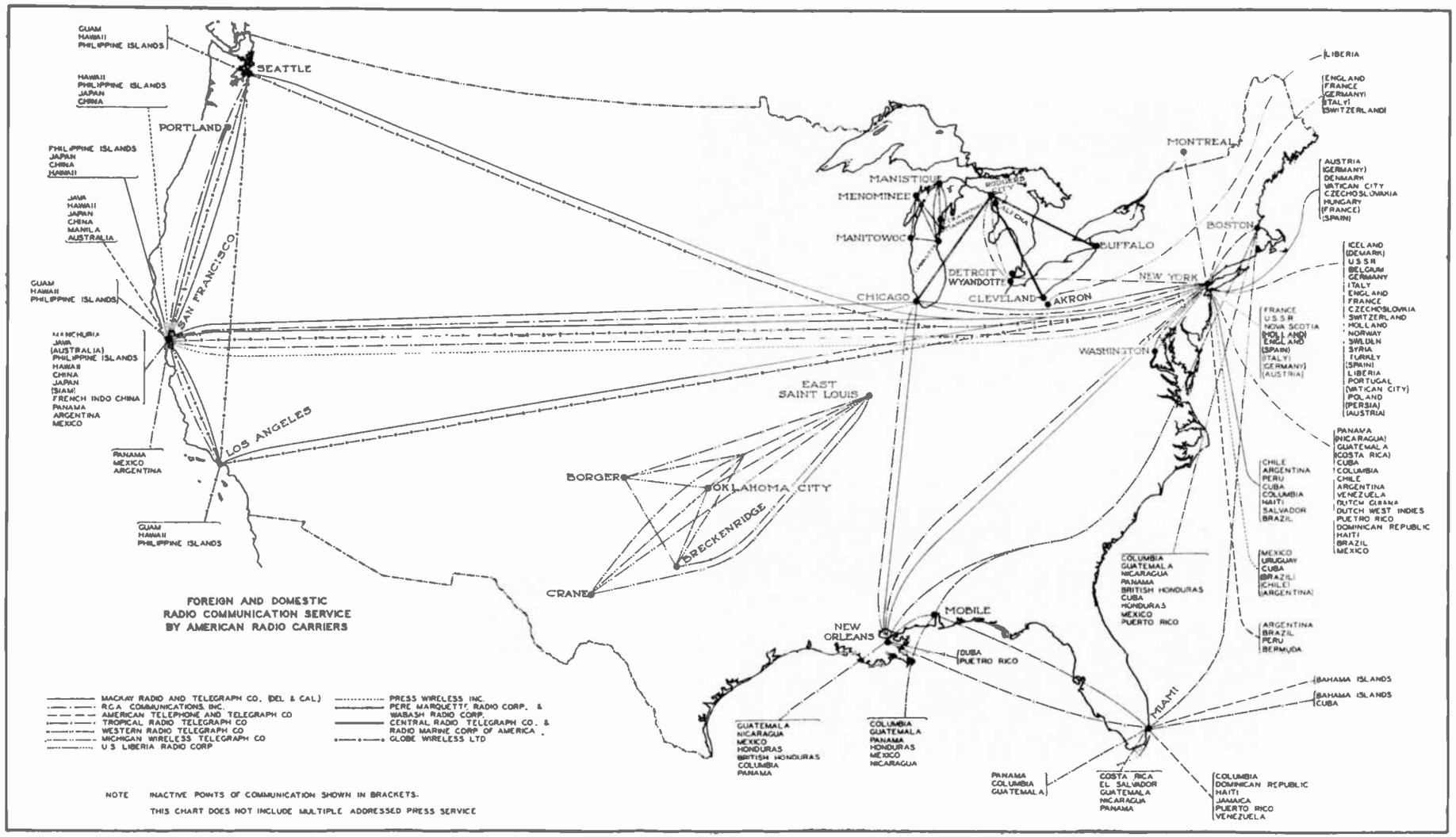
Manufacturer:	*Type or Model No.*
Federal Telegraph Co. for Mackay Radio & Telegraph Co.	101–A.
Do.	101–B.
Radiomarine Corporation of America	AR–8600.

TRANSMITTERS[2]

Manufacturer	Type No.	Approved as—
Federal Telegraph Co	104–M	Main and emergency transmitter in accordance with par. 12 (c) (2) and (4) of the Ship Radiotelegraph Safety Rules.
Do	120–M	Main transmitter in accordance with par. 12 (c) (2) of the Ship Radiotelegraph Safety Rules.
Do	123–B	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of the Ship Radiotelegraph Safety Rules.
Do	142–A, B, and C.	Emergency transmitter in accordance with par. 12 (c) (4) of the Ship Radiotelegraph Safety Rules.
Do	147–A and M	Main and emergency transmitter in accordance with par. 12 (c) (2) and (4) of the Ship Radiotelegraph Safety Rules.
Do	149–A	Emergency transmitter in accordance with par. 12 (c) (4) of the Ship Radiotelegraph Safety Rules.
Do	150–A and B	Main transmitter in accordance with par. 12 (c) (1) of the Ship Radiotelegraph Safety Rules.
Heintz & Kaufman, Ltd	935	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of Ship Radiotelegraph Safety Rules.
Radiomarine Corporation of America.	3627–S, A S, and BS.	Main transmitter in accordance with par. 12 (c) (2) of the Ship Radiotelegraph Safety Rules.
Do	ET–8003	Emergency transmitter in accordance with par. 12 (c) (4) of Ship Radiotelegraph Safety Rules.
Do	ET–8006	Main transmitter in accordance with par. 12 (c) (1) of Ship Radiotelegraph Safety Rules.
Do	ET–8010	Do.
Do	ET–8010–A	Main and emergency transmitter in accordance with par. 12 (c) (1) and (4) of Ship Radiotelegraph Safety Rules.
States Steamship Co	HF–100 and 100–A.	Main transmitter in accordance with par. 12 (2) (1) of the Ship Radiotelegraph Safety Rules.

[1] Approval of automatic alarms is on a temporary basis until Mar. 31, 1939, pending consideration for final approval on or before that date.

[2] Transmitters are approved as capable of meeting the applicable requirements of par. 12 (c) of the Ship Radiotelegraph Safety Rules, as amended.



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ENGINEERING DEPARTMENT
JUNE 1 1938

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