



NO CITY IS SAFE FROM ATOM ATTACK

BLOOD TYPE RECORD
 (Fill in with names of members of your family and the blood type for each.)

	Blood Type
1.	
2.	
3.	
4.	
5.	

OUR BLOCK WARDEN IS —

Name _____
 Address _____
 Phone No. _____

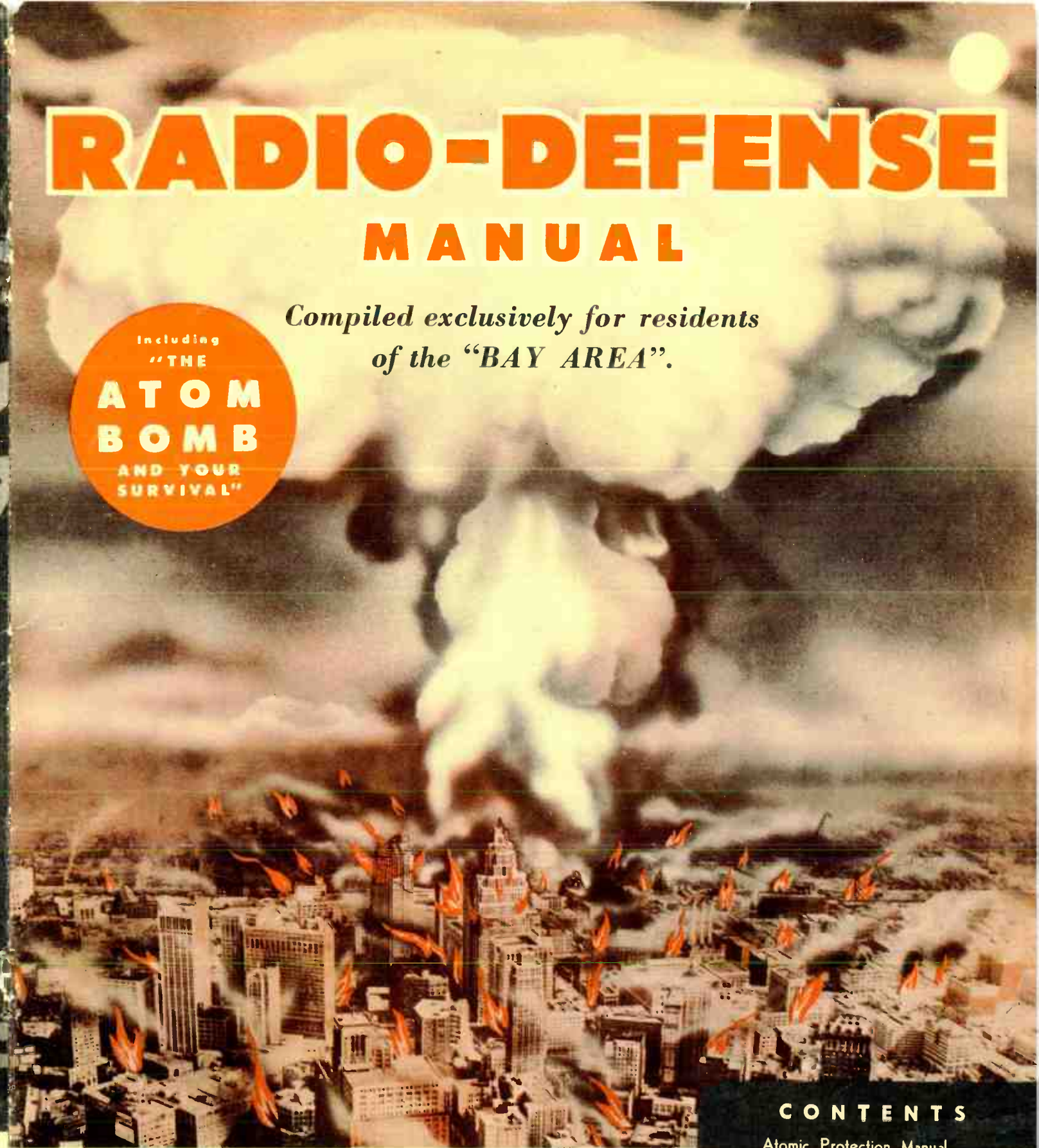
SOURCES OF MATERIAL — Damage from Atomic Explosion and Design of Protective Structures (Dept. of Defense and AEC) • A Study of Civil Defense (National Military Establishment) • Civil Defense Against Atomic Attack (Joint Committee on Atomic Energy) • The Effects of Atomic Weapons (Atomic Energy Commission) • Medical Aspects of Atomic Weapons (Dept. of Defense and AEC) • Control of Radiation Hazards in the Atomic Energy Program (AEC) • Civil Defense Status (Civilian Defense Office) • Self-Help and Mutual Aid in Civil Defense (NSRB) • Municipal Action in Civil Defense (NSRB) • State and Municipal Responsibilities in Civil Defense Planning (NSRB) • The City of Washington and an Atomic Bomb Attack (NSRB) • Address of William A. Gill, Ass't Dir. of Civilian Mobilization Office • Radiological Monitoring in Civil Defense (NSRB) • National Defense Transportation Journal • Bulletin of the Atomic Scientists • Must We Hide?, Dr. R. E. Lapp • United States Civil Defense.

RADIO-DEFENSE

MANUAL

Compiled exclusively for residents of the "BAY AREA".

Including
 "THE
ATOM BOMB
 AND YOUR SURVIVAL"



Sponsored by Radio Station **KFRC** Don Lee Broadcasting System
 SAN FRANCISCO
IN THE INTEREST OF CIVIL DEFENSE

CONTENTS

- Atomic Protection Manual
- Latest War Maps
- Bay Area Defense Information
- Subversive Organizations in the United States
- Station Personnel, Facilities and Program Photos

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KFRC'S STAFF AND FACILITIES ARE



(Below) Mel Venter, Program Director—Mel came to KFRC after graduation from Stanford in 1933 as an announcer. He became one of Coast's outstanding radio personalities. Named Program Director in 1940, and returned from the Coast Guard in 1946 after three years service.



(Below) Dink Templeton, Public Relations and Sports Director—Dink is now in his seventh year at KFRC, entering radio with a background of twenty years as athletic coach and newspaper columnist.



(Below) Enes Canata, Network Traffic Director—As a result of fifteen years at KFRC Miss Canata has every network operation at her fingertips. She started in '36 in Sales Services, became Traffic Secretary in '39, Traffic Manager in '41 and in '49, Network Traffic Director.



William D. Pabst, Vice President of the Don Lee Broadcasting System and General Manager of KFRC—Mr. Pabst joined KFRC in 1932 as departmental coordinator. Went into the Production Department and in 1936 was made Production Manager. In 1939 he was named Manager of KFRC, and except for two years in Naval Aviation, has remained at the helm ever since.

DON LEE BROADCASTING SYSTEM
The Nation's Greatest Regional Network
 1000 VAN NESS AVENUE, SAN FRANCISCO 9, CALIFORNIA

WILLIAM D. PABST
 VICE PRESIDENT AND
 MANAGER-KFRC

We at KFRC feel that nothing is more important to the public welfare than a thorough knowledge by all people concerning the details and critical nature of the present emergency. We therefore offer this all-encompassing radio and defense manual as our initial contribution to the citizens of the Bay Area. Located in the heart of San Francisco, where the immediate dissemination of news may be invaluable, KFRC wishes to dedicate all of its facilities to the service of the public should disaster actually strike.

William D. Pabst
 William D. Pabst



(Left) Jim McArdle, Supervising Engineer—This is Mr. McArdle's 21st year at KFRC. Starting transmitter engineer, then as studio technician in 1941, and Supervising Engineer five years later.

This RADIO-DEFENSE ALBUM has been presented to you with the compliments of

HAYWARD SAVINGS AND LOAN ASSOCIATION

646 MAIN STREET TELEPHONE LUCERNE 2-3297

If you have a friend who would like to have one, have him stop in and order one. It's free.

ENEMIES FROM WITHIN

- Citizens' Committee for Harry Bridges
- Citizens' Committee on Academic Freedom (The)
- Civil Rights Congress
- Civil Rights Council of Northern California
- Committee for Citizenship Rights
- Committee For the First Amendment
- Committee on One Thousand
- Congress of American Women
- Consumers Union
- Council on African Affairs
- Citizens' Committee for the Defense of Mexican American Youth
- Citizens' Committee for the Motion Picture Strikers
- Citizens Committee to Support Labor's Right
- Civil Rights Federation
- Committee for a Democratic Far Eastern Policy
- Committee for Civil Rights for Communists
- Committee for Peace through World Cooperation
- Committee for the Care of Young Children in Wartime
- Communist Information Bureau (Cominform)
- Conference for Democratic Action
- Conference on Constitutional Liberties in America
- Conference on Pan American Democracy
- Consumers' National Federation
- Contemporary Theatre
- Council of United States Veterans
- Daily Worker Press Club
- Daily Worker Publishing Co.
- Daughters of the American Depression
- Descendants of the American Revolution
- Down Town Forum
- Dramatic Workshop
- Exiled Writers Committee
- Federated Press
- Film Audiences for Democracy
- Films for Democracy
- Four Continent Book Corporation
- Free Italy Society
- Film and Photo League
- Freedom from Fear Committee
- Friends of the Campus
- Friends of the Chinese People
- Frontier Films
- Group Theatre
- Galena Defense Committee
- Garrison Films Distributors, Inc.
- Harry Bridges Defense Committee
- Harry Bridges Victory Committee
- Hawaii Civil Liberties Committee
- Hollywood Democratic Committee
- Hollywood Motion Picture Democratic Committee
- Hollywood Peace Forum
- Hollywood Theatre Alliance
- Hollywood Writers Mobilization
- Holyoke Book Shop
- Hold the Price Line Committee
- Hollywood Community Radio Group, Inc.
- Icor
- Independent Citizens Committee of the Arts, Sciences, and Professions
- Independent Progressive Party
- Independent Socialist League
- Independent Voters Committee of the Arts and Sciences
- International Book Store, San Francisco
- International Committee on African Affairs
- Industrial Workers of the World
- International Congress of Women
- International Democratic Women's Federation
- International Juridical Association
- International Labor Defense
- International Publishers
- International Union of Students
- International Workers Order
- Jewish Blackbook Committee of Los Angeles
- Jewish People's Committee
- Jefferson Chorus
- Jewish Peoples Fraternal Order
- Joint Committee for Trade Unions on Social Work
- Keynote Recordings, Inc.
- Korean Culture Society
- Korean Independent News Company
- Labor Research Association
- League of American Writers
- Labor Youth League
- League of Workers Theatres
- League of Young Southerners
- League of Struggle for Negro Rights
- Lincoln Book Store, Hollywood
- Maritime Book Shop, San Francisco
- Methodist Federation for Social Service
- Metropolitan Interfaith and Interracial Coordinating Council
- Modern Culture Club
- Motion Picture Artists Committee
- Mobilization for Democracy
- Model Youth Legislature of Northern California
- Modern Book Shop, Santa Barbara
- Motion Picture Democratic Committee
- Musicians' Democratic Committee
- National Committee for People's Rights
- National Committee for the Defense of Political Prisoners
- National Council of Negro Youth
- National Emergency Conference for Democratic Rights
- National Federation for Constitutional Liberties
- National Lawyers' Guild
- National Negro Congress
- National Negro Women's Council
- National Student League
- National Youth Assembly Against Universal Military Training
- National Civil Rights Federation
- National Committee Against Censorship of the Theatre Arts
- National Committee to Abolish the Poll Tax
- National Committee to Win the Peace
- National Conference on Civil Liberties
- National Congress for Unemployment and Social Insurance
- National Council of the Arts, Sciences and Professions
- National Institute of Arts and Letters
- National Joint Action Committee for Genuine Social Insurance
- National Labor Committee Against War
- Negro Cultural Committee
- Negro Labor Victory Committee
- New Union Press
- New Theatre League
- New Union Press
- New York Conference on Civil Rights
- New York Peace Association
- Non-Partisan Labor Defense
- Non-Sectarian Committee for Political Refugees
- Northern California Civil Rights Council
- Open Road
- Pacific Northwest Labor School
- Pacific Publishing Foundation, Inc.
- Pax Productions
- People's Artists, Inc.
- People's Educational Center
- People's Chorus
- People's Committee to Investigate Un-American Activities
- People's Institute of Applied Religion
- People's Orchestra
- People's Peace
- People's Radio Foundation, Inc.
- Progressive Citizens of America
- Progressive Book Shop, Los Angeles and Sacramento
- Progressive Women's Council
- Prompt Press
- Provisional Committee for Democracy in Radio
- Public Use of Arts Committee
- Seattle Labor School
- Second Annual California Model Legislature
- School for Democracy
- Scientific and Cultural Conference for World Peace
- Slavic Council of Los Angeles
- Southern Conference for Human Welfare
- Southern Negro Youth Congress
- State-Wide Legislative Congress (California)
- Student Conference Against War
- Stage for Action
- State-Wide Civil Rights Conference (California)
- Theatre Arts Committee (TAC)
- Theodore Dreiser Work Shop
- Trade Union Advisory Committee
- Trade Union Service
- Trade Union Theatre
- Twentieth Century Book Store
- Teen-Age Art Club
- Tom Mooney Labor School
- Trade-Union Unity League
- Twentieth Century Book Shop, Oakland, Calif.
- United American Artists
- United Committee of Action
- United Veterans for Equality
- Vanguard Press
- Veterans and Wives, Inc.
- Veterans National Liaison Committee
- Veterans of Equality
- Victory Book Store
- Western Council for Progressive Labor in Agriculture
- Western Writers Congress
- Wives and Sweethearts of Servicemen
- Workers Cultural Federation
- Workers Ex-Servicemen's League
- Workers Alliance
- Workers Library Publishers
- Workers' School of Los Angeles
- World Federation of Democratic Youth
- World Congress of Intellectuals
- World Peace Congress
- World Youth Council
- Young Communist League
- Young People's Records
- Young Pioneers of America
- Young Progressive Citizen's Committee
- Young Workers League



Scenic Photos courtesy the San Francisco Convention and Tourist Bureau, and the Oakland Convention and Tourist Bureau.

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KFRC Radio Photos by MOULIN STUDIOS San Francisco

HAROLD H. VELDE, M.C.
 Ranking Minority Member,
 Un-American Activities
 Committee
 (Formerly with FBI)

SUBVERSIVE ORGANIZATIONS IN THE U. S.

- There are easy tests to establish the real character of such organizations:
1. Does the group espouse the cause of Americanism or the cause of Soviet Russia?
 2. Does the organization feature as speakers at its meetings known Communists, sympathizers, or fellow travelers?
 3. Does the organization shift when the party line shifts?
 4. Does the organization sponsor causes, campaigns, literature, petitions, or other activities sponsored by the party or other front organizations?
 5. Is the organization used as a sounding board by or is it endorsed by Communist-controlled labor unions?
 6. Does its literature follow the Communist line or is it printed by the Communist press?
 7. Does the organization receive consistent favorable mention in Communist publications?
 8. Does the organization present itself to be nonpartisan yet engage in political activities and consistently advocate causes favored by the Communists?
 9. Does the organization denounce American and British foreign policy while always lauding Soviet policy?
 10. Does the organization utilize Communist "double talk" by referring to Soviet-dominated countries as democracies, complaining that the United States is imperialistic and constantly denouncing monopoly-capital?
 11. Have outstanding leaders in public life openly renounced affiliation with the organization?
 12. Does the organization, if espousing liberal progressive causes, attract well-known honest patriotic liberals or does it denounce well-known liberals?
 13. Does the organization have a consistent record of supporting the American viewpoint over the years?
 14. Does the organization consider matters not directly related to its avowed purposes and objectives?

This is an official list of organizations listed as subversive by the House Un-American Activities Committee and the U. S. Attorney General's Office.

- | | | |
|--|---|---|
| Abolish Peonage Committee | American Committee of Jewish Writers, Artists, and Scientists | American Writers Congress |
| Abraham Lincoln Brigade or Battalion | American Committee of Liberals for the Freedom of Mooney and Billings | American Youth Congress |
| Abraham Lincoln School | American Committee to Aid Korean Federation of Trade-Unions | American Youth for Democracy |
| Academic and Civil Rights Committee | American Committee to Aid Soviet Russia | All Harlem Youth Conference |
| Academic and Civil Rights Council of California | American Committee to Save Refugees | American Friends of Spanish Democracy |
| Action Committee to Free Spain | American Congress for Peace and Democracy | American Investors Union, Inc. |
| Actors Laboratory | American Congress to Free Earl Browder | American Jewish Labor Council |
| Actors' Laboratory Theatre | American Council, Institute of Pacific Relations | American Labor Alliance |
| African Blood Brotherhood | American Council on Soviet Relations | American Labor Party |
| All-American Anti-Imperialist League | American Federated Russian Famine Relief Committee | American League of Ex-servicemen |
| All-California Conference for Defense of Civil Rights and Aid to Labor's Prisoners | American Federation for Political Unity | American People's Fund |
| Allied Labor News Service | American Friends of the Chinese People | American People's Mobilization |
| Allied Voters Against Coudert | American Friends of the Mexican People | American Polish Labor Council |
| Almanac Singers | American Friends of the Spanish People | American Pushkin Committee |
| American Artists Congress | American Fund for Public Service (Garland Fund) | American Relief for Greek Democracy |
| American Association for Reconstruction in Yugoslavia | American Labor Committee Against War | American-Russian Fraternal Society |
| American Association of Scientific Workers | American League Against War and Fascism | American Russian Institute (New York) |
| American Committee for a Korean People's Party | American League for Peace and Democracy | American Russian Institute (Philadelphia) |
| American Committee for Anti-Nazi Literature | American Negro Labor Congress | American-Soviet Science Society |
| American Committee for Democracy and Intellectual Freedom | American Peace Crusade | American Soviet Music Society |
| American Committee for European workers' Relief | American Peace Mobilization | American Youth for a Free World |
| American Committee for Free Yugoslavia (The) | American Round Table of India | Appeal for Lawrence Simpson |
| American Committee for Friendship with the Soviet Union | American Russian Institute of Southern California | Artef |
| American Committee for a Free Indonesia - San Francisco | American Russian Institute for Cultural Relations with the Soviet Union | Artists' Front to Win the War |
| American Committee for Protection of Foreign Born | American Russian Institute of San Francisco | Associated Film Audiences |
| American Committee for Russian Famine Relief | American Russian Music Corporation | Associated Magazine Contributors |
| American Committee for Spanish Freedom | American Slav Congress | Book Find Club |
| American Committee for Struggle Against War | American Society for Cultural Relations with Russia | Book Union |
| American Committee for Yugoslav Relief | American Student Union | California Committee for Political Unity |



Reception Desk at KFRC—Located on the mezzanine floor of the beautiful Cadillac Building at 1000 Van Ness where busy operators and receptionists welcome the public.



Main Studio at KFRC—One of three spacious studios, with famous "Budda's Amateur Hour" in progress for the seventeenth consecutive year, creating a full house every Saturday night.



KFRC Master Control, Engineer Don Cameron—Where all KFRC studios, Don Lee Broadcasting System, Mutual Broadcasting System and overseas news operations and switching are performed.

Cadillac Building, home of KFRC, located in the very heart of metropolitan San Francisco at 1000 Van Ness. Studios on the mezzanine floor. Transmitter on the eighth floor. Towers and antenna on roof.



Announce Booth, Engineer's Control Room, and Studio Operation—In the background you see the newscaster. Center, the engineers and foreground, the program announcer, a perfectly co-ordinated operation.



KFRC - DON LEE PROGRAMS DEDICATED



(Right) News Director Al Berglund — Graduate of Michigan State and four year veteran of World War II, as well as UP and NBC radio bureau, Berglund is also a vital cog in Mutual's Pacific overseas news.



KFRC News Room in Action—News Director Al Berglund confers with Newscaster Lew Pfeifer on script, as writer-editor Harvey Sachs selects the last minute news.



(Left) KFRC Newscaster Dave Scofield — KFRC's Twelve o'Clock Noon News is one of the most important Bay Area radio programs. Voiced by Dave Scofield, the full meaning of every item is given impact to the public.



KFRC Teletype Room—With the great news breaks from all over the world pouring in over INS and AP, Berglund and Sachs make certain of important flashes for break-in to program in progress.

(Right) Chief Announcer Lew Pfeifer—At 7:45 each morning many thousands tune in Lew for the best morning summary of local and world news. His keen awareness of important events is always evident in his broadcasts.



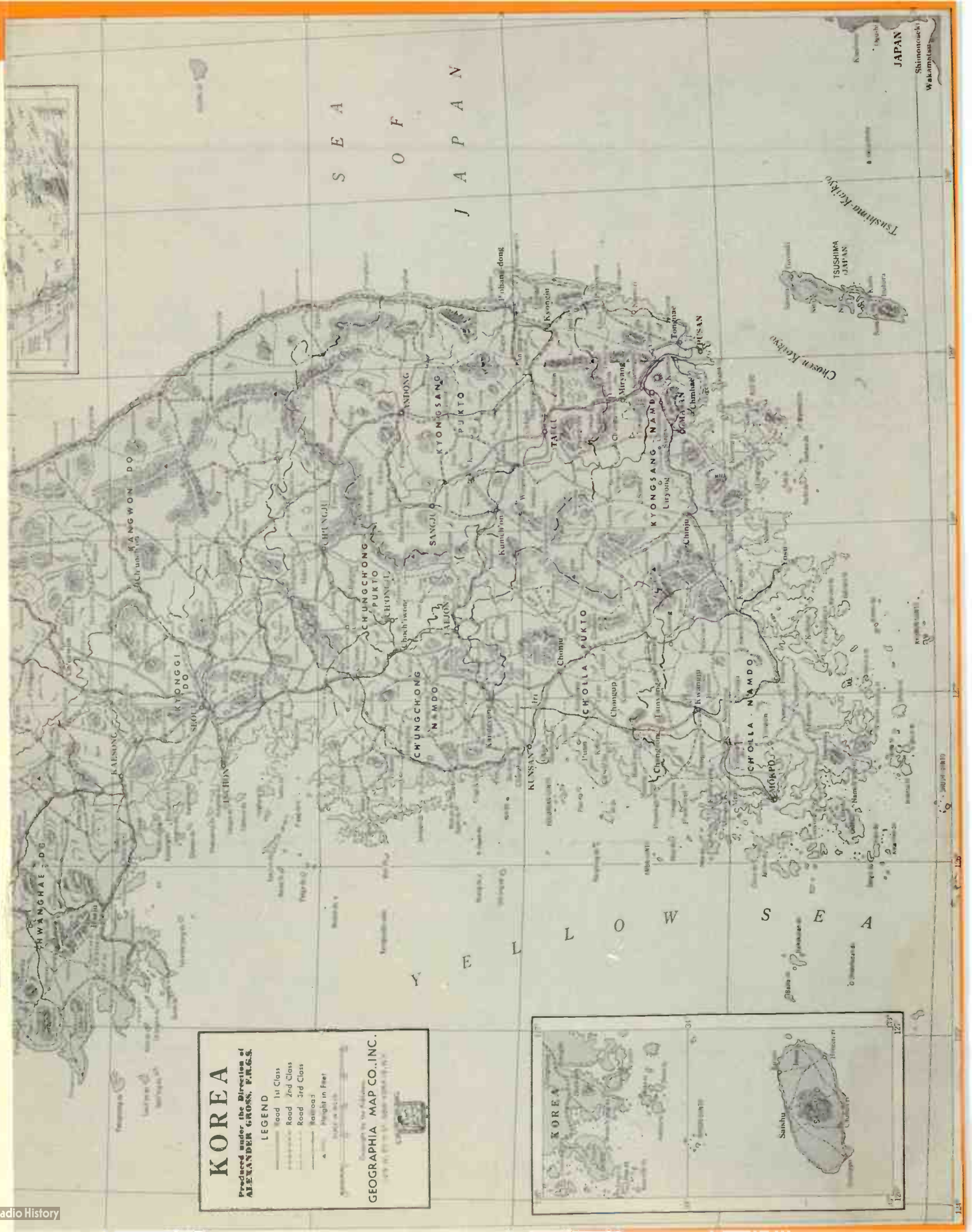
Fulton Lewis, Jr. (6) — His commentaries from Washington have long made national headlines.



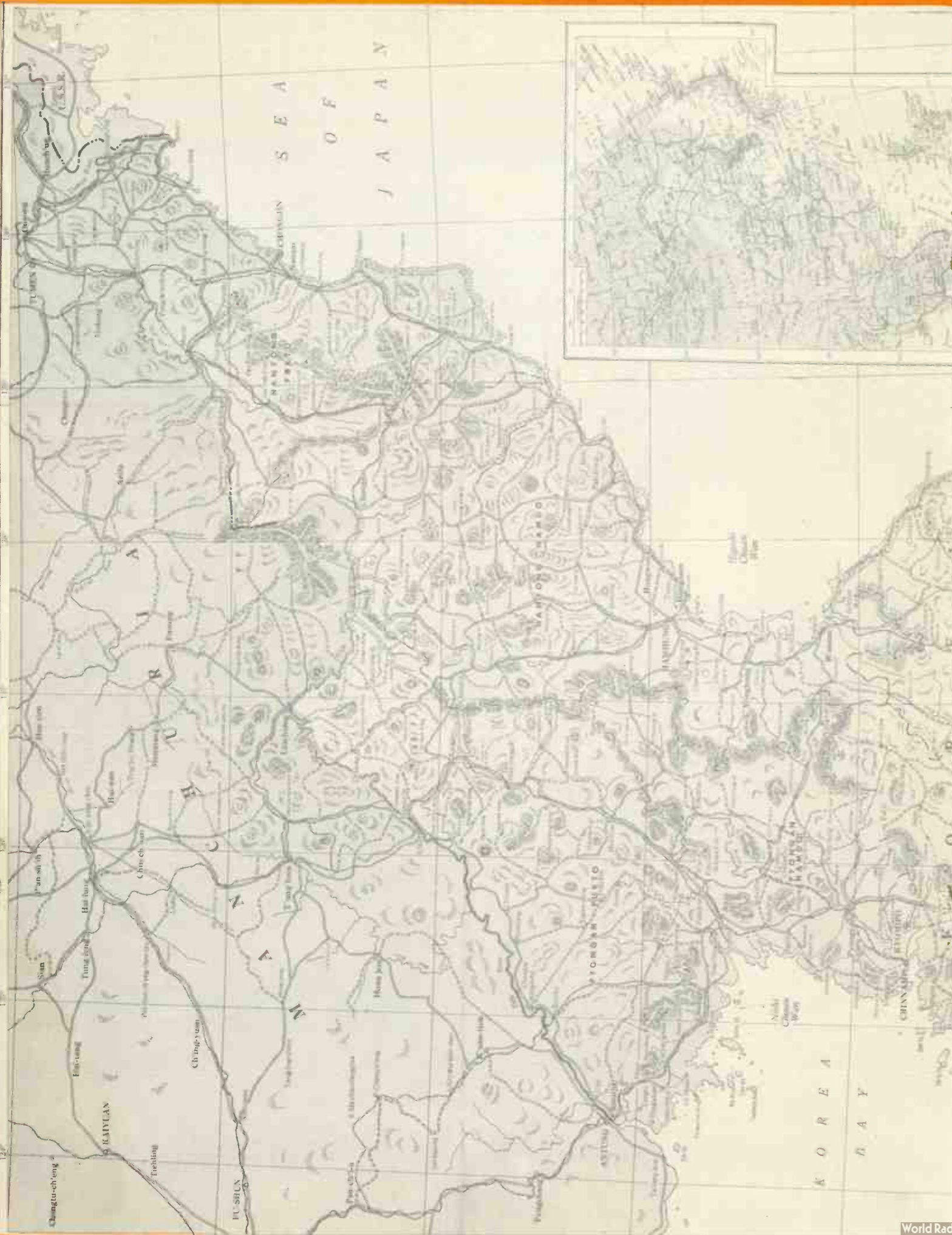
Glenn Hardy (7)—His Pacific Coast programs at 10 a.m. and 9 p.m. are a Don Lee fixture.



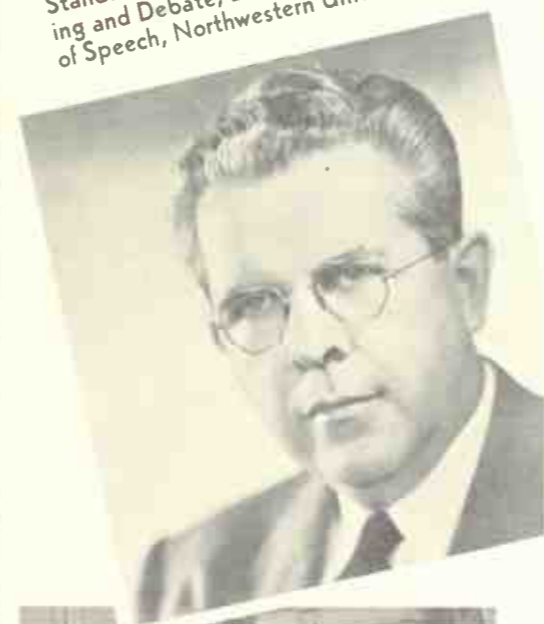
Frank Hemingway (8)—“Twice a day with Hemingway” is a well known slogan from Seattle to San Diego. Hemingway's presentation of the news is unique.



TO THE PUBLIC WELFARE AND NECESSITY



(Below) James H. McBurney, Director of the Northwestern "Reviewing Stand." Professor of Public Speaking and Debate, Dean of the School of Speech, Northwestern University.



Northwestern University Reviewing Stand—James H. McBurney (center), moderator, each week conducts a forum discussion of the country's most important problem. This view shows experts discussing "Our Stake in the Pacific." L. to R.: Rufus B. van Kleinsmid, Chancellor Univ. of So. Cal.; H. Arthur Steiner, Political Science, U.C.L.A.; Ch'en Shore-Yi, Pomona College; Arthur Coons, Occidental College.



(Below) "Reporters' Roundup" — Hollis Seavey, MBS News and Special Events Coordinator in Washington, D.C. and producer of "Reporters' Roundup," and Everett Holles, veteran newspaperman who moderates the programs in which other noted journalists appear on important questions of the week.



Mutual Newsreel — John Bosman and Jack Fern, editors of Newsreel, editing sound tape recorded at the scene and sent to New York for each evening's selection of news events from "where they happened, when they happened."



"War Front, Home Front" — These alert men in Mutual's New York studios prepare to speak directly to correspondents in Korea, Japan and Germany, in a brilliant weekly discussion of the war news. L. to R.: Les, Higbee, Art Feldman, Cecil Brown and George Fielding Eliot.

Gabriel Heatter (9) — His prophetic commentaries have roused the nation, and given comfort in times of greatest stress.

Cecil Brown (10) — Years of courageous coverage under enemy fire and fearless interpretation of the news have given him a deep insight into the truth.

Sam Hayes (11) — For twenty-two years he has been one of the most listened-to personalities on the air. His two daily news shows on KFRC, 4:45 p.m. and 6:45 p.m. require great speed and judgment in editing and writing.



THE MIGHTY

DESTROY THESE"



Governor Earl Warren of California proclaimed in an emergency meeting of the League of California Cities on January 4, 1951 —

"This is the greatest of emergencies. . . . The stakes we are playing for are the greatest in the history of the country. . . . This is everybody's job — everybody has to pay, everybody has to sacrifice."



Major General Walter M. Robertson, the state director of California's Civil Defense program on a radio broadcast given January 19, 1951, said —

"EVERY RESIDENT of California should consider it as his personal responsibility to get on the Civil Defense team. . . . Just as a fighting force must have its shock troops for attack, we must have our shock troops for Civil Defense on the home front."

A POTENTIAL MILITARY WEAPON

We are currently engaged in a conflict in which use of the atomic bomb is quite probable. It is highly important that you understand the effects of this weapon and how you can best protect yourself. We shall present in the following pages a simple digest of such facts from governmental and other authentic sources we feel to be of greatest value.

The atomic bomb is an extremely potent military weapon but not "absolute" in the sense that its possession alone guarantees victory. Thus far the United States has exploded several atom bombs and we have learned of the devastation that can be caused. In Hiroshima, 71,000 people were killed and 68,000 injured in a city of 245,000. About 75 A-bombs, according to Dr. R. E. Lapp, would probably have done as much damage to target areas in Germany as was done by all the strategic bombing during World War II. With all its tremendous heat and blast effects, accompanied by its unique radiation effects, it is still not unlimited in the amount of damage it can do. You need not worry, for example, about rumors to the effect that atomic explosions might contaminate the earth. It would take something like a million A-bombs to do the trick.

The atomic bomb is certainly to be feared and respected but there is no reason that it should cause panic. Now that the damage that it can cause, and the probable extent of such damage, is known, it has been possible to formulate certain simple rules that will go a long way towards insuring your safety and eliminate to a great degree the element of fear.

In any discussion of the atomic weapon it should be

remembered that constant improvements in design and type, or usage, can be expected. A top military spokesman recently forecast the use of A-bombs as the next probable step in battlefield warfare and said that they can be used with deadly accuracy against troops, tanks and other military targets.

RADIOLOGICAL WARFARE — The use of radioactive gases, dusts or mists as a weapon, is a possibility and we should be prepared for it according to Prof. Ridenour of the University of Illinois, but because it is a mystery weapon its most important effect might be psychological since it probably couldn't be used to kill people. It probably would force them to abandon homes, towns and military installations, however.

H-BOMB (Hydrogen Bomb) . . . It is no secret that research and experimentation on the development of the H-bomb is going on. It is not possible to predict when, or if, such a weapon will be produced. It is interesting to note however that according to the AEC a hydrogen bomb would be 10 times as destructive. It would cause severe destruction to over 30 to 40 square miles. According to a recent article in Science Digest, the H-bomb's most dangerous effect, from the viewpoint of the entire human race, would lie in the virulent radioactive dusts it might be used to produce. Such dusts, blown to the stratosphere would drift about the earth, gradually settling anywhere.

ATOMIC GUIDED MISSILES — or artillery shells, are certainly a future possibility, within perhaps two to five years, according to Army General J. Lawton Collins.



Busy, colorful Market Street in San Francisco, looking toward Ferry Building.



Oakland, great industrial, shipping and trading center.



Oakland is justly proud of its commodious, and modern Civic Auditorium.



An interesting skyline view of Oakland, taken from near 17th and Alice.

Lofty Empire Hotel Building, one of the hundreds of large and luxurious San Francisco hotels which have made this city a convention and tourist mecca.



Oakland photos courtesy of the Oakland Convention and Tourist Bureau.



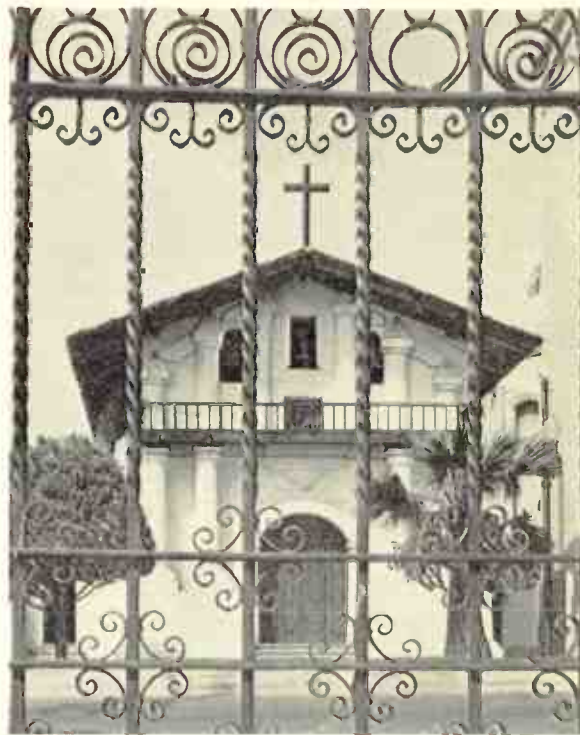
The University of California, at Berkeley. In its scenic and picturesque setting nestles the campus of one of the world's largest and most famous educational institutions.

"ATOM BOMBS COULD

ATOM BOMB!



Downtown San Francisco, showing the city's waterfront, where ships from the seven seas unload their cargoes. The mighty Golden Gate Bridge is seen in the background.



Mission Dolores . . . The Church where San Francisco was born.



San Francisco Bay Bridge, taken from Yerba Buena Island. San Francisco can be glimpsed in the distance.



(Above) San Francisco's famed Union Square in the heart of the downtown district. The world's largest (4 level) parking garage is constructed under Union Square.



San Francisco's Convention City—Twenty million dollar Civic Center of Public Buildings surrounding the City Hall. Buildings pictured are (1) Civic Auditorium; (2) Health Center Building; (3) City Hall; (4) War Memorial Opera House, and beside it (5) The Veterans Building (in these two buildings the United Nations was born); (6) U. S. Treasury Building; (7) Public Library; (8) State Building; (9) Whitcomb Hotel; (10) Masonic Temple.



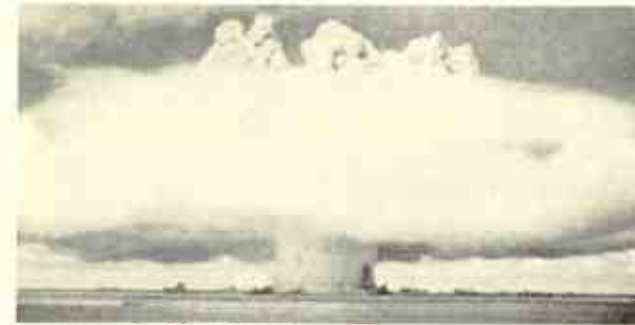
(Left) A street in San Francisco's Chinatown.

San Francisco photos courtesy of the San Francisco Convention and Tourist Bureau.

THE ATOMIC BOMB differs from other bombs in several important ways: (1) **ENERGY** released by an atomic bomb is roughly equivalent to that produced by the explosion of 20,000 tons of TNT bombs; (2) the explosion of the bomb produces highly penetrating, invisible **RADIATION** in the form of lethal gamma rays. In addition there

is also; (3) intense **HEAT** (1,000,000° C. in center of fire-ball) and **LIGHT** (at 5.7 miles, the brilliance is 100 times that of the sun viewed at the earth's surface); and (4) **RADIOACTIVE RESIDUES** which remain after the explosion emitting harmful radiations.

TYPES OF EXPLOSIONS



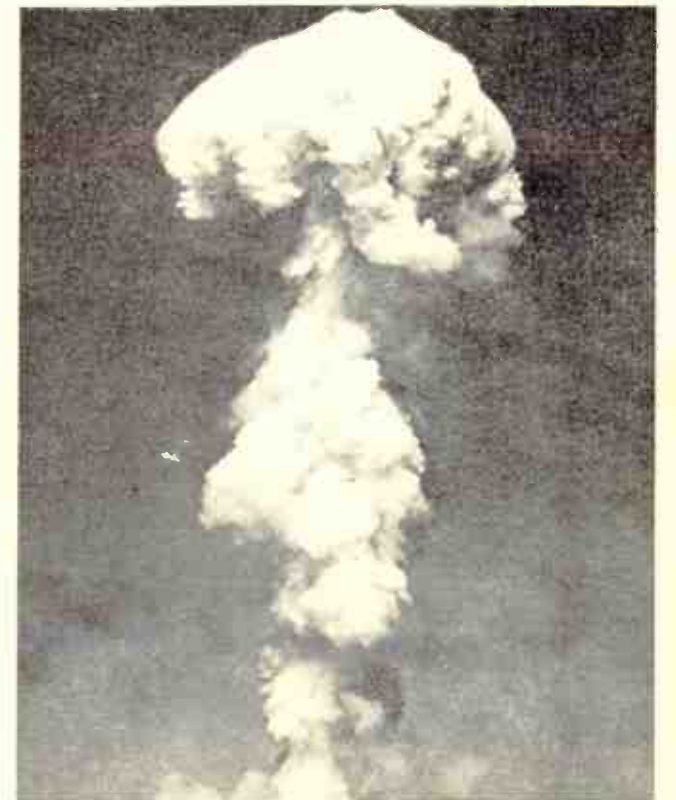
UNDERWATER BLAST—In test "Baker" off Bikini, a tremendous column of water was produced, which completely absorbed the initial flash of neutrons and gamma rays. When it began to fall back to the lagoon surface a critical base surge—a 200 to 300 foot wave of radioactive fission products—rolled over the ships in the harbor drenching them with highly contaminated radioactive products. Fall-out droplets were a further serious radioactive hazard many miles "downwind." In order to produce a critical base surge the water must be fairly deep. Fortunately little water of such depth exists in harbors or water adjacent to any of our larger cities. However the blast effect of an underwater explosion in even shallow water would cause considerable damage to any nearby docks or shore installations. . . . **AIR BURST OVER WATER**—In an air burst over water exposed structures, such as masts, spars, radar antennae, etc., within a radius of 3,000 to 3,500 feet may be expected to suffer very severe damage.

shielding. On account of falling debris, streets would likely be clogged and fire fighting would be rendered very difficult. . . . **SUB-GROUND LEVEL BLAST**—According to the AEC an atomic bomb could be made to burrow 50 feet or more into soft earth before exploding causing a "Grade D" earthquake. It would upset chimneys, collapse weak buildings, etc., to a radial distance of approximately 1350 to 3300 feet.

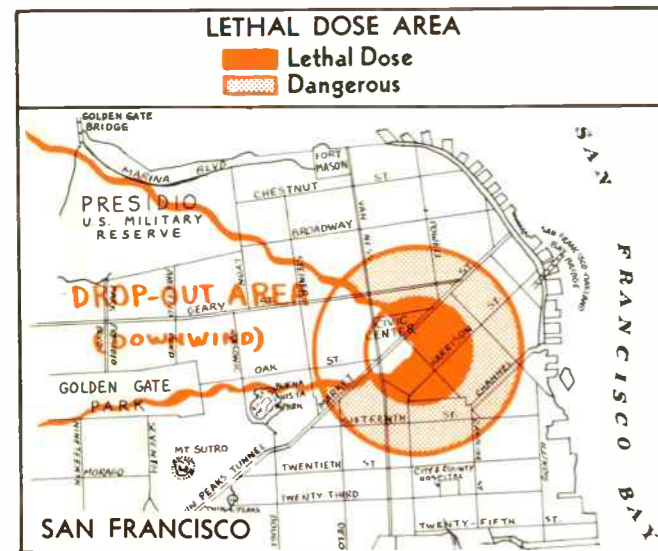
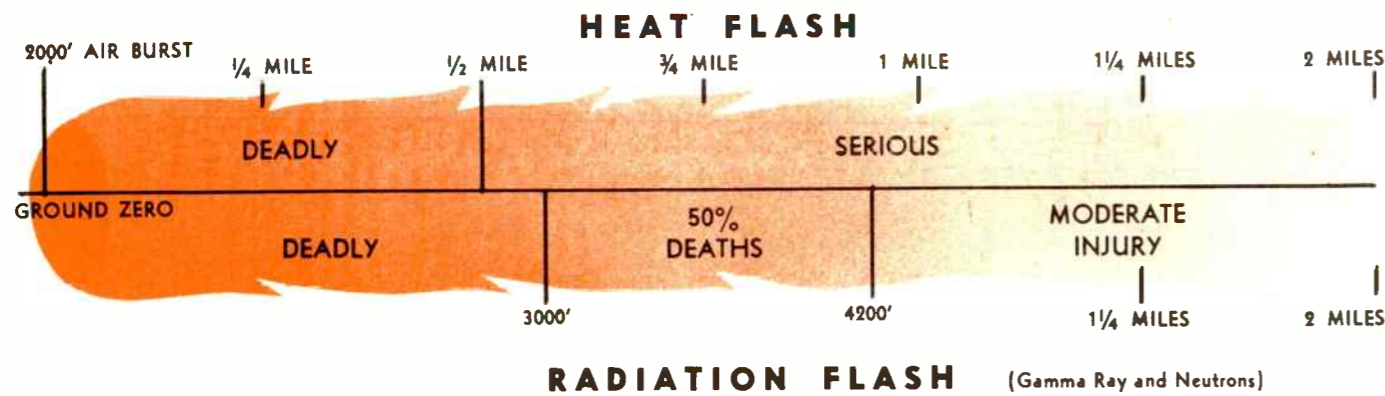
AIR BURST—An air burst of bomb at a height of about 2,000 feet, setting up thousand-mile-an-hour winds, very powerful suction and deadly, instantaneous radiation, appears to be the most destructive use of atomic energy. The heat wave in this case would not be as important as fires of secondary origin started by falling debris, shorting of electrical circuits, etc. The instant burst of gamma rays that would flash from the bomb would be lethal to anyone in the open up to 3,000 feet. The blast wave would be terrific, destroying almost everything within a half-mile radius of the explosion, and all but the strongest buildings would collapse to about one mile. Radioactive contamination of ground, building structures, etc., is practically negligible in an airburst.



GROUND LEVEL BLAST—On account of the blocking and shielding effects of the huge skyscrapers a ground level or "basement" blast in say New York, or Chicago, would have a relatively small area of critical destruction. Very close buildings would probably collapse and those nearby would suffer loss of masonry and be materially weakened. Primary radiation would be materially checked by the shielding of the buildings but there would be a small area of intense residual radioactivity near explosion center. It would probably be 6 hours before it would be safe to walk across the area but to stay for any length of time would be out of the question without proper



DAMAGE EFFECTS OF AN



THERMAL EFFECTS

At the time of the explosion a terrific heat flash is generated. It goes out in straight lines from the explosion and lasts but a fraction of a second, but during that time it can burn unprotected skin at distances of 2 1/2 miles and has been felt up to 5 miles. It has scorched telegraph poles at 2 miles. FIRE, set directly by the flash of radiant heat, or started by the ignition of gas from disrupted mains, or short circuits, can destroy huge areas. In Nagasaki, it was estimated that almost immediately after the detonation, fires were started in dwellings within a radius of 3,000 feet from ground zero. Debris-choked streets usually hamper or make fire fighting difficult. **If survivors will personally fight the small fires in their immediate area, huge conflagrations may never develop.** The thermal effect of an A-Bomb air explosion in San Francisco is shown.

RADIATION EFFECTS

GAMMA RAYS, pulses of electro-magnetic radiation, traveling with the velocity of visible light, are very penetrating. They are usually lethal to anyone in the open up to 3,000 or 4,000 feet from the bomb burst. They do most of their killing in the first second, or not at all. The second gamma ray hazard comes from the radioactive fission products left from the blast, or deposited from the cloud. Fission products from an air burst bomb must be regarded as something of a nuisance but a negligible factor in causing death. In the case of an underwater burst, however, residual radioactivity is much more extreme and may remain a hazard for a considerable time.



Elmer E. Robinson
Mayor of
San Francisco

STATEMENT FOR APOC BOUNDLET

I urge everyone to read this booklet very carefully. It takes only a few minutes, but they can be the most valuable few minutes you've ever given to your own protection and that of your loved ones.

Again, as your Mayor, I urge you to have someone in your family take a course in first aid, and if you can possibly do so, to volunteer for service in the civil defense forces of San Francisco. Civil defense is everybody's job.

Elmer E. Robinson
Elmer E. Robinson
Mayor



Regional Coordinator,
Harry H. Stoops



Clifford E. Rishell
Mayor of
Oakland



Rear Admiral Albert G. Cook,
Director of San Francisco
Disaster Corps.

Rear Admiral A. G. Cook, USN (Ret.), who is now Director of the San Francisco Disaster Council and Corps, was Commanding Officer of the USS General Mitchell, engaged in returning troops to the United States. As many as 6,000 men were carried at a time during this command, facing the Admiral with problems of mass feeding and housing.

Named Assistant Chief of Staff of the Twelfth Naval District in June, 1947, Admiral Cook was advanced to Chief of Staff in June, 1949, and served in that responsible administrative capacity until July, 1950.

Statement by Rear Admiral A. G. Cook, USN (Ret.)

San Francisco launched its disaster relief program shortly after the election of Mayor Elmer E. Robinson. As the international situation grew in gravity, the work of the Disaster Council and Corps, commanded by the Mayor, was intensified.

Today, the city's civil defense program, although still in a state of organization, is making rapid forward strides.

Each of the Corps' services, all reaching deep into the roots of official and civilian life within this great city, are progressing effectively in their own fields.

The Plant Protection Division and the Warden Service are well-advanced in their downtown and residential area safety programs. Police and Fire Auxiliary Reserves and Rescue Aid units are being trained.

The majority of the city's doctors and dentists have been provided with credentials and instructed where to proceed for emergency service.

Five giant air raid sirens have been installed and ten additional smaller sirens have been ordered installed to augment these. Work now is underway on communications and transportation services. A "backyard" emergency feeding program has been established.

In all, San Francisco's fine spirit of self-help and aid and assistance for a neighbor has provided the Disaster Corps with a fine foundation for the civil defense program.

AIR FILTER CENTERS are a vital necessity in any overall civil defense plan. In the event that air raids are deemed imminent, observation posts will immediately be manned by volunteer personnel already selected. Information of aircraft flying over these posts will be phoned to a Filter Center, one of which is located in Oakland. These centers are staffed and manned by volunteers instructed and supervised by Air Force officers. Information derived by this means will enable fighting planes to intercept enemy bombers and will permit warnings to be flashed to civilians in areas where bombings might occur. Men and women who volunteer for this service will be subject to call in the event of an emergency. They will serve without compensation for definite periods, assigned according to their own convenience. Duties will be assigned according to ability, such as supervisors, grid plotters, filterers and tellers. A regular training period is required, these hours also may be arranged according to your own convenience.

Application blanks for volunteer work can be obtained from the Oakland Disaster Council Office, 1401 San Pablo, Oakland. The Oakland Filter Center is at Room 423, Pacific Bldg., 16th and Jefferson, Oakland.

BOMB SHELTERS are a vital consideration in case of atomic attack. The city of San Francisco is studying various types of large community shelters, including possible use of underground garages. In this connection a survey has been taken to see what basements might be available for protection. In the meantime every family in the BAY AREA should construct a backyard bomb shelter if possible. It could be no more than a simplified cyclone cellar with 2 or 3 feet of dirt over it. . . . The Metropolitan Life Insurance Company has written specifications for an atom bomb shelter into a \$2,500,000 expansion of its Stockton Street headquarters. It will be the most thoroughly bomb-proofed area known to date, they claim.

PRIVATE PLANES will play an important role in defense plans. Preliminary plans call for (1) Designation of "Master Control" airports, at San Francisco, Oakland and other cities, which will give orders in an emergency to smaller "control airports," equipped with radio. . . . (2) In time of emergency the smaller "control airports" would be ready to furnish volunteer pilots of private planes to fly medicine and other emergency supplies to the disaster areas. A first step will be registration of the city's some 10,000 private planes, with special identification cards to be issued after a loyalty declaration by their pilot owners.

THE BAY AREA PREPARES FOR ATOMIC ATTACK

IN A CITY PROPERLY ALERTED AND ORGANIZED FOR CIVILIAN DEFENSE THE DEATH TOLL CAN BE CUT AS MUCH AS 50%

"FOOD FOR THOUGHT"

According to Maj. Gen. Lucas U. Beau of the Air Force, Russia has the ability to bomb any city in the U. S., including San Francisco, a vital installation in the national defense plan.

Gen. George C. Kenney states that "A large percentage of enemy atomic bombers would get through to blast American cities even if this country had the best possible radar screen and fighter defense system." He added the U. S. is a long way from having such a system.

Mayor Robinson warned San Franciscans that their city is among the nation's first five targets for attack in the event of war. He stated "Most every other activity of government around here will have to be secondary until all of our people are ready and trained as far as is possible to be trained, for whatever disaster may befall."

James J. Wadsworth, of the Civil Defense Administration, in Washington, said that there can be no "take to the hills" mentality nor "let George do it" attitude on the part of any person in this country, wherever he may live. Our cities must be manned and fought just as our Navy ships are manned and fought.

CIVIL DEFENSE VOLUNTEERS NEEDED

A mammoth home front defense organization of 1,500,000 persons is needed for the State of California without delay. 350,000 wardens alone will be needed in the event of an atomic attack on the state. Civil Defense also vitally needs nurses, first aid experts, rescue teams and many other types of volunteers. Applications for volunteer work can be obtained from any one of the offices named at the top of this page.

FAMILY PRACTICE

Until overall plans are completed and adequate volunteers recruited, individual families should school themselves in first aid, educate themselves in elementary fire protection, learn how best to shelter themselves and adopt family plans on what to do in event of an "air raid alert." It is suggested that at least one person in each family take the Red Cross first aid course.

MAIN DISASTER CORPS OFFICES IN THIS AREA

REGIONAL — Address 69 — 9th Street, San Francisco
Telephone UN 1-8700
Regional Coordinator, Harry H. Stoops

SAN FRANCISCO — Address—45 Hyde Street, San Francisco
Telephone UN 3-2474
Director, Rear Admiral Albert G. Cook

OAKLAND — Address 1401 San Pablo, Oakland
Telephone Templebar 2-3600
Director, Lloyd Shellabarger

For information pertaining to Bay Area Civil Defense matters telephone or visit one of the above offices. Applications for volunteering your aid in some Civil Defense capacity can be obtained from these offices.

SIGNAL FOR IMMINENT ATTACK WARNING TO TAKE IMMEDIATE SHELTER

— RED ALERT —

A THREE-MINUTE WARBLING BLAST ON ALL SIRENS. "ALL CLEAR" — THREE ONE-MINUTE BLASTS SEPARATED BY TWO-MINUTE INTERVALS EACH.

RED CROSS FIRST AID CLASSES

The Red Cross has been officially designated by the Disaster Council to train the populace in first aid for an emergency. Beginning first-aid classes open to the general public are now being held. Advanced first-aid classes will also be available. Registration for future first-aid courses can be made by calling First Aid Department, Red Cross, PRospect 6-1500. . . . Mayor Robinson has asked the School Department to set up first aid classes for all school children over 10.

All professional nurses, now inactive or retired, are urged to sign up for participation in the Civil Defense nursing program. Nurses may register at SFDNA headquarters, 1155 Pine Street, with Mrs. Wilfrid A. Froggatt. Some nurses may act as first aid instructors after first taking a refresher course in how to treat victims of an atomic bomb.

ESTIMATED \$340,000,000 TO BE SPENT FOR CIVIL DEFENSE IN CALIFORNIA

A projected civil defense program for the State of California would cost approximately \$340,000,000. The state's share of this huge amount would be about \$150,000,000, with the Federal Government to furnish the balance. . . . The establishment of a reserve highway patrol force has been proposed for civil defense duty. . . . Burlingame is believed to be the first city in the country to register all of its citizens in a mass nose-counting operation designed to speed up civilian defense. From this master file, a 500-man air raid warden group will be organized. . . . The Bay Meadows Race Track has been offered to Civil Defense authorities for a disaster relief center in the case of war.

ATOM BOMB EXPLOSION

BLAST DAMAGE



GROUND ZERO COMPLETE DESTRUCTION 1/2 MILE SEVERE DAMAGE 1 MILE MODERATE DAMAGE 1 1/2 MILES PARTIAL DAMAGE 2 MILES LIGHT DAMAGE

BLAST DAMAGE CHART (Air Burst) (AEC)

Feet	Damage
0	Ground Zero — or directly beneath the air burst.
1,500	Mass distortion of heavy steel frame buildings.
2,000	Limit of severe structural damage to earthquake resistant reinforced concrete buildings.
2,500	To this point virtually complete destruction of all buildings, other than reinforced concrete.
3,500	18-inch brick walls completely destroyed.
4,000	Roof tiles melted by heat.
4,500	Light concrete buildings collapsed.
5,000	12-inch brick walls severely cracked.
5,500	Electrical installations and trolley cars destroyed.
6,000	Severe damage to entire area. Severe structural damage to steel frame buildings.
6,600	Structural damage to multistory brick buildings.
8,000	Severe damage to homes, heavy damage to window frames and doors, foliage scorched.
8,300	Moderate damage to area.
9,000	Heavy plaster damage.
10,000	Blast damage to majority of homes. Severe fire damage. Flash ignition of combustible materials.
10,300	Partial damage to structures in area.
11,000	Flash charring of telegraph poles.
12,000	Light damage to window frames and doors, moderate plaster damage.
8 MILES	— Limit of light damage.

(Statistics above relate to Japanese explosions.)

While giant skyscrapers with reinforced concrete structures and long periods of vibration should withstand the shock very well the masonry would be stripped off, girders twisted and people literally blown out of the top floors

BLAST DAMAGE AREA

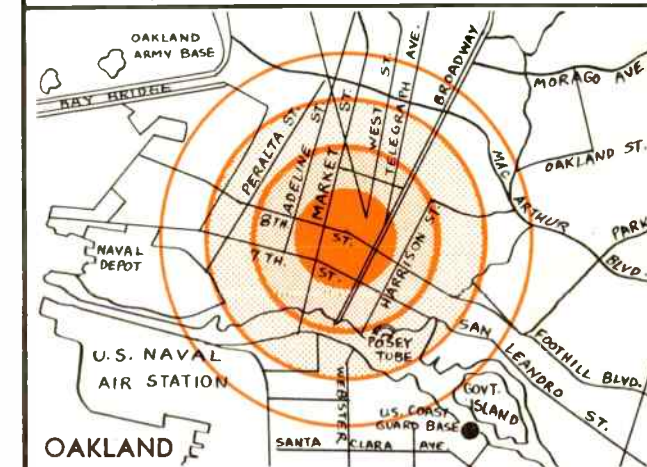
Very Heavy 1 Mile Moderate 3 Miles
Heavy 2 Miles Slight 4 Miles



of the buildings if within the primary blast area. People in basements, subways, or even the lower floors of reinforced concrete structures would be reasonably safe.

BLAST DAMAGE AREA

Very Heavy 1 Mile Moderate 3 Miles
Heavy 2 Miles Slight 4 Miles

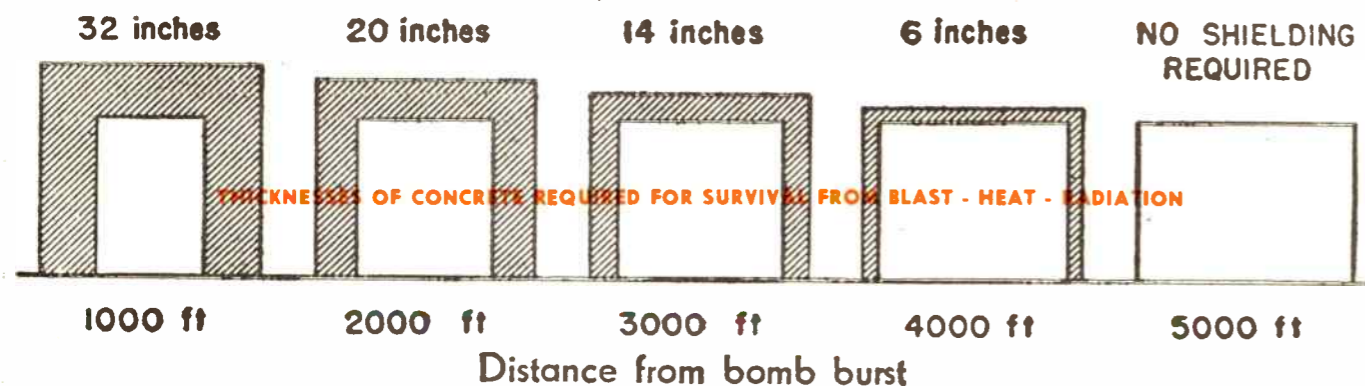
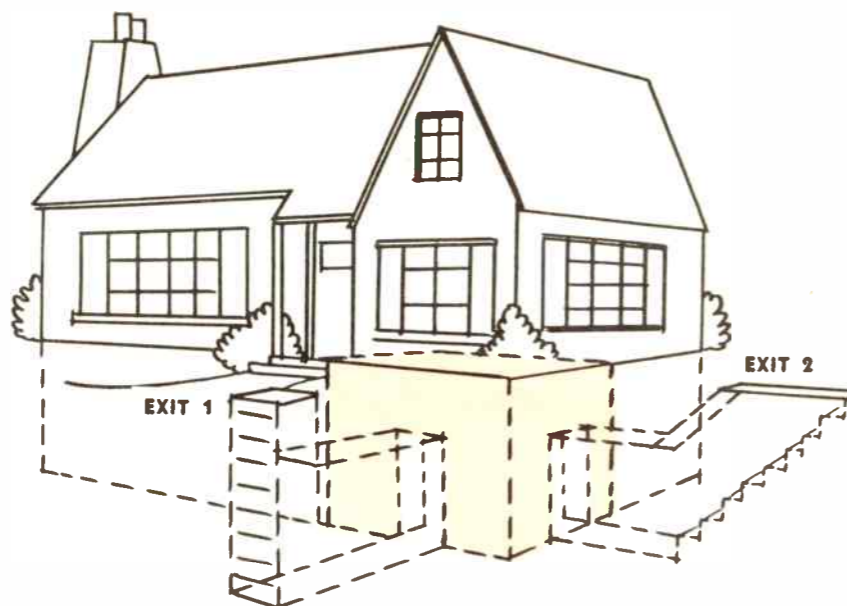


ADVANCE PRECAUTIONS

YOUR BOMB SHELTER

Best protection from an atomic explosion is the properly constructed shelter. This can be built in the open or as a specially reinforced room in your basement as in the diagram to the right. The room can be made any size you wish but should have no windows, since glass transmits the deadly gamma rays. Some means of getting out, preferably two exits, should be provided.

The most flimsy structure will give you complete protection against heat flash, but protection against the deadly gamma rays and neutrons is a main consideration. Lead is the most effective shielding device, but since lead is expensive and not practical, your next best bet is a shelter of reinforced concrete or perhaps reinforced concrete with a thick layer of earth over the top. If built outside, completely underground or partially above ground, solid earth walls and ceiling 6 feet thick will reduce the intensities of the gamma rays to practically zero even directly



The shelters shown as diagrams above are, according to the book *MUST WE HIDE*, by Dr. R. E. Lapp, effective at the distances given. For neutron shielding a modified concrete made by adding a considerable proportion of an iron (oxide) ore, such as limonite, or magnetite, to the cement is effective. Small pieces of iron, such as steel punchings, may also be incorporated. Concrete should be kept painted to seal its pores, reducing the penetration of gamma rays.

under the bomb burst. Some crude, semi-buried shelters only 900 feet from ground zero withstood the blast in Nagasaki, and none were damaged beyond one-half mile. Semi-buried shelters of the type used in Europe in World War II for protection against conventional bombs would provide worthwhile protection against atomic explosions.

Outside shelters, buried or semi-buried, should be located well clear of buildings to avoid hazards from debris and fire. Outside shelters designed for a static load of 500 pounds per square foot should provide protection against blast at one-half mile from ground zero if an earth cover of at least 2 feet is provided. This cover is necessary for protection against ionizing radiation. The shelter should be capable of being closed up so as to be air tight. Doors should close tightly against seals in the frame. At least two means of exit are essential.

Concrete or hard-packed-earth building materials do not become dangerously radioactive when bombarded by gamma rays.

In your atomic shelter, whether inside or outside, adequate drainage and ventilation should be provided. Basements of homes, especially if they extend beyond the main structure of the house, offer reasonable protection against blast damage, provided they are not too near the center of the explosion and have outside escape hatches to be used in case the house collapses or catches fire.

If you give them an idea of what you need, your local construction company will help in working out the details for an effective shelter. Some of them already have specifications.

TS OF AN ATOMIC BLAST

RADIATION INJURIES

Because of the concentration of ionizing radiation nearly everyone not protected by earth, steel, or thick concrete within a radius of approximately 3000 ft. would probably die. The most serious cases would succumb within a few hours to 4 or 5 days after exposure. A second group would develop susceptibility to infection due to destruction of their white blood cells and would die from 4 days to 6 weeks after exposure. Another group would incur multiple hemorrhages and die within 2 to 3 weeks from this cause.

THEIR TREATMENT

Many people believe that very little can be done in treatment of radiation casualties. This is true of a lethal

GENERAL

There is little about the effects of either old or new weapons which is new to the health professions. The atomic bomb produces burns, lacerations, amputations, crushing injuries, and blast injuries which all surgeons are accustomed to treating. Radiation sickness is a new type of wartime injury, but it is not a new disease and its symptoms are recognized by physicians, particularly radiologists.

When the dose is 400 r or less, many lives can be saved with proper treatment. Immediate hospitalization, so as to insure complete rest, and avoidance of chills and fatigue, is the first step. Whole blood transfusions should be given as required, until the bone marrow has had time to regenerate blood cells. Adequate nourishment should be provided by intravenous feeding to supply necessary sugars, proteins, vitamins, etc. Infection may be controlled by the use of penicillin and other antibiotics.

Findings in Japan show that people exposed to heavy radiation suffer various injuries, sicknesses, and malfunctions which together are called the **acute radiation syndrome**. Physicians find that the severity of the symptoms is related importantly to two factors: The amount of radiation absorbed in a single dose, and the proportion of the body exposed.

No unusual ill effects directly attributable to ionizing radiation have occurred among Japanese survivors. Whether or not such after-effects will occur among these survivors will have to be answered in the future. After-effects from radiation exposure that cannot be fully assessed for many years are effects on heredity and effects on fertility. From investigations, it is found that the likelihood of parents having deformed children after suffering sublethal amounts of ionizing radiation is very slight.

With adequate warning which is heeded and adequate shelters which are occupied, the casualties can be greatly reduced. Furthermore, doctors with ample medical supplies, hospital facilities, and blood banks can save many of those injured by blast or burns.

GAMMA RAYS

Gamma rays are very similar to powerful X-rays and constitute the greatest radiological danger in an atomic blast. They penetrate deeply into the body and ionize the carbon, nitrogen, hydrogen, and oxygen atoms, disrupting the complex body combinations of these elements, changing the proteins, enzymes and other substances that make up our cells and bodies. As a result, the cells are injured or killed; if enough cells are damaged or killed, the person becomes seriously ill or dies.

dose; but many borderline cases can be saved by:

- Good medical care.
 - Whole blood transfusions. It has been estimated that, for a catastrophe such as at Hiroshima, approximately 250,000 pints of blood would be needed, 80,000 per week for the first 3 weeks.
 - Control of infection by antibiotics such as penicillin and aureomycin.
 - Intravenous feeding to supply necessary sugars, proteins and vitamins.
 - Control of the bleeding tendency by use of drugs.
- Whole blood would be required in great quantities, primarily to treat the casualties suffering from mechanical injuries and burns, secondarily to treat victims of ionizing radiation.

One may receive radiation producing far more serious tissue damage than a severe burn without any sensation and no damage will be apparent for several days.

In the case of such a high air blast as in Japan, some 15 to 20 per cent of the deaths probably will be caused solely by nuclear radiation. The remaining 80 to 85 per cent will be caused primarily by injuries suffered in the collapse of buildings and by burns, although many of these may also suffer severe radiation exposure.

A dose of 400 r (roentgens) of radiation received over the whole body in the course of a few minutes represents the median lethal dose which would be fatal to about 50 per cent of human beings. At the minimum distance of 2100 feet from the explosion, protection from a lethal dose would require something like 20 inches of concrete, 3 inches of lead, or 40 inches of packed earth.

CONTAMINATION

The chief external radiation hazard in a contaminated area will come from gamma rays thrown off by fission products or by materials made radioactive by neutrons or gamma rays during the explosion. Filter masks, clothing tight at the wrists, ankles, and neck, and tight-wristed gloves will afford protection against Alpha and Beta particle contamination. Material heavily contaminated with Beta-emitting material should not, however, be handled, even with gloved hands, since it can cause severe burns. Tongs or equivalent instruments should be used. Clothing should be discarded at the edge of the contaminated area to avoid spreading radioactive contamination. Thorough soap-and-water bathing would be a valuable precaution.

Gamma radiation from contamination will not approach the power of direct bomb radiation, but it still can be severe. The best protection against contamination that gives off gamma radiation is to use instruments to detect its presence and to avoid any areas of dangerous concentration.

At a bomb burst, contaminated particles of the size which will most readily pass from the small airpockets of the lung into the blood stream ascend rapidly into the atmosphere. The chances of inhaling a dangerous amount of these small particles is small unless explosion occurs during rain or heavy overcast. A combat-type gas mask will filter out 99.999 per cent of all such particles.

Any wound suffered in a contaminated area should be cared for in the same manner as any similar injury in an uncontaminated area. Clean such a wound with soap and water or potassium permanganate, cut out the damaged tissue, and cover the wound. Amputation is not indicated.

PERSONAL INJURY EFFECTS

INJURIES FROM ATOMIC EXPLOSION

- I. Those caused by the blast pressure or shock wave directly.
- II. Those caused when buildings are wrecked.
- III. Those caused from radiant heat.
- IV. Those caused by burns, either in the wreckage or otherwise.
- V. Those caused by nuclear radiation.
- VI. Those caused through residual contamination.

BLAST INJURIES

Direct blast injury may occur whenever the greatly increased air pressure comes into contact with body surfaces, causing multiple hemorrhages, particularly of the intestinal tract, the stomach, the lungs, the ears, and the sinuses about the nose. Direct blast is not a significant primary cause of death. Most blast injuries are the result of missiles, such as broken glass, falling bricks, etc.

The shock wave from the blast sweeps outward rapidly from ground zero and, in the case of Japan, took up to 10 seconds to travel 2 miles.

In the water, the dangerous level for pressure is about 500 pounds per square inch. In an underwater atomic explosion, any person immersed in the water probably would be killed or seriously injured up to 2,000 yards from the zero point.

Since practically all brick and light masonry buildings with weight-bearing walls in the blast area will be wrecked, wooden buildings flattened, and the doors and other partitions of blast-resistant steel-reinforced concrete buildings blown out, people in or near these buildings will be killed or injured by collapse of structures, and by missile effects of debris.

FLASH BURNS

The flash burns caused by an atomic explosion may be first degree, merely reddening the skin; second degree, causing blisters; or third degree, damaging all layers of the skin.

Severe burns are caused both by the radiant heat from the explosion of the atomic bomb (flash burns) and from the fires that break out in the wreckage (flame burns). The effects of visible light probably are not significant. Even those who look directly at the burst apparently suffer only temporary dazzling and loss of vision.

Atomic bomb flash burns are distinctly different from those caused by other types of explosions, since they are due to radiant heat rather than to hot gases, as in the case of shell bursts or gasoline explosions. Shadow effects are prominent. An ear, for example, might be badly burned, yet the skin behind the ear be unharmed.

As compared with flame burns, flash burns show a much smaller depth of penetration of the skin. This is due to the fact that the thermal radiation flash lasts only approximately 3 seconds. Within the depths to which the thermal radiations penetrate, the tissues appear to be completely destroyed; in a radius of 3600 feet from ground zero blackening

GENERAL

There are no particular problems involved in the treatment of individual injuries received as a result of an atomic attack. Standard treatment procedures can be used in treating mechanical injuries (cuts, lacerations, broken bones, concussions, etc.), burns, shock and radiation effects. Problems of a more serious nature are involved in the necessity of treating thousands of individual cases almost at once, in the immediate need for mountains of medical supplies and prompt evacuation of seriously injured to hospitals outside of the disaster area. There is nothing mysterious about radiation, as man is subject to a constant bombardment of cosmic rays. He accumulates minute amounts of radium in his body through life, and X-rays are used extensively in the treatment of certain illnesses. The only difference in atomic radiation is in the types of rays and the intensity.

FLAME BURNS

A conflagration may be expected to follow any atomic bomb blast. Fire damage light in underwater bursts.

Burns suffered from flames, in such cases, differ in no way from those encountered in any ordinary intense fires unless radiation injury has also been suffered. In Japan, there were many cases where excessive scar tissue (keloids) formed, and many of the survivors have contraction deformities not specifically related to exposure to the atomic bomb, but rather to slow healing, improper care, and infection. Burns suffered in non-atomic bomb raids resulted in comparable amounts of scar tissue, a tendency in Japanese as a race.

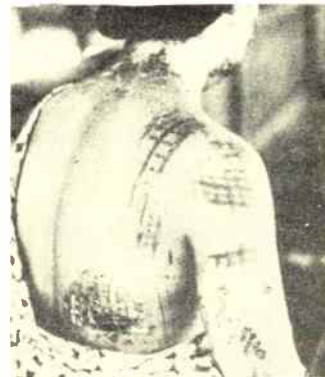
It would be unrealistic to prepare for fewer than 40,000 to 50,000 severely burned persons from a single atomic explosion. Fortunately, severe symptoms from radiation in those not killed outright do not ordinarily come on until several days after the acute exposure, so that those suffering from burns and mechanical injuries will actually constitute the chief immediate medical problem and make their heaviest demands on emergency facilities at a time when those suffering solely from acute radiation will require very little attention.

indicates that actual charring has occurred.

Direct injury from radiant heat occurs at the explosion of the bomb; Japanese people in the open suffered third-degree burns up to 1,500 yards and second-degree burns up to 2,500 yards. The effect was instantaneous.

Even loose clothing afforded some protection against atomic flash burns, and color also had a protective effect. White clothing tended to reflect the radiant heat, darker clothing to absorb heat. Burns sometimes were cross-hatched where light clothing was marked with dark lines. Tight clothing was less protection, and burns were inflicted at elbows and where straps crossed the shoulders, for example, while other places where clothing was loose were protected or less severely burned.

As far as burning caused by thermal radiation is concerned, the essential points are protection from direct exposure for human beings and the avoidance of easily combustible materials, especially near windows.



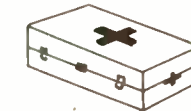
MAY SAVE YOUR LIFE EQUIPMENT AND SUPPLIES FOR YOUR BOMB SHELTER

Your bomb shelter should be equipped with certain necessary items that may be extremely valuable when it

FLASHLIGHT OR BATTERY-OPERATED LIGHTING FACILITIES—will be found valuable since all light circuits will be put out of commission at the time of the burst.



FIRST-AID KIT—will be found essential for rendering aid to injured or to members of your own family or group.



PORTABLE RADIO—to keep you in contact with emergency broadcasts concerning the disaster.



FOOD AND WATER—A few cans of staple food and water in a tightly sealed jar may be most useful. Properly covered or canned foods should undergo little or no contamination. Contaminated water, when distilled, is perfectly safe for drinking purposes. The radioactive material remains behind in the residual scale and brine. **MERE BOILING OF WATER CONTAMINATED WITH RADIOACTIVITY IS OF NO VALUE.**



BLANKETS—may be needed for warmth or shock protection.



FIRE EXTINGUISHER—A small hand fire extinguisher will permit you to put out any small fires in your immediate vicinity. This may prevent these fires from spreading into a general conflagration and will be a godsend to the firefighting groups which will have their hands full trying to cope with major fires.



TOOLS—of a simple nature, such as a shovel, saw, hammer, hand ax, crow bar, pliers, knife, etc., may be necessary to remove debris from exit of your own shelter or in doing rescue work.



RADIATION EQUIPMENT—A dosimeter for measuring the amount of radiation that an individual has absorbed should be added to your equipment as soon as these are available.



GAS MASK—An ordinary gas mask is adequate protection against swallowing or breathing sub-microscopic radioactive particles. If a mask is not available a surgical type of gauze face covering would help. In case of a high air burst, this probably would not be necessary, as very little radioactive residue is present.



GLOVES—Rubber gloves will serve to cover any small overlooked skin wounds that might permit entry of the radio-active particles into the blood stream. Heavy work (cotton or leather) gloves to slip over the rubber gloves might



comes time to emerge into the bomb-blasted outer world.

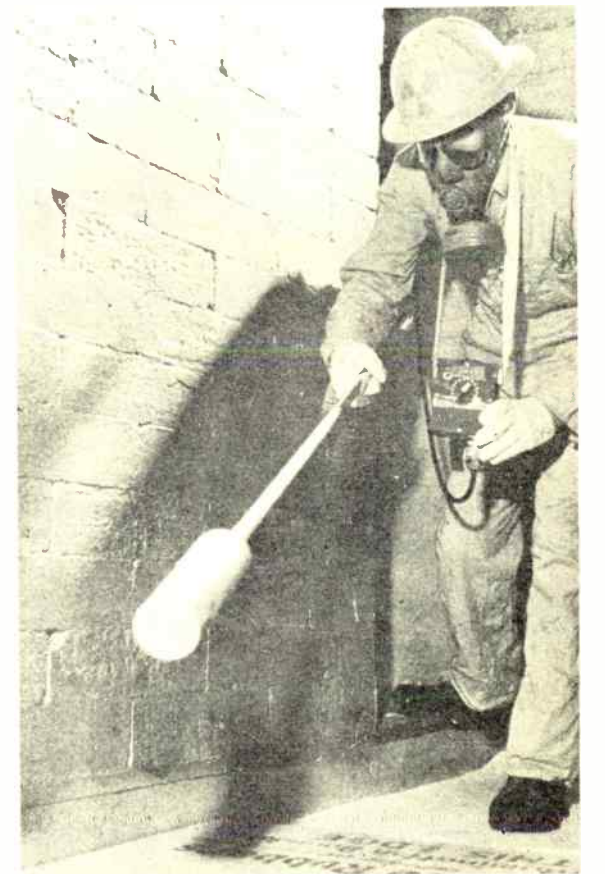
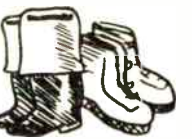
be helpful in the event of attempting to move heavy timbers or working in debris.

HEAD COVERING—Some sort of tight-fitting cap, preferably of the type used by surgeons, covering the hair as completely as possible, should be worn.



COVERALLS—(preferably of a light color and loose fitting to tuck into your boots or overshoes) will provide an effective and practical working outfit that can later be discarded along with your other clothes when you have left the radioactive area.

BOOTS OR OVERSHOES—will prevent radioactive particles adhering to your shoes and at the same time will be most helpful in working in flooded areas. If overshoes or boots are not handy, you can wrap your shoes with cloth which can be discarded later along with any radioactive particles.



(Above) An advance monitor entering an area of high radioactive contamination. (The average individual would not require such elaborate protective devices.)

WHAT TO DO IF BOMB FALLS WITHOUT WARNING

Your first indication of an atomic bomb burst will be an awesome glare in the sky hundreds of times brighter than the sun. **DON'T LOOK AT THIS GLARE. YOU WILL EXPOSE YOUR FACE AND BODY TO FLASH BURNS AND DEADLY RADIATION.**

IS ONE LEAP OR SO AWAY. BEND OVER, BACK TO THE LIGHT, SO AS NOT TO EXPOSE UNPROTECTED PARTS OF THE BODY — BUT IF SHELTER IS SEVERAL STEPS AWAY, DO NOT TRY TO MAKE IT. FALL TO THE GROUND AS IF YOU WERE IN THE OPEN AND THEN WAIT 10 SECONDS.

THEN PRESS YOURSELF TIGHTLY AGAINST A BUILDING IF YOU CAN, TO AVOID SHATTERED GLASS OR FALLING BRICKS. (See photo No. 2)

3. IF YOU'RE AT HOME OR IN THE OFFICE, DROP TO THE FLOOR, BACK TO A WINDOW, OR CRAWL BEHIND A DESK OR TABLE. THERE IS A LITTLE TIME LAG BETWEEN THE GLARE AND THE BLAST WAVE, SO FOR A FULL MINUTE STAY AWAY FROM THE WINDOWS AND THE DANGER OF FLYING GLASS. SAFEST PLACE INSIDE A BUILDING IS AGAINST AN INTERIOR PARTITION WHICH MAY BE STRONG ENOUGH TO RESIST COLLAPSE.

(See photos No. 3 and 3A)



1. IF YOU ARE IN THE OPEN, DROP TO THE GROUND INSTANTLY, BACK TO THE LIGHT, AND TRY TO SHADE YOUR BARE FACE, NECK, ARMS AND HANDS. THIS WILL NOT PROTECT YOU FROM GAMMA RAYS BUT WILL PROTECT YOU FROM BURNS which can hurt you far beyond the limits of radiation effects. (See photo No. 1)

KEEP YOURSELF DOWN FOR AT LEAST 10 SECONDS. THE IMMEDIATE DANGER IS THEN OVER AND YOU CAN GET UP AND LOOK AROUND AND DECIDE WHAT TO DO NEXT — IF YOU ARE ABLE.

2. IF YOU ARE IN THE STREET, DUCK BEHIND A TREE OR INTO A CORNER OR A DOORWAY IF IT



WHAT TO DO IF YOU HAVE ADVANCE WARNING

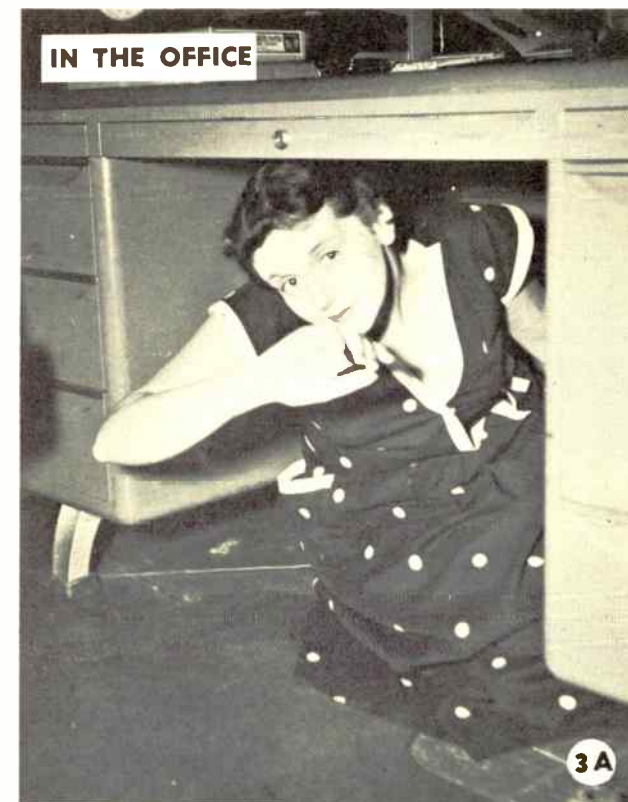
THE WARNING SIGNAL TO TAKE COVER WILL BE A THREE-MINUTE WARBLING BLAST OF SIRENS. (Three one-minute blasts separated by two-minute intervals means "all-clear.") When the warning is heard . . .

1. Move at once to designated shelters or disperse as directed. In the event special shelters have not been prepared, go to the nearest subway or deep basement.

2. If no adequate shelter is nearby, you can still protect yourself against flying debris and some of the heat effect. Get away from frame buildings and trees. Lie down, preferably in a ditch, behind a wall, in a ravine. Protect your eyes from the flash by covering your eyes with your arm. If not, you may be temporarily blinded. Remain under shelter for a few minutes after the blast, to be sure all flying debris has landed.

3. If able, try and help any injured people near you. Administer first aid when possible. Put out any small fires in your vicinity. Each home should have a fire extinguisher available, as chances are that city water pressure will be gone.

4. When you have done what you can in your immediate vicinity, report to the place designated by civil de-



fense authorities, as you will be needed to help in rescue work, evacuation of wounded, general fire fighting, and other emergency jobs. If no place to report has been designated, see if you can aid any of the emergency crews who will be in operation.

5. After the initial rescue work is done, check with a radiological defense man as to the safety of the area.

6. Take a shower and scrub thoroughly three or four times to remove any radioactive materials that may have gotten on you, using sodium bisulphite or potassium permanganate if badly contaminated, and if advised by competent authorities to do so.

7. Change your clothes, discarding the clothes you wore in the affected areas, especially shoes. **Bury them! Do not burn them!**

8. When feasible, check with a radiological defense adviser and a doctor to make sure you are well and safe.

9. Do not spread rumors. Enough confusion will exist without adding to it.

AVOID PANIC — BE CALM . . . MASS HYSTERIA CAN SERIOUSLY HAMPER ORGANIZED DEFENSE



NO CITY IS SAFE FROM ATOM ATTACK

BLOOD TYPE RECORD
 (Fill in with names of members of your family and the blood type for each.)

	Blood Type
1.	
2.	
3.	
4.	
5.	

OUR BLOCK WARDEN IS —

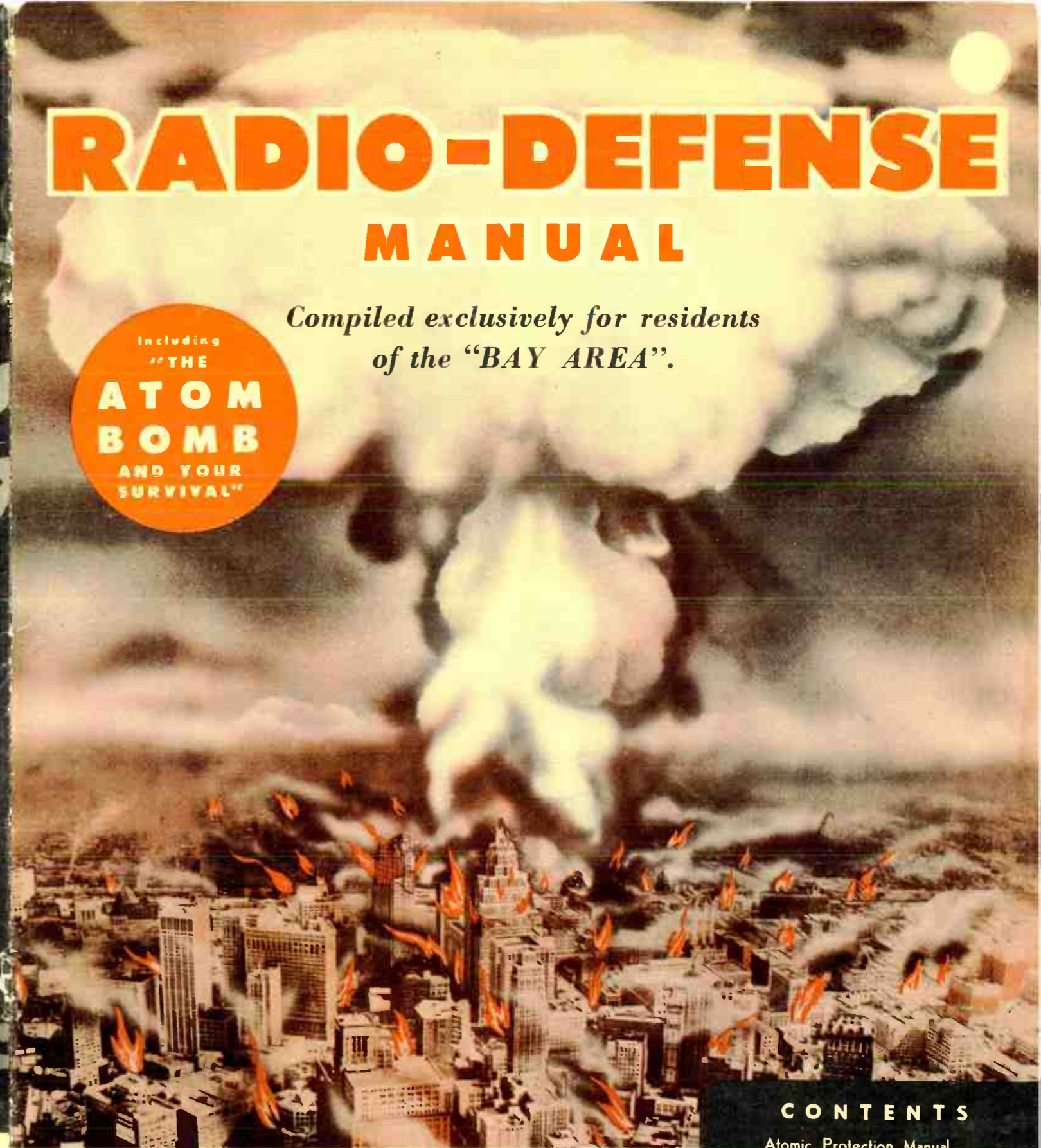
Name _____
 Address _____
 Phone No. _____

SOURCES OF MATERIAL — Damage from Atomic Explosion and Design of Protective Structures (Dept. of Defense and AEC) • A Study of Civil Defense (National Military Establishment) • Civil Defense Against Atomic Attack (Joint Committee on Atomic Energy) • The Effects of Atomic Weapons (Atomic Energy Commission) • Medical Aspects of Atomic Weapons (Dept. of Defense and AEC) • Control of Radiation Hazards in the Atomic Energy Program (AEC) • Civil Defense Status (Civilian Defense Office) • Self-Help and Mutual Aid in Civil Defense (NSRB) • Municipal Action in Civil Defense (NSRB) • State and Municipal Responsibilities in Civil Defense Planning (NSRB) • The City of Washington and an Atomic Bomb Attack (NSRB) • Address of William A. Gill, Asst. Dir. of Civilian Mobilization Office • Radiological Monitoring in Civil Defense (NSRB) • National Defense Transportation Journal • Bulletin of the Atomic Scientists • Must We Hide?, Dr. R. E. Lapp • United States Civil Defense.

RADIO-DEFENSE MANUAL

Compiled exclusively for residents of the "BAY AREA".

Including "THE ATOM BOMB AND YOUR SURVIVAL"



Sponsored by Radio Station **KFRC** Don Lee Broadcasting System
 SAN FRANCISCO
IN THE INTEREST OF CIVIL DEFENSE

CONTENTS

- Atomic Protection Manual
- Latest War Maps
- Bay Area Defense Information
- Subversive Organizations in the United States
- Station Personnel, Facilities and Program Photos

KFRC'S STAFF AND FACILITIES ARE



(Below) Mel Venter, Program Director—Mel came to KFRC after graduation from Stanford in 1933 as an announcer. He became one of Coast's outstanding radio personalities. Named Program Director in 1940, and returned from the Coast Guard in 1946 after three years service.



(Below) Dink Templeton, Public Relations and Sports Director—Dink is now in his seventh year at KFRC, entering radio with a background of twenty years as athletic coach and newspaper columnist.



(Below) Enes Canata, Network Traffic Director—As a result of fifteen years at KFRC Miss Canata has every network operation at her fingertips. She started in '36 in Sales Services, became Traffic Secretary in '39, Traffic Manager in '41 and in '49, Network Traffic Director.



William D. Pabst, Vice President of the Don Lee Broadcasting System and General Manager of KFRC—Mr. Pabst joined KFRC in 1932 as departmental coordinator. Went into the Production Department and in 1936 was made Production Manager. In 1939 he was named Manager of KFRC, and except for two years in Naval Aviation, has remained at the helm ever since.

DON LEE BROADCASTING SYSTEM
 A DIVISION OF DONALD B. LEE BROADCASTING, INC.
 The Nation's Greatest Regional Network
 1000 VAN NESS AVENUE, SAN FRANCISCO 9, CALIFORNIA

WILLIAM D. PABST
 VICE PRESIDENT AND
 MANAGER-KFRC

We at KFRC feel that nothing is more important to the public welfare than a thorough knowledge by all people concerning the details and critical nature of the present emergency. We therefore offer this all-encompassing radio and defense manual as our initial contribution to the citizens of the Bay Area. Located in the heart of San Francisco, where the immediate dissemination of news may be invaluable, KFRC wishes to dedicate all of its facilities to the service of the public should disaster actually strike.

William D. Pabst
 William D. Pabst

(Left) Jim McArdle, Supervising Engineer—This will be Mr. McArdle's 21st year at KFRC. Starting transmitter engineer, then as studio technician in 1941, and Supervising Engineer five years later.



This RADIO-DEFENSE ALBUM has been presented to you with the compliments of

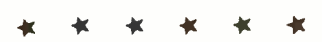
HAYWARD SAVINGS AND LOAN ASSOCIATION

646 MAIN STREET TELEPHONE LUCERNE 2-3297

If you have a friend who would like to have one, have him stop in and order one. It's free.

ENEMIES FROM WITHIN

- Citizens' Committee for Harry Bridges
- Citizens' Committee on Academic Freedom (The)
- Civil Rights Congress
- Civil Rights Council of Northern California
- Committee for Citizenship Rights
- Committee For the First Amendment
- Committee on One Thousand
- Congress of American Women
- Consumers Union
- Council on African Affairs
- Citizens' Committee for the Defense of Mexican American Youth
- Citizens' Committee for the Motion Picture Strikers
- Citizens Committee to Support Labor's Right Civil Rights Federation
- Committee for a Democratic Far Eastern Policy
- Committee for Civil Rights for Communists
- Committee for Peace through World Cooperation
- Committee for the Care of Young Children in Wartime
- Communist Information Bureau (Cominform)
- Conference for Democratic Action
- Conference on Constitutional Liberties in America
- Conference on Pan American Democracy
- Consumers' National Federation
- Contemporary Theatre
- Council of United States Veterans
- Daily Worker Press Club
- Daily Worker Publishing Co.
- Daughters of the American Depression
- Descendants of the American Revolution
- Down Town Forum
- Dramatic Workshop
- Exiled Writers Committee
- Federated Press
- Film Audiences for Democracy
- Films for Democracy
- Four Continent Book Corporation
- Free Italy Society
- Film and Photo League
- Freedom from Fear Committee
- Friends of the Campus
- Friends of the Chinese People
- Frontier Films
- Group Theatre
- Galena Defense Committee
- Garrison Films Distributors, Inc.
- Harry Bridges Defense Committee
- Harry Bridges Victory Committee
- Hawaii Civil Liberties Committee
- Hollywood Democratic Committee
- Hollywood Motion Picture Democratic Committee
- Hollywood Peace Forum
- Hollywood Theatre Alliance
- Hollywood Writers Mobilization
- Holyoke Book Shop
- Hold the Price Line Committee
- Hollywood Community Radio Group, Inc.
- Icor
- Independent Citizens Committee of the Arts, Sciences, and Professions
- Independent Progressive Party
- Independent Socialist League
- Independent Voters Committee of the Arts and Sciences
- International Book Store, San Francisco
- International Committee on African Affairs
- Industrial Workers of the World
- International Congress of Women
- International Democratic Women's Federation
- International Juridical Association
- International Labor Defense
- International Publishers
- International Union of Students
- International Workers Order
- Jewish Blackbook Committee of Los Angeles
- Jewish People's Committee
- Jefferson Chorus
- Jewish Peoples Fraternal Order
- Joint Committee for Trade Unions on Social Work
- Keynote Recordings, Inc.
- Korean Culture Society
- Korean Independent News Company
- Labor Research Association
- League of American Writers
- Labor Youth League
- League of Workers Theatres
- League of Young Southerners
- League of Struggle for Negro Rights
- Lincoln Book Store, Hollywood
- Maritime Book Shop, San Francisco
- Methodist Federation for Social Service
- Metropolitan Interfaith and Interracial Coordinating Council
- Modern Culture Club
- Motion Picture Artists Committee
- Mobilization for Democracy
- Model Youth Legislature of Northern California
- Modern Book Shop, Santa Barbara
- Motion Picture Democratic Committee
- Musicians' Democratic Committee
- National Committee for People's Rights
- National Committee for the Defense of Political Prisoners
- National Council of Negro Youth
- National Emergency Conference for Democratic Rights
- National Federation for Constitutional Liberties
- National Lawyers' Guild
- National Negro Congress
- National Negro Women's Council
- National Student League
- National Youth Assembly Against Universal Military Training
- National Civil Rights Federation
- National Committee Against Censorship of the Theatre Arts
- National Committee to Abolish the Poll Tax
- National Committee to Win the Peace
- National Conference on Civil Liberties
- National Congress for Unemployment and Social Insurance
- National Council of the Arts, Sciences and Professions
- National Institute of Arts and Letters
- National Joint Action Committee for Genuine Social Insurance
- National Labor Committee Against War
- Negro Cultural Committee
- Negro Labor Victory Committee
- New Union Press
- New Theatre League
- New Union Press
- New York Conference on Civil Rights
- New York Peace Association
- Non-Partisan Labor Defense
- Non-Sectarian Committee for Political Refugees
- Northern California Civil Rights Council
- Open Road
- Pacific Northwest Labor School
- Pacific Publishing Foundation, Inc.
- Pax Productions
- People's Artists, Inc.
- People's Educational Center
- People's Chorus
- People's Committee to Investigate Un-American Activities
- People's Institute of Applied Religion
- People's Orchestra
- People's Peace
- People's Radio Foundation, Inc.
- Progressive Citizens of America
- Progressive Book Shop, Los Angeles and Sacramento
- Progressive Women's Council
- Prompt Press
- Provisional Committee for Democracy in Radio
- Public Use of Arts Committee
- Seattle Labor School
- Second Annual California Model Legislature School for Democracy
- Scientific and Cultural Conference for World Peace
- Slavic Council of Los Angeles
- Southern Conference for Human Welfare
- Southern Negro Youth Congress
- State-Wide Legislative Congress (California)
- Student Conference Against War Stage for Action
- State-Wide Civil Rights Conference (California)
- Theatre Arts Committee (TAC)
- Theodore Dreiser Work Shop
- Trade Union Advisory Committee
- Trade Union Service
- Trade Union Theatre
- Twentieth Century Book Store
- Teen-Age Art Club
- Tom Mooney Labor School
- Trade-Union Unity League
- Twentieth Century Book Shop, Oakland, Calif.
- United American Artists
- United Committee of Action
- United Veterans for Equality
- Vanguard Press
- Veterans and Wives, Inc.
- Veterans National Liaison Committee
- Veterans of Equality
- Victory Book Store
- Western Council for Progressive Labor in Agriculture
- Western Writers Congress
- Wives and Sweethearts of Servicemen
- Workers Cultural Federation
- Workers Ex-Servicemen's League
- Workers Alliance
- Workers Library Publishers
- Workers' School of Los Angeles
- World Federation of Democratic Youth
- World Congress of Intellectuals
- World Peace Congress
- World Youth Council
- Young Communist League
- Young People's Records
- Young Pioneers of America
- Young Progressive Citizen's Committee
- Young Workers League



Scenic Photos courtesy the San Francisco Convention and Tourist Bureau, and the Oakland Convention and Tourist Bureau.

This Book designed, edited, produced and distributed by AMERICAN RADIO PUBLICATIONS, INC., 121 N. Washington St., Peoria 2, Illinois EDITOR, Charles A. Morrison

KFRC Radio Photos by MOULIN STUDIOS San Francisco

DEDICATED TO THE PUBLIC DEFENSE

HAROLD H. VELDE, M.C.
Ranking Minority Member,
Un-American Activities
Committee
(Formerly with FBI)

SUBVERSIVE ORGANIZATIONS IN THE U. S.

There are easy tests to establish the real character of such organizations:

1. Does the group espouse the cause of Americanism or the cause of Soviet Russia?
2. Does the organization feature as speakers at its meetings known Communists, sympathizers, or fellow travelers?
3. Does the organization shift when the party line shifts?
4. Does the organization sponsor causes, campaigns, literature, petitions, or other activities sponsored by the party or other front organizations?
5. Is the organization used as a sounding board by or is it endorsed by Communist controlled labor unions?
6. Does its literature follow the Communist line or is it printed by the Communist press?
7. Does the organization receive consistent favorable mention in Communist publications?
8. Does the organization present itself to be nonpartisan yet engage in political activities and consistently advocate causes favored by the Communists?
9. Does the organization denounce American and British foreign policy while always lauding Soviet policy?
10. Does the organization utilize Communist "double talk" by referring to Soviet-dominated countries as democracies, complaining that the United States is imperialistic and constantly denouncing monopoly-capital?
11. Have outstanding leaders in public life openly renounced affiliation with the organization?
12. Does the organization, if espousing liberal progressive causes, attract well-known honest patriotic liberals or does it denounce well-known liberals?
13. Does the organization have a consistent record of supporting the American viewpoint over the years?
14. Does the organization consider matters not directly related to its avowed purposes and objectives?



United States
House of Representatives
Washington, D. C.

American Radio Publications, Inc.
121 N. Washington St.
Peoria, Illinois

Gentlemen:

In order to enable the American public to better understand the technique used by subversives, the House Un-American Activities Committee has compiled and published a list of Communist "front" groups and subversive organizations.

This is an accurate and reliable list which can be used as a guide by our American citizenry to the destructive forces operating in our nation.

The Committee desires to make clear, however, that a great many loyal and patriotic Americans who may find that they are members or sponsors of one or more of the organizations listed, need have no cause for alarm. They should make immediate inquiry and examination into the operation and management of the group in which they are interested before continuing their memberships or joining such group.

Respectfully yours,
Harold H. Velde
HAROLD H. VELDE, M.C.
Ranking Minority Member
Un-American Activities Committee

This is an official list of organizations listed as subversive by the House Un-American Activities Committee and the U. S. Attorney General's Office.

Abolish Peonage Committee
Abraham Lincoln Brigade or Battalion
Abraham Lincoln School
Academic and Civil Rights Committee
Academic and Civil Rights Council of California
Action Committee to Free Spain
Actors Laboratory
Actors' Laboratory Theatre
African Blood Brotherhood
All-American Anti-Imperialist League
All-California Conference for Defense of Civil Rights and Aid to Labor's Prisoners
Allied Labor News Service
Allied Voters Against Coudert
Almanac Singers
American Artists Congress
American Association for Reconstruction in Yugoslavia
American Association of Scientific Workers
American Committee for a Korean People's Party
American Committee for Anti-Nazi Literature
American Committee for Democracy and Intellectual Freedom
American Committee for European workers' Relief
American Committee for Free Yugoslavia (The)
American Committee for Friendship with the Soviet Union
American Committee for a Free Indonesia - San Francisco
American Committee for Protection of Foreign Born
American Committee for Russian Famine Relief
American Committee for Spanish Freedom
American Committee for Struggle Against War
American Committee for Yugoslav Relief

American Committee of Jewish Writers, Artists, and Scientists
American Committee of Liberals for the Freedom of Mooney and Billings
American Committee to Aid Korean Federation of Trade-Unions
American Committee to Aid Soviet Russia
American Committee to Save Refugees
American Congress for Peace and Democracy
American Congress to Free Earl Browder
American Council, Institute of Pacific Relations
American Council on Soviet Relations
American Federated Russian Famine Relief Committee
American Federation for Political Unity
American Friends of the Chinese People
American Friends of the Mexican People
American Friends of the Spanish People
American Fund for Public Service (Garland Fund)
American Labor Committee Against War
American League Against War and Fascism
American League for Peace and Democracy
American Negro Labor Congress
American Peace Crusade
American Peace Mobilization
American Round Table of India
American Russian Institute of Southern California
American Russian Institute for Cultural Relations with the Soviet Union
American Russian Institute of San Francisco
American Russian Music Corporation
American Slav Congress
American Society for Cultural Relations with Russia
American Student Union

American Writers Congress
American Youth Congress
American Youth for Democracy
All Harlem Youth Conference
American Friends of Spanish Democracy
American Investors Union, Inc.
American Jewish Labor Council
American Labor Alliance
American Labor Party
American League of Ex-servicemen
American People's Fund
American People's Mobilization
American Polish Labor Council
American Pushkin Committee
American Relief for Greek Democracy
American-Russian Fraternal Society
American Russian Institute (New York)
American Russian Institute (Philadelphia)
American-Soviet Science Society
American Soviet Music Society
American Youth for a Free World
Appeal for Lawrence Simpson
Artef
Artists' Front to Win the War
Associated Film Audiences
Associated Magazine Contributors
Book Find Club
Book Union
California Committee for Political Unity
California Congerence for Democratic Action
California Labor School
California Legislative Congress
California Youth Legislature
Carpatho-Russian Peoples Society
Cervantes Fraternal Society
China Aid Council
Citizens' Committee for Better Education



Reception Desk at KFRC—Located on the mezzanine floor of the beautiful Cadillac Building at 1000 Van Ness where busy operators and receptionists welcome the public.



Main Studio at KFRC—One of three spacious studios, with famous "Budda's Amateur Hour" in progress for the seventeenth consecutive year, creating a full house every Saturday night.



Cadillac Building, home of KFRC, located in the very heart of metropolitan San Francisco at 1000 Van Ness. Studios on the mezzanine floor. Transmitter on the eighth floor. Towers and antenna on roof.



KFRC Master Control, Engineer Don Cameron—Where all KFRC studios, Don Lee Broadcasting System, Mutual Broadcasting System and overseas news operations and switching are performed.



Announce Booth, Engineer's Control Room, and Studio Operation—In the background you see the newscaster. Center, the engineers and foreground, the program announcer, a perfectly co-ordinated operation.



KFRC - DON LEE PROGRAMS DEDICATED



(Right) News Director Al Berglund — Graduate of Michigan State and four year veteran of World War II, as well as UP and NBC radio bureau, Berglund is also a vital cog in Mutual's Pacific overseas news.



KFRC News Room in Action—News Director Al Berglund confers with Newscaster Lew Pfeifer on script, as writer-editor Harvey Sachs selects the last minute news.



(Left) KFRC Newscaster Dave Scofield — KFRC's Twelve o'Clock Noon News is one of the most important Bay Area radio programs. Voiced by Dave Scofield, the full meaning of every item is given impact to the public.



KFRC Teletype Room—With the great news breaks from all over the world pouring in over INS and AP, Berglund and Sachs make certain of important flashes for break-in to program in progress.

(Right) Chief Announcer Lew Pfeifer—At 7:45 each morning many thousands tune in Lew for the best morning summary of local and world news. His keen awareness of important events is always evident in his broadcasts.



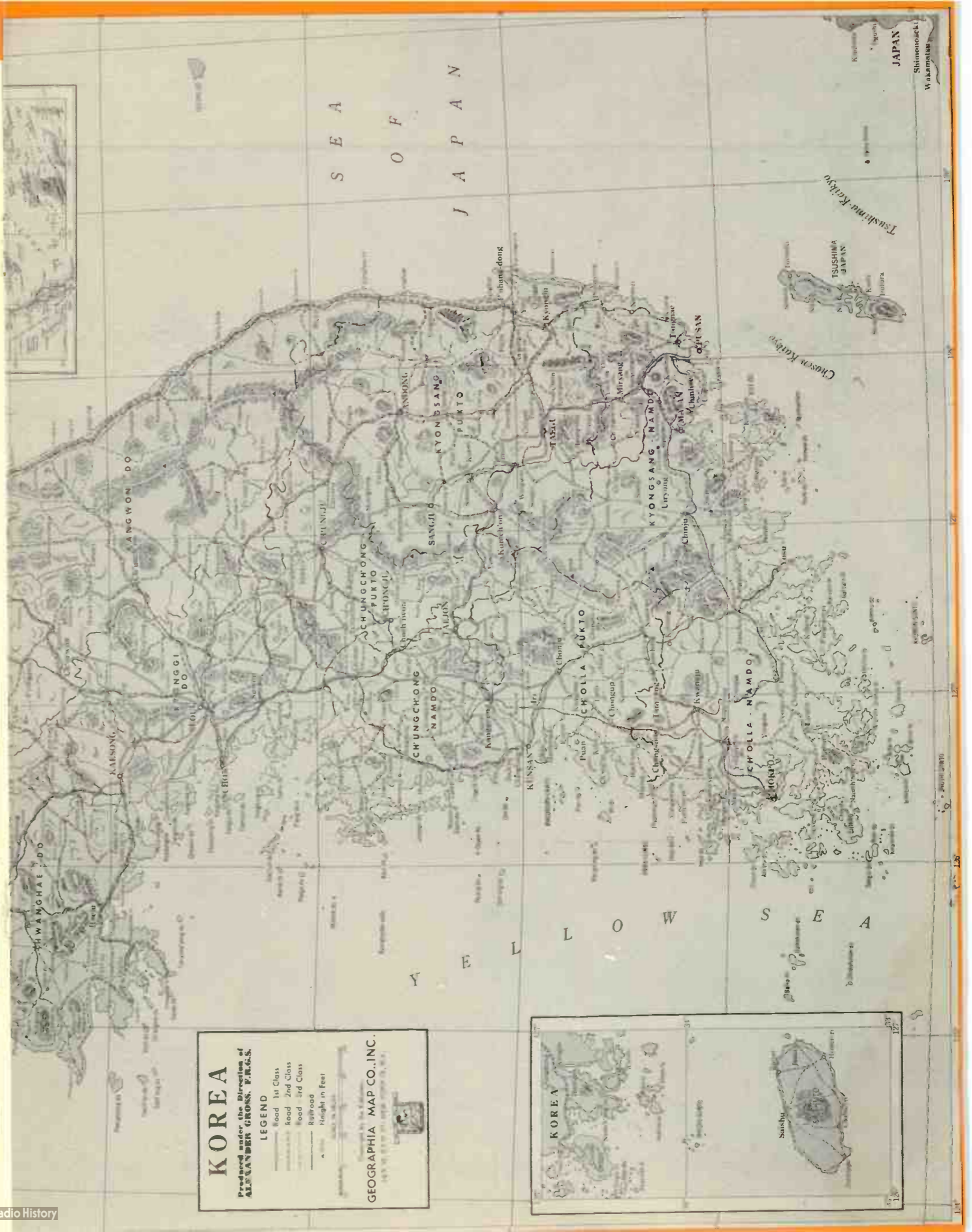
Fulton Lewis, Jr. (6) — His commentaries from Washington have long made national headlines.



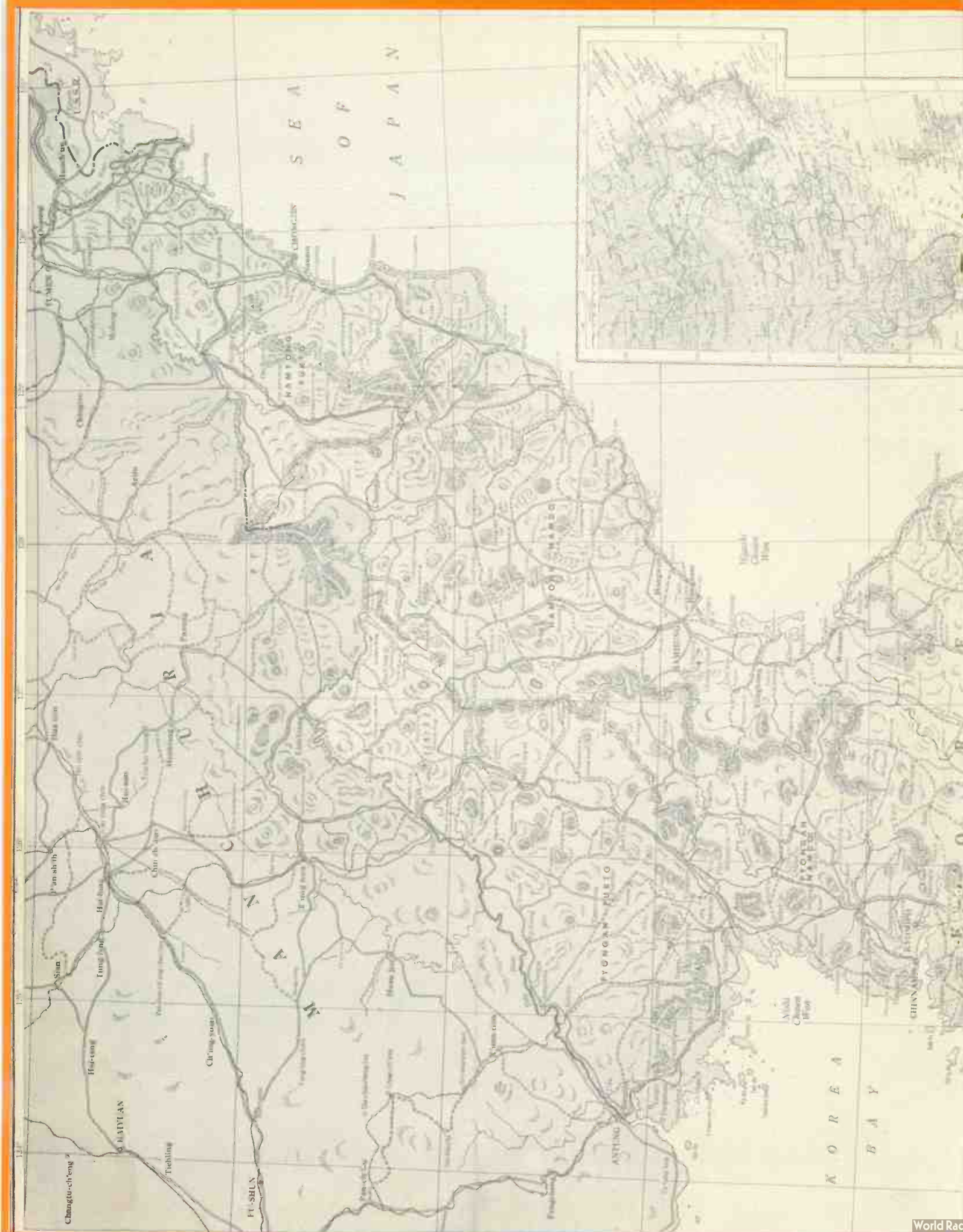
Glenn Hardy (7)—His Pacific Coast programs at 10 a.m. and 9 p.m. are a Don Lee fixture.



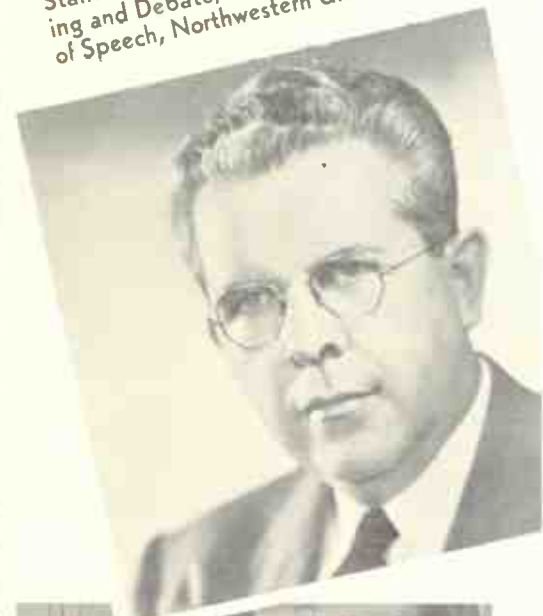
Frank Hemingway (8)—"Twice a day with Hemingway" is a well known slogan from Seattle to San Diego. Hemingway's presentation of the news is unique.



TO THE PUBLIC WELFARE AND NECESSITY



(Below) James H. McBurney, Director of the Northwestern "Reviewing Stand." Professor of Public Speaking and Debate, Dean of the School of Speech, Northwestern University.



Northwestern University Reviewing Stand—James H. McBurney (center), moderator, each week conducts a forum discussion of the country's most important problem. This view shows experts discussing "Our Stake in the Pacific." L. to R.: Rufus B. van Kleinsmid, Chancellor Univ. of So. Cal.; H. Arthur Steiner, Political Science, U.C.L.A.; Ch'en Shore-Yi, Pomona College; Arthur Coons, Occidental College.



(Below) "Reporters' Roundup" — Hollis Seavey, MBS News and Special Events Coordinator in Washington, D.C. and producer of "Reporters' Roundup," and Everett Holles, veteran newspaperman who moderates the programs in which other noted journalists appear on important questions of the week.



Mutual Newsreel — John Bosman and Jack Fern, editors of Newsreel, editing sound tape recorded at the scene and sent to New York for each evening's selection of news events from "where they happened, when they happened."



"War Front, Home Front" — These alert men in Mutual's New York studios prepare to speak directly to correspondents in Korea, Japan and Germany, in a brilliant weekly discussion of the war news. L. to R.: Les, Higbee, Art Feldman, Cecil Brown and George Fielding Eliot.

Gabriel Heatter (9) — His prophetic commentaries have roused the nation, and given comfort in times of greatest stress.

Cecil Brown (10) — Years of courageous coverage under enemy fire and fearless interpretation of the news have given him a deep insight into the truth.

Sam Hayes (11) — For twenty-two years he has been one of the most listened-to personalities on the air. His two daily news shows on KFRC, 4:45 p.m. and 6:45 p.m. require great speed and judgment in editing and writing.



THE MIGHTY

DESTROY THESE"



Governor Earl Warren of California proclaimed in an emergency meeting of the League of California Cities on January 4, 1951 —
 "This is the greatest of emergencies. . . . The stakes we are playing for are the greatest in the history of the country. . . . This is everybody's job — everybody has to pay, everybody has to sacrifice."



Major General Walter M. Robertson, the state director of California's Civil Defense program on a radio broadcast given January 19, 1951, said —
 "EVERY RESIDENT of California should consider it as his personal responsibility to get on the Civil Defense team. . . . Just as a fighting force must have its shock troops for attack, we must have our shock troops for Civil Defense on the home front."

A POTENTIAL MILITARY WEAPON

We are currently engaged in a conflict in which use of the atomic bomb is quite probable. It is highly important that you understand the effects of this weapon and how you can best protect yourself. We shall present in the following pages a simple digest of such facts from governmental and other authentic sources we feel to be of greatest value.

The atomic bomb is an extremely potent military weapon but not "absolute" in the sense that its possession alone guarantees victory. Thus far the United States has exploded several atom bombs and we have learned of the devastation that can be caused. In Hiroshima, 71,000 people were killed and 68,000 injured in a city of 245,000. About 75 A-bombs, according to Dr. R. E. Lapp, would probably have done as much damage to target areas in Germany as was done by all the strategic bombing during World War II. With all its tremendous heat and blast effects, accompanied by its unique radiation effects, it is still not unlimited in the amount of damage it can do. You need not worry, for example, about rumors to the effect that atomic explosions might contaminate the earth. It would take something like a million A-bombs to do the trick.

The atomic bomb is certainly to be feared and respected but there is no reason that it should cause panic. Now that the damage that it can cause, and the probable extent of such damage, is known, it has been possible to formulate certain simple rules that will go a long way towards insuring your safety and eliminate to a great degree the element of fear.

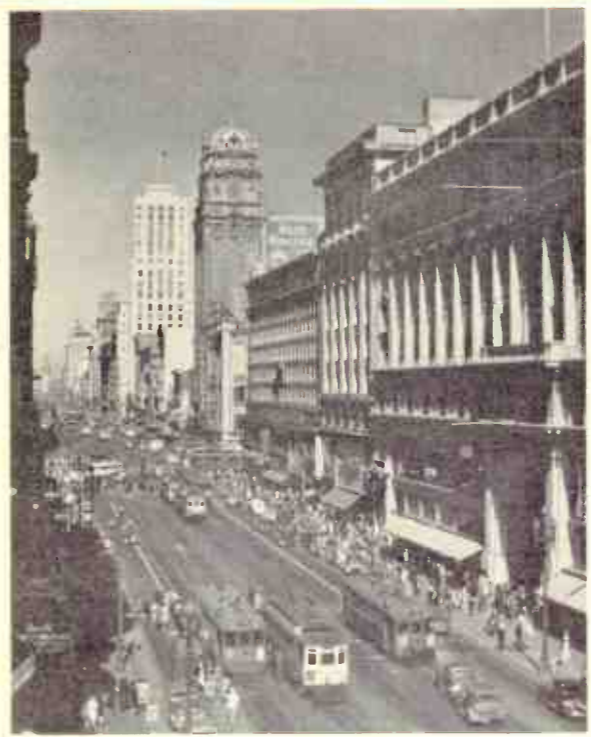
In any discussion of the atomic weapon it should be

remembered that constant improvements in design and type, or usage, can be expected. A top military spokesman recently forecast the use of A-bombs as the next probable step in battlefield warfare and said that they can be used with deadly accuracy against troops, tanks and other military targets.

RADIOLOGICAL WARFARE — The use of radioactive gases, dusts or mists as a weapon, is a possibility and we should be prepared for it according to Prof. Ridenour of the University of Illinois, but because it is a mystery weapon its most important effect might be psychological since it probably couldn't be used to kill people. It probably would force them to abandon homes, towns and military installations, however.

H-BOMB (Hydrogen Bomb) . . . It is no secret that research and experimentation on the development of the H-bomb is going on. It is not possible to predict when, or if, such a weapon will be produced. It is interesting to note however that according to the AEC a hydrogen bomb would be 10 times as destructive. It would cause severe destruction to over 30 to 40 square miles. According to a recent article in Science Digest, the H-bomb's most dangerous effect, from the viewpoint of the entire human race, would lie in the virulent radioactive dusts it might be used to produce. Such dusts, blown to the stratosphere would drift about the earth, gradually settling anywhere.

ATOMIC GUIDED MISSILES — or artillery shells, are certainly a future possibility, within perhaps two to five years, according to Army General J. Lawton Collins.



Busy, colorful Market Street in San Francisco, looking toward Ferry Building.



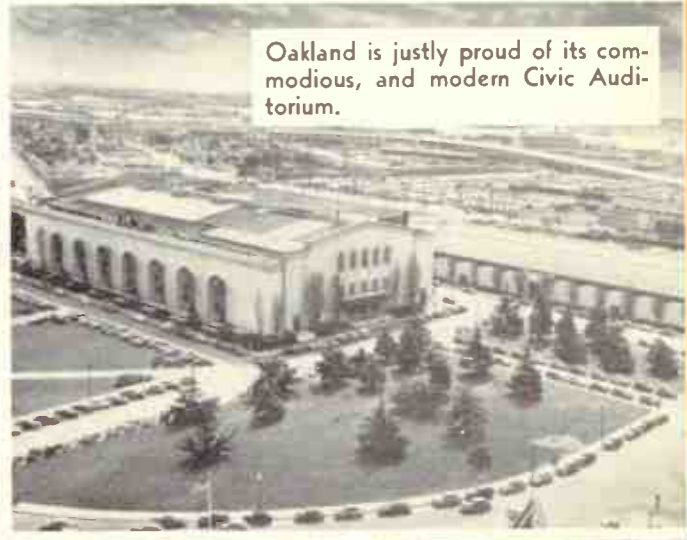
Oakland, great industrial, shipping and trading center.



An interesting skyline view of Oakland, taken from near 17th and Alice.

Lofty Empire Hotel Building, one of the hundreds of large and luxurious San Francisco hotels which have made this city a convention and tourist mecca.

Oakland photos courtesy of the Oakland Convention and Tourist Bureau.



Oakland is justly proud of its commodious, and modern Civic Auditorium.



The University of California, at Berkeley. In its scenic and picturesque setting nestles the campus of one of the world's largest and most famous educational institutions.

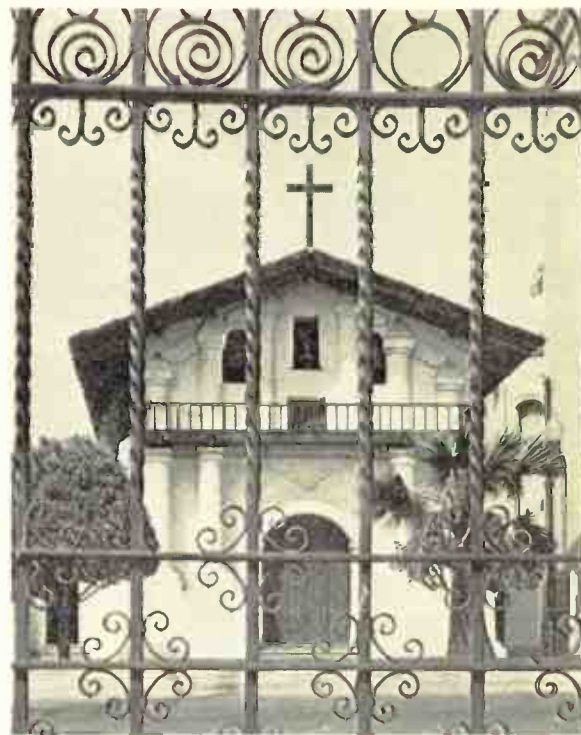


"ATOM BOMBS COULD

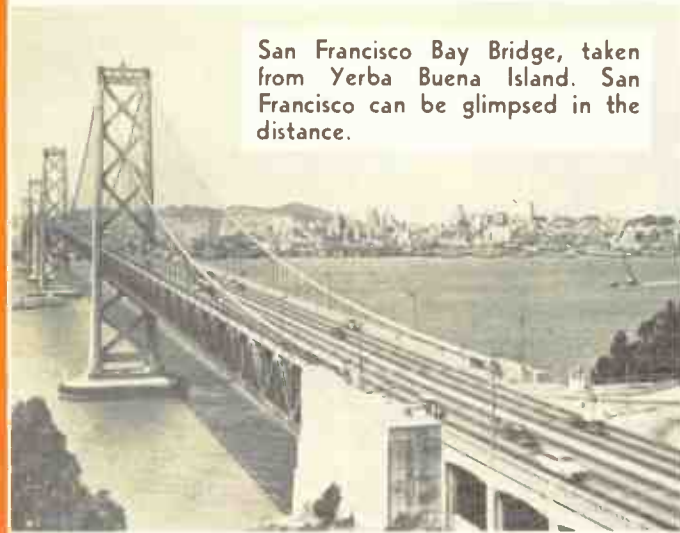
ATOM BOMB!



Downtown San Francisco, showing the city's waterfront, where ships from the seven seas unload their cargoes. The mighty Golden Gate Bridge is seen in the background.



Mission Dolores . . . The Church where San Francisco was born.



San Francisco Bay Bridge, taken from Yerba Buena Island. San Francisco can be glimpsed in the distance.



(Above) San Francisco's famed Union Square in the heart of the downtown district. The world's largest (4 level) parking garage is constructed under Union Square.



San Francisco's Convention City—Twenty million dollar Civic Center of Public Buildings surrounding the City Hall. Buildings pictured are (1) Civic Auditorium; (2) Health Center Building; (3) City Hall; (4) War Memorial Opera House, and beside it (5) The Veterans Building (in these two buildings the United Nations was born); (6) U. S. Treasury Building; (7) Public Library; (8) State Building; (9) Whitcomb Hotel; (10) Masonic Temple.



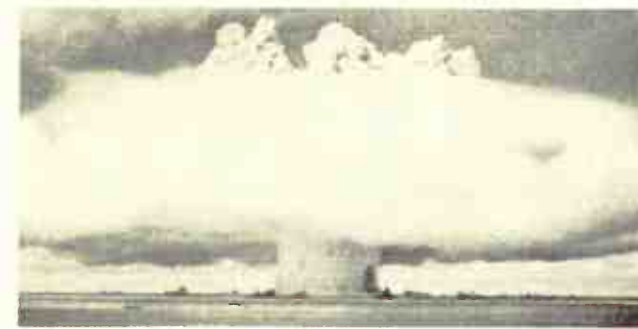
(Left) A street in San Francisco's Chinatown.

San Francisco photos courtesy of the San Francisco Convention and Tourist Bureau.

THE ATOMIC BOMB differs from other bombs in several important ways: (1) **ENERGY** released by an atomic bomb is roughly equivalent to that produced by the explosion of 20,000 tons of TNT bombs; (2) the explosion of the bomb produces highly penetrating, invisible **RADIATION** in the form of lethal gamma rays. In addition there

is also; (3) intense **HEAT** (1,000,000° C. in center of fire-ball) and **LIGHT** (at 5.7 miles, the brilliance is 100 times that of the sun viewed at the earth's surface); and (4) **RADIOACTIVE RESIDUES** which remain after the explosion emitting harmful radiations.

TYPES OF EXPLOSIONS



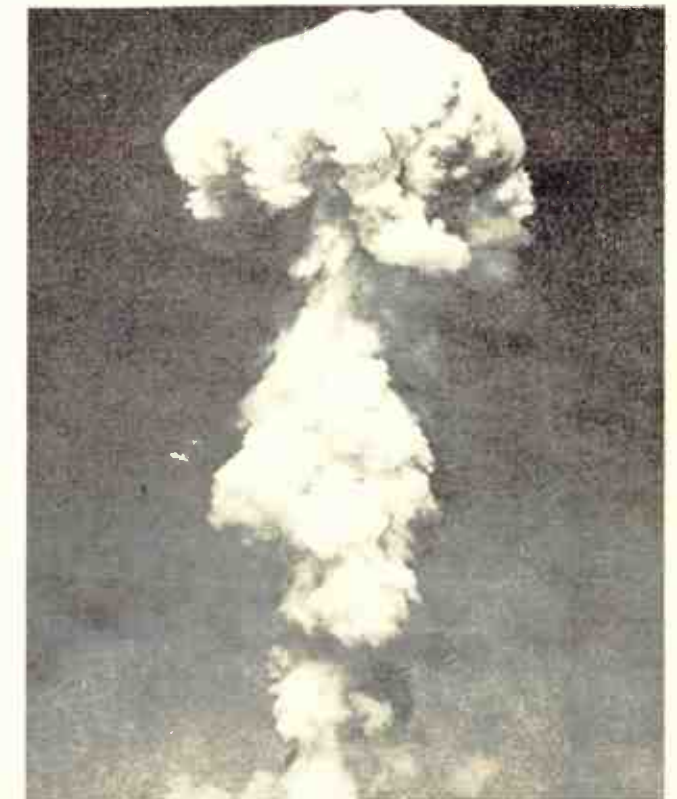
shielding. On account of falling debris, streets would likely be clogged and fire fighting would be rendered very difficult. . . . **SUB-GROUND LEVEL BLAST**— According to the AEC an atomic bomb could be made to burrow 50 feet or more into soft earth before exploding causing a "Grade D" earthquake. It would upset chimneys, collapse weak buildings, etc., to a radial distance of approximately 1350 to 3300 feet.

UNDERWATER BLAST— In test "Baker" off Bikini, a tremendous column of water was produced, which completely absorbed the initial flash of neutrons and gamma rays. When it began to fall back to the lagoon surface a critical base surge — a 200 to 300 foot wave of radioactive fission products—rolled over the ships in the harbor drenching them with highly contaminated radioactive products. Fall-out droplets were a further serious radioactive hazard many miles "downwind." In order to produce a critical base surge the water must be fairly deep. Fortunately little water of such depth exists in harbors or water adjacent to any of our larger cities. However the blast effect of an underwater explosion in even shallow water would cause considerable damage to any nearby docks or shore installations. . . . **AIR BURST OVER WATER** — In an air burst over water exposed structures, such as masts, spars, radar antennae, etc., within a radius of 3,000 to 3,500 feet may be expected to suffer very severe damage.

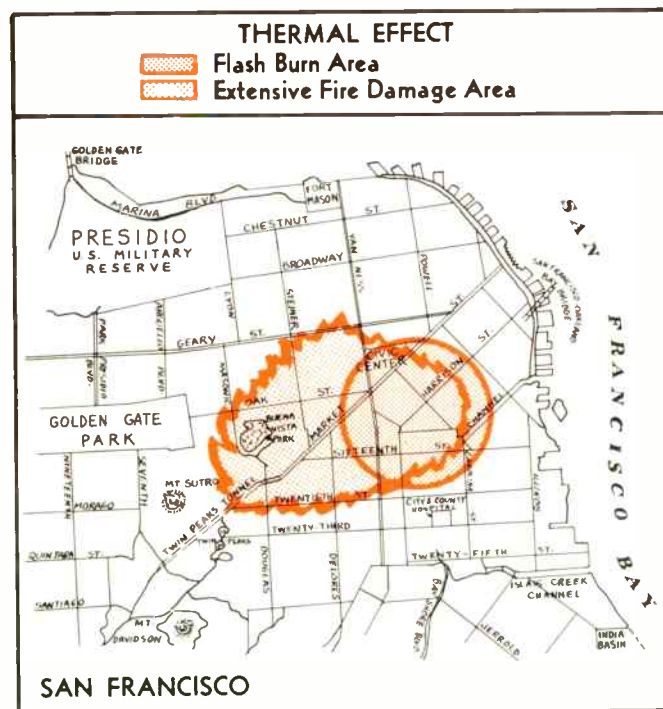
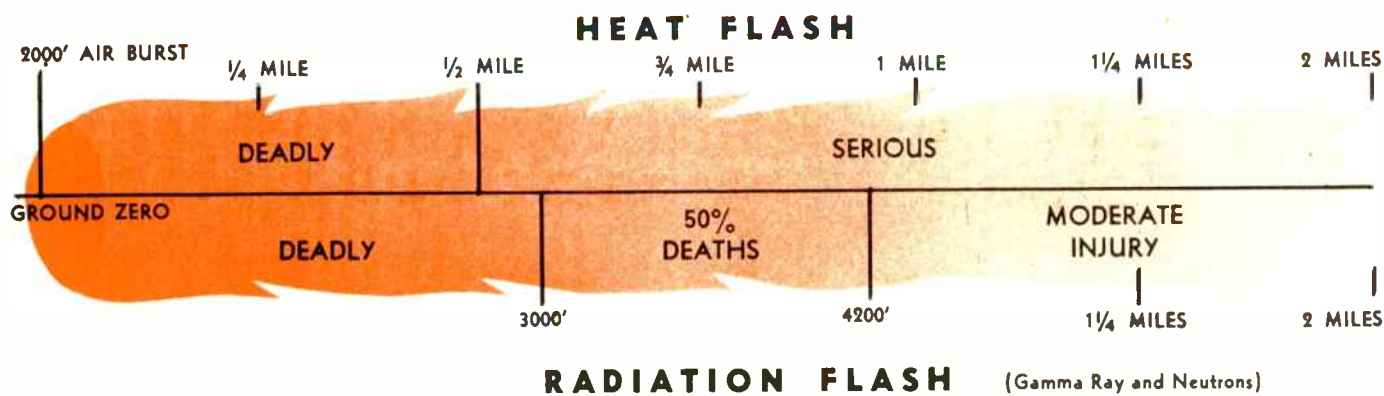
AIR BURST— An air burst of bomb at a height of about 2,000 feet, setting up thousand-mile-an-hour winds, very powerful suction and deadly, instantaneous radiation, appears to be the most destructive use of atomic energy. The heat wave in this case would not be as important as fires of secondary origin started by falling debris, shorting of electrical circuits, etc. The instant burst of gamma rays that would flash from the bomb would be lethal to anyone in the open up to 3,000 feet. The blast wave would be terrific, destroying almost everything within a half-mile radius of the explosion, and all but the strongest buildings would collapse to about one mile. Radioactive contamination of ground, building structures, etc., is practically negligible in an airburst.



GROUND LEVEL BLAST— On account of the blocking and shielding effects of the huge skyscrapers a ground level or "basement" blast in say New York, or Chicago, would have a relatively small area of critical destruction. Very close buildings would probably collapse and those nearby would suffer loss of masonry and be materially weakened. Primary radiation would be materially checked by the shielding of the buildings but there would be a small area of intense residual radioactivity near explosion center. It would probably be 6 hours before it would be safe to walk across the area but to stay for any length of time would be out of the question without proper

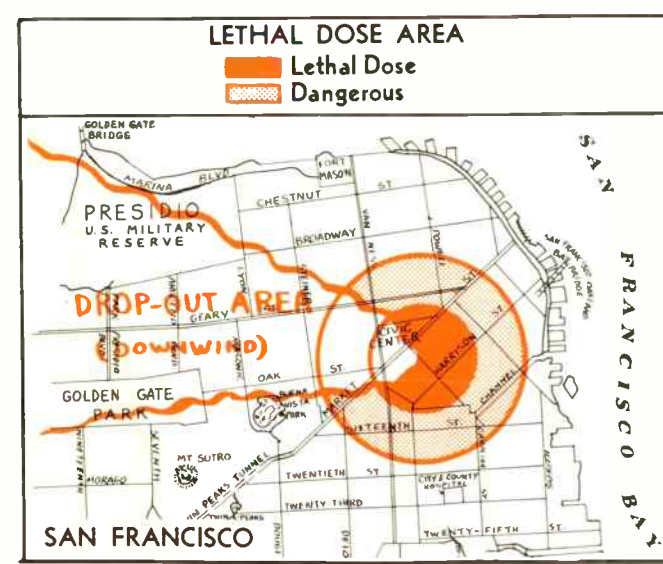


DAMAGE EFFECTS OF AN



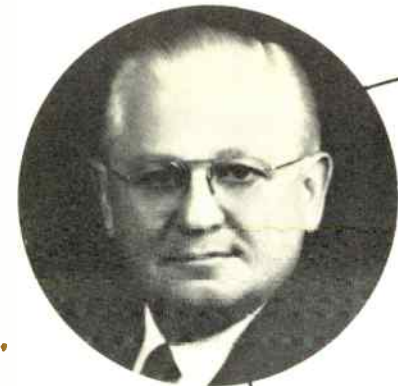
THERMAL EFFECTS

At the time of the explosion a terrific heat flash was generated. It goes out in straight lines from the explosion and lasts but a fraction of a second, but during that time it can burn unprotected skin at distances of 2 1/2 miles and has been felt up to 5 miles. It has scorched telegraph poles at 2 miles. FIRE, set directly by the flash of radiant heat, or started by the ignition of gas from disrupted mains, or short circuits, can destroy huge areas. In Nagasaki, it was estimated that almost immediately after the detonation, fires were started in dwellings within a radius of 3,000 feet from ground zero. Debris-choked streets usually hamper or make fire fighting difficult. **If survivors will personally fight the small fires in their immediate area, huge conflagrations may never develop.** The thermal effect of an A-Bomb air explosion in San Francisco is shown.



RADIATION EFFECTS

GAMMA RAYS, pulses of electro-magnetic radiation, traveling with the velocity of visible light, are very penetrating. They are usually lethal to anyone in the open up to 3,000 or 4,000 feet from the bomb burst. They do most of their killing in the first second, or not at all. The second gamma ray hazard comes from the radioactive fission products left from the blast, or deposited from the cloud. Fission products from an air burst bomb must be regarded as something of a nuisance but a negligible factor in causing death. In the case of an underwater burst, however, residual radioactivity is much more extreme and may remain a hazard for a considerable time.



Elmer E. Robinson
Mayor of
San Francisco

STATEMENT FOR ERIC WOOLLET

I urge everyone to read this booklet very carefully. It takes only a few minutes, but they can be the most valuable few minutes you've ever given to your own protection and that of your loved ones.

Again, as your Mayor, I urge you to have someone in your family take a course in first aid, and if you can possibly do so, to volunteer for service in the civil defense forces of San Francisco. Civil defense is everybody's job.

Elmer E. Robinson
Elmer E. Robinson
Mayor



Regional Coordinator,
Harry H. Stoops



Clifford E. Rishell
Mayor of
Oakland



Rear Admiral Albert G. Cook,
Director of San Francisco
Disaster Corps.

Rear Admiral A. G. Cook, USN (Ret.), who is now Director of the San Francisco Disaster Council and Corps, was Commanding Officer of the USS General Mitchell, engaged in returning troops to the United States. As many as 6,000 men were carried at a time during this command, facing the Admiral with problems of mass feeding and housing.

Named Assistant Chief of Staff of the Twelfth Naval District in June, 1947, Admiral Cook was advanced to Chief of Staff in June, 1949, and served in that responsible administrative capacity until July, 1950.

Statement by Rear Admiral A. G. Cook, USN (Ret.)

San Francisco launched its disaster relief program shortly after the election of Mayor Elmer E. Robinson. As the international situation grew in gravity, the work of the Disaster Council and Corps, commanded by the Mayor, was intensified.

Today, the city's civil defense program, although still in a state of organization, is making rapid forward strides.

Each of the Corps' services, all reaching deep into the roots of official and civilian life within this great city, are progressing effectively in their own fields.

The Plant Protection Division and the Warden Service are well-advanced in their downtown and residential area safety programs. Police and Fire Auxiliary Reserves and Rescue Aid units are being trained.

The majority of the city's doctors and dentists have been provided with credentials and instructed where to proceed for emergency service.

Five giant air raid sirens have been installed and ten additional smaller sirens have been ordered installed to augment these. Work now is underway on communications and transportation services. A "backyard" emergency feeding program has been established.

In all, San Francisco's fine spirit of self-help and aid and assistance for a neighbor has provided the Disaster Corps with a fine foundation for the civil defense program.

AIR FILTER CENTERS are a vital necessity in any overall civil defense plan. In the event that air raids are deemed imminent, observation posts will immediately be manned by volunteer personnel already selected. Information of aircraft flying over these posts will be phoned to a Filter Center, one of which is located in Oakland. These centers are staffed and manned by volunteers instructed and supervised by Air Force officers. Information derived by this means will enable fighting planes to intercept enemy bombers and will permit warnings to be flashed to civilians in areas where bombings might occur. Men and women who volunteer for this service will be subject to call in the event of an emergency. They will serve without compensation for definite periods, assigned according to their own convenience. Duties will be assigned according to ability, such as supervisors, grid plotters, filterers and tellers. A regular training period is required, these hours also may be arranged according to your own convenience.

Application blanks for volunteer work can be obtained from the Oakland Disaster Council Office, 1401 San Pablo, Oakland. The Oakland Filter Center is at Room 423, Pacific Bldg., 16th and Jefferson, Oakland.

BOMB SHELTERS are a vital consideration in case of atomic attack. The city of San Francisco is studying various types of large community shelters, including possible use of underground garages. In this connection a survey has been taken to see what basements might be available for protection. In the meantime every family in the BAY AREA should construct a backyard bomb shelter if possible. It could be no more than a simplified cyclone cellar with 2 or 3 feet of dirt over it. . . . The Metropolitan Life Insurance Company has written specifications for an atom bomb shelter into a \$2,500,000 expansion of its Stockton Street headquarters. It will be the most thoroughly bomb-proofed area known to date, they claim.

PRIVATE PLANES will play an important role in defense plans. Preliminary plans call for (1) Designation of "Master Control" airports, at San Francisco, Oakland and other cities, which will give orders in an emergency to smaller "control airports," equipped with radio. . . . (2) In time of emergency the smaller "control airports" would be ready to furnish volunteer pilots of private planes to fly medicine and other emergency supplies to the disaster areas. A first step will be registration of the city's some 10,000 private planes, with special identification cards to be issued after a loyalty declaration by their pilot owners.

THE BAY AREA PREPARES FOR ATOMIC ATTACK

IN A CITY PROPERLY ALERTED AND ORGANIZED FOR CIVILIAN DEFENSE THE DEATH TOLL CAN BE CUT AS MUCH AS 50%

"FOOD FOR THOUGHT"

According to Maj. Gen. Lucas U. Beau of the Air Force, Russia has the ability to bomb any city in the U. S., including San Francisco, a vital installation in the national defense plan.

Gen. George C. Kenney states that "A large percentage of enemy atomic bombers would get through to blast American cities even if this country had the best possible radar screen and fighter defense system." He added the U. S. is a long way from having such a system.

Mayor Robinson warned San Franciscans that their city is among the nation's first five targets for attack in the event of war. He stated "Most every other activity of government around here will have to be secondary until all of our people are ready and trained as far as is possible to be trained, for whatever disaster may befall."

James J. Wadsworth, of the Civil Defense Administration, in Washington, said that there can be no "take to the hills" mentality nor "let George do it" attitude on the part of any person in this country, wherever he may live. Our cities must be manned and fought just as our Navy ships are manned and fought.

CIVIL DEFENSE VOLUNTEERS NEEDED

A mammoth home front defense organization of 1,500,000 persons is needed for the State of California without delay. 350,000 wardens alone will be needed in the event of an atomic attack on the state. Civil Defense also vitally needs nurses, first aid experts, rescue teams and many other types of volunteers. Applications for volunteer work can be obtained from any one of the offices named at the top of this page.

FAMILY PRACTICE

Until overall plans are completed and adequate volunteers recruited, individual families should school themselves in first aid, educate themselves in elementary fire protection, learn how best to shelter themselves and adopt family plans on what to do in event of an "air raid alert." It is suggested that at least one person in each family take the Red Cross first aid course.

MAIN DISASTER CORPS OFFICES IN THIS AREA

REGIONAL — Address 69 — 9th Street, San Francisco
Telephone UN 1-8700
Regional Coordinator, Harry H. Stoops

SAN FRANCISCO — Address—45 Hyde Street, San Francisco
Telephone UN 3-2474
Director, Rear Admiral Albert G. Cook

OAKLAND — Address 1401 San Pablo, Oakland
Telephone Templebar 2-3600
Director, Lloyd Shellabarger

For information pertaining to Bay Area Civil Defense matters telephone or visit one of the above offices. Applications for volunteering your aid in some Civil Defense capacity can be obtained from these offices.

SIGNAL FOR IMMINENT ATTACK WARNING TO TAKE IMMEDIATE SHELTER

— RED ALERT —

A THREE-MINUTE WARBLING BLAST ON ALL SIRENS.
"ALL CLEAR" — THREE ONE-MINUTE BLASTS
SEPARATED BY TWO-MINUTE INTERVALS EACH.

RED CROSS FIRST AID CLASSES

The Red Cross has been officially designated by the Disaster Council to train the populace in first aid for an emergency. Beginning first-aid classes open to the general public are now being held. Advanced first-aid classes will also be available. Registration for future first-aid courses can be made by calling First Aid Department, Red Cross, PRospect 6-1500. . . . Mayor Robinson has asked the School Department to set up first aid classes for all school children over 10.

All professional nurses, now inactive or retired, are urged to sign up for participation in the Civil Defense nursing program. Nurses may register at SFDNA headquarters, 1155 Pine Street, with Mrs. Wilfrid A. Froggatt. Some nurses may act as first aid instructors after first taking a refresher course in how to treat victims of an atomic bomb.

ESTIMATED \$340,000,000 TO BE SPENT FOR CIVIL DEFENSE IN CALIFORNIA

A projected civil defense program for the State of California would cost approximately \$340,000,000. The state's share of this huge amount would be about \$150,000,000, with the Federal Government to furnish the balance. . . . The establishment of a reserve highway patrol force has been proposed for civil defense duty. . . . Burlingame is believed to be the first city in the country to register all of its citizens in a mass nose-counting operation designed to speed up civilian defense. From this master file, a 500-man air raid warden group will be organized. . . . The Bay Meadows Race Track has been offered to Civil Defense authorities for a disaster relief center in the case of war.

ATOM BOMB EXPLOSION

BLAST DAMAGE

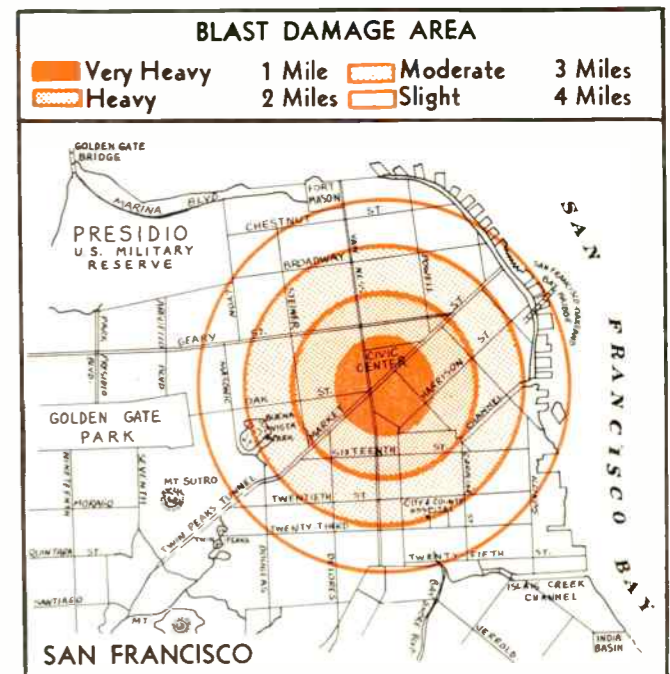


GROUND ZERO COMPLETE DESTRUCTION 1/2 MILE SEVERE DAMAGE 1 MILE MODERATE DAMAGE 1 1/2 MILES PARTIAL DAMAGE 2 MILES LIGHT DAMAGE

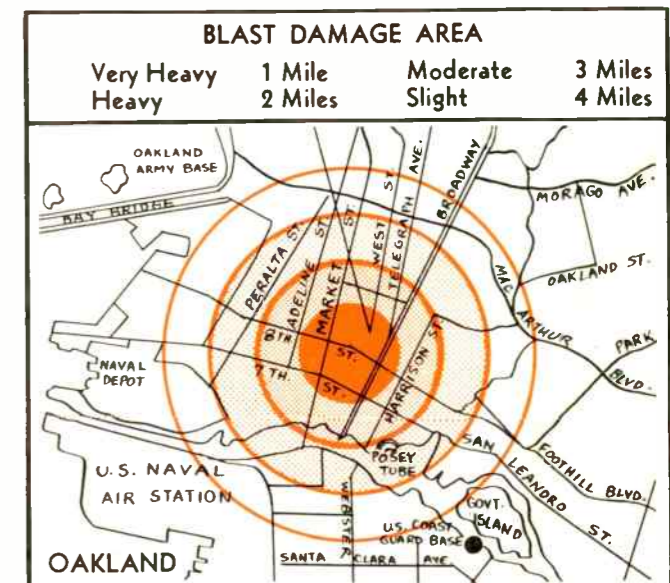
BLAST DAMAGE CHART (Air Burst) (AEC)

Feet	Damage
0	Ground Zero — or directly beneath the air burst.
1,500	Mass distortion of heavy steel frame buildings.
2,000	Limit of severe structural damage to earthquake resistant reinforced concrete buildings.
2,500	To this point virtually complete destruction of all buildings, other than reinforced concrete.
3,500	18-inch brick walls completely destroyed.
4,000	Roof tiles melted by heat.
4,500	Light concrete buildings collapsed.
5,000	12-inch brick walls severely cracked.
5,500	Electrical installations and trolley cars destroyed.
6,000	Severe damage to entire area. Severe structural damage to steel frame buildings.
6,600	Structural damage to multistory brick buildings.
8,000	Severe damage to homes, heavy damage to window frames and doors, foliage scorched.
8,300	Moderate damage to area.
9,000	Heavy plaster damage.
10,000	Blast damage to majority of homes. Severe fire damage. Flash ignition of combustible materials.
10,300	Partial damage to structures in area.
11,000	Flash charring of telegraph poles.
12,000	Light damage to window frames and doors, moderate plaster damage.
8 MILES	— Limit of light damage.

(Statistics above relate to Japanese explosions.)



of the buildings if within the primary blast area. People in basements, subways, or even the lower floors of reinforced concrete structures would be reasonably safe.



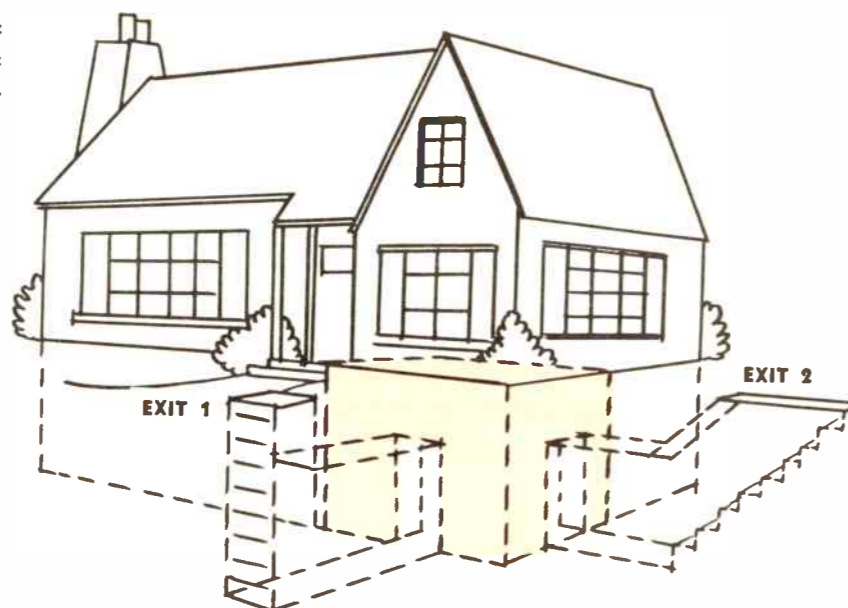
While giant skyscrapers with reinforced concrete structures and long periods of vibration should withstand the shock very well the masonry would be stripped off, girders twisted and people literally blown out of the top floors

ADVANCE PRECAUTIONS

YOUR BOMB SHELTER

Best protection from an atomic explosion is the properly constructed shelter. This can be built in the open or as a specially reinforced room in your basement as in the diagram to the right. The room can be made any size you wish but should have no windows, since glass transmits the deadly gamma rays. Some means of getting out, preferably two exits, should be provided.

The most flimsy structure will give you complete protection against heat flash, but protection against the deadly gamma rays and neutrons is a main consideration. Lead is the most effective shielding device, but since lead is expensive and not practical, your next best bet is a shelter of reinforced concrete or perhaps reinforced concrete with a thick layer of earth over the top. If built outside, completely underground or partially above ground, solid earth walls and ceiling 6 feet thick will reduce the intensities of the gamma rays to practically zero even directly



The shelters shown as diagrams above are, according to the book *MUST WE HIDE*, by Dr. R. E. Lapp, effective at the distances given. For neutron shielding a modified concrete made by adding a considerable proportion of an iron (oxide) ore, such as limonite, or magnetite, to the cement is effective. Small pieces of iron, such as steel punchings, may also be incorporated. Concrete should be kept painted to seal its pores, reducing the penetration of gamma rays.

under the bomb burst. Some crude, semi-buried shelters only 900 feet from ground zero withstood the blast in Nagasaki, and none were damaged beyond one-half mile. Semi-buried shelters of the type used in Europe in World War II for protection against conventional bombs would provide worthwhile protection against atomic explosions.

Outside shelters, buried or semi-buried, should be located well clear of buildings to avoid hazards from debris and fire. Outside shelters designed for a static load of 500 pounds per square foot should provide protection against blast at one-half mile from ground zero if an earth cover of at least 2 feet is provided. This cover is necessary for protection against ionizing radiation. The shelter should be capable of being closed up so as to be air tight. Doors should close tightly against seals in the frame. At least two means of exit are essential.

Concrete or hard-packed-earth building materials do not become dangerously radioactive when bombarded by gamma rays.

In your atomic shelter, whether inside or outside, adequate drainage and ventilation should be provided. Basements of homes, especially if they extend beyond the main structure of the house, offer reasonable protection against blast damage, provided they are not too near the center of the explosion and have outside escape hatches to be used in case the house collapses or catches fire.

If you give them an idea of what you need, your local construction company will help in working out the details for an effective shelter. Some of them already have specifications.

TS OF AN ATOMIC BLAST

RADIATION INJURIES

Because of the concentration of ionizing radiation nearly everyone not protected by earth, steel, or thick concrete within a radius of approximately 3000 ft. would probably die. The most serious cases would succumb within a few hours to 4 or 5 days after exposure. A second group would develop susceptibility to infection due to destruction of their white blood cells and would die from 4 days to 6 weeks after exposure. Another group would incur multiple hemorrhages and die within 2 to 3 weeks from this cause.

THEIR TREATMENT

Many people believe that very little can be done in treatment of radiation casualties. This is true of a lethal

GENERAL

There is little about the effects of either old or new weapons which is new to the health professions. The atomic bomb produces burns, lacerations, amputations, crushing injuries, and blast injuries which all surgeons are accustomed to treating. Radiation sickness is a new type of wartime injury, but it is not a new disease and its symptoms are recognized by physicians, particularly radiologists.

When the dose is 400 r or less, many lives can be saved with proper treatment. Immediate hospitalization, so as to insure complete rest, and avoidance of chills and fatigue, is the first step. Whole blood transfusions should be given as required, until the bone marrow has had time to regenerate blood cells. Adequate nourishment should be provided by intravenous feeding to supply necessary sugars, proteins, vitamins, etc. Infection may be controlled by the use of penicillin and other antibiotics.

Findings in Japan show that people exposed to heavy radiation suffer various injuries, sicknesses, and malfunctions which together are called the **acute radiation syndrome**. Physicians find that the severity of the symptoms is related importantly to two factors: The amount of radiation absorbed in a single dose, and the proportion of the body exposed.

No unusual ill effects directly attributable to ionizing radiation have occurred among Japanese survivors. Whether or not such after-effects will occur among these survivors will have to be answered in the future. After-effects from radiation exposure that cannot be fully assessed for many years are effects on heredity and effects on fertility. From investigations, it is found that the likelihood of parents having deformed children after suffering sublethal amounts of ionizing radiation is very slight.

With adequate warning which is heeded and adequate shelters which are occupied, the casualties can be greatly reduced. Furthermore, doctors with ample medical supplies, hospital facilities, and blood banks can save many of those injured by blast or burns.

GAMMA RAYS

Gamma rays are very similar to powerful X-rays and constitute the greatest radiological danger in an atomic blast. They penetrate deeply into the body and ionize the carbon, nitrogen, hydrogen, and oxygen atoms, disrupting the complex body combinations of these elements, changing the proteins, enzymes and other substances that make up our cells and bodies. As a result, the cells are injured or killed; if enough cells are damaged or killed, the person becomes seriously ill or dies.

dose; but many borderline cases can be saved by:

- Good medical care.
 - Whole blood transfusions. It has been estimated that, for a catastrophe such as at Hiroshima, approximately 250,000 pints of blood would be needed, 80,000 per week for the first 3 weeks.
 - Control of infection by antibiotics such as penicillin and aureomycin.
 - Intravenous feeding to supply necessary sugars, proteins and vitamins.
 - Control of the bleeding tendency by use of drugs.
- Whole blood would be required in great quantities, primarily to treat the casualties suffering from mechanical injuries and burns, secondarily to treat victims of ionizing radiation.

One may receive radiation producing far more serious tissue damage than a severe burn without any sensation and no damage will be apparent for several days.

In the case of such a high air blast as in Japan, some 15 to 20 per cent of the deaths probably will be caused solely by nuclear radiation. The remaining 80 to 85 per cent will be caused primarily by injuries suffered in the collapse of buildings and by burns, although many of these may also suffer severe radiation exposure.

A dose of 400 r (roentgens) of radiation received over the whole body in the course of a few minutes represents the median lethal dose which would be fatal to about 50 per cent of human beings. At the minimum distance of 2100 feet from the explosion, protection from a lethal dose would require something like 20 inches of concrete, 3 inches of lead, or 40 inches of packed earth.

CONTAMINATION

The chief external radiation hazard in a contaminated area will come from gamma rays thrown off by fission products or by materials made radioactive by neutrons or gamma rays during the explosion. Filter masks, clothing tight at the wrists, ankles, and neck, and tight-wristed gloves will afford protection against Alpha and Beta particle contamination. Material heavily contaminated with Beta-emitting material should not, however, be handled, even with gloved hands, since it can cause severe burns. Tongs or equivalent instruments should be used. Clothing should be discarded at the edge of the contaminated area to avoid spreading radioactive contamination. Thorough soap-and-water bathing would be a valuable precaution.

Gamma radiation from contamination will not approach the power of direct bomb radiation, but it still can be severe. The best protection against contamination that gives off gamma radiation is to use instruments to detect its presence and to avoid any areas of dangerous concentration.

At a bomb burst, contaminated particles of the size which will most readily pass from the small airpockets of the lung into the blood stream ascend rapidly into the atmosphere. The chances of inhaling a dangerous amount of these small particles is small unless explosion occurs during rain or heavy overcast. A combat-type gas mask will filter out 99.999 per cent of all such particles.

Any wound suffered in a contaminated area should be cared for in the same manner as any similar injury in an uncontaminated area. Clean such a wound with soap and water or potassium permanganate, cut out the damaged tissue, and cover the wound. Amputation is not indicated.

PERSONAL INJURY EFFECTS

INJURIES FROM ATOMIC EXPLOSION

- I. Those caused by the blast pressure or shock wave directly.
- II. Those caused when buildings are wrecked.
- III. Those caused from radiant heat.
- IV. Those caused by burns, either in the wreckage or otherwise.
- V. Those caused by nuclear radiation.
- VI. Those caused through residual contamination.

BLAST INJURIES

Direct blast injury may occur whenever the greatly increased air pressure comes into contact with body surfaces, causing multiple hemorrhages, particularly of the intestinal tract, the stomach, the lungs, the ears, and the sinuses about the nose. Direct blast is not a significant primary cause of death. Most blast injuries are the result of missiles, such as broken glass, falling bricks, etc.

The shock wave from the blast sweeps outward rapidly from ground zero and, in the case of Japan, took up to 10 seconds to travel 2 miles.

In the water, the dangerous level for pressure is about 500 pounds per square inch. In an underwater atomic explosion, any person immersed in the water probably would be killed or seriously injured up to 2,000 yards from the zero point.

Since practically all brick and light masonry buildings with weight-bearing walls in the blast area will be wrecked, wooden buildings flattened, and the doors and other partitions of blast-resistant steel-reinforced concrete buildings blown out, people in or near these buildings will be killed or injured by collapse of structures, and by missile effects of debris.

FLASH BURNS

The flash burns caused by an atomic explosion may be first degree, merely reddening the skin; second degree, causing blisters; or third degree, damaging all layers of the skin.

Severe burns are caused both by the radiant heat from the explosion of the atomic bomb (flash burns) and from the fires that break out in the wreckage (flame burns). The effects of visible light probably are not significant. Even those who look directly at the burst apparently suffer only temporary dazzling and loss of vision.

Atomic bomb flash burns are distinctly different from those caused by other types of explosions, since they are due to radiant heat rather than to hot gases, as in the case of shell bursts or gasoline explosions. Shadow effects are prominent. An ear, for example, might be badly burned, yet the skin behind the ear be unharmed.

As compared with flame burns, flash burns show a much smaller depth of penetration of the skin. This is due to the fact that the thermal radiation flash lasts only approximately 3 seconds. Within the depths to which the thermal radiations penetrate, the tissues appear to be completely destroyed; in a radius of 3600 feet from ground zero blackening

GENERAL

There are no particular problems involved in the treatment of individual injuries received as a result of an atomic attack. Standard treatment procedures can be used in treating mechanical injuries (cuts, lacerations, broken bones, concussions, etc.), burns, shock and radiation effects. Problems of a more serious nature are involved in the necessity of treating thousands of individual cases almost at once, in the immediate need for mountains of medical supplies and prompt evacuation of seriously injured to hospitals outside of the disaster area. There is nothing mysterious about radiation, as man is subject to a constant bombardment of cosmic rays. He accumulates minute amounts of radium in his body through life, and X-rays are used extensively in the treatment of certain illnesses. The only difference in atomic radiation is in the types of rays and the intensity.

FLAME BURNS

A conflagration may be expected to follow any atomic bomb blast. Fire damage light in underwater bursts.

Burns suffered from flames, in such cases, differ in no way from those encountered in any ordinary intense fires unless radiation injury has also been suffered. In Japan, there were many cases where excessive scar tissue (keloids) formed, and many of the survivors have contraction deformities not specifically related to exposure to the atomic bomb, but rather to slow healing, improper care, and infection. Burns suffered in non-atomic bomb raids resulted in comparable amounts of scar tissue, a tendency in Japanese as a race.

It would be unrealistic to prepare for fewer than 40,000 to 50,000 severely burned persons from a single atomic explosion. Fortunately, severe symptoms of radiation in those not killed outright do not ordinarily come on until several days after the acute exposure, so that those suffering from burns and mechanical injuries will actually constitute the chief immediate medical problem and make their heaviest demands on emergency facilities at a time when those suffering solely from acute radiation will require very little attention.

indicates that actual charring has occurred.

Direct injury from radiant heat occurs at the explosion of the bomb; Japanese people in the open suffered third-degree burns up to 1,500 yards and second-degree burns up to 2,500 yards. The effect was instantaneous.

Even loose clothing afforded some protection against atomic flash burns, and color also had a protective effect. White clothing tended to reflect the radiant heat, darker clothing to absorb heat. Burns sometimes were cross-hatched where light clothing was marked with dark lines. Tight clothing was less protection, and burns were inflicted at elbows and where straps crossed the shoulders, for example, while other places where clothing was loose were protected or less severely burned.

As far as burning caused by thermal radiation is concerned, the essential points are protection from direct exposure for human beings and the avoidance of easily combustible materials, especially near windows.



MAY SAVE YOUR LIFE

EQUIPMENT AND SUPPLIES FOR YOUR BOMB SHELTER

Your bomb shelter should be equipped with certain necessary items that may be extremely valuable when it

comes time to emerge into the bomb-blasted outer world.

FLASHLIGHT OR BATTERY-OPERATED LIGHTING FACILITIES—will be found valuable since all light circuits will be put out of commission at the time of the burst.



FIRST-AID KIT—will be found essential for rendering aid to injured or to members of your own family or group.



PORTABLE RADIO—to keep you in contact with emergency broadcasts concerning the disaster.



FOOD AND WATER—A few cans of staple food and water in a tightly sealed jar may be most useful. Properly covered or canned foods should undergo little or no contamination. Contaminated water, when distilled, is perfectly safe for drinking purposes. The radioactive material remains behind in the residual scale and brine. **MERE BOILING OF WATER CONTAMINATED WITH RADIOACTIVITY IS OF NO VALUE.**



BLANKETS—may be needed for warmth or shock protection.



FIRE EXTINGUISHER—A small hand fire extinguisher will permit you to put out any small fires in your immediate vicinity. This may prevent these fires from spreading into a general conflagration and will be a godsend to the firefighting groups which will have their hands full trying to cope with major fires.



TOOLS—of a simple nature, such as a shovel, saw, hammer, hand ax, crow bar, pliers, knife, etc., may be necessary to remove debris from exit of your own shelter or in doing rescue work.



RADIATION EQUIPMENT—A dosimeter for measuring the amount of radiation that an individual has absorbed should be added to your equipment as soon as these are available.



GAS MASK—An ordinary gas mask is adequate protection against swallowing or breathing sub-microscopic radioactive particles. If a mask is not available a surgical type of gauze face covering would help. In case of a high air burst, this probably would not be necessary, as very little radioactive residue is present.



GLOVES—Rubber gloves will serve to cover any small overlooked skin wounds that might permit entry of the radioactive particles into the blood stream. Heavy work (cotton or leather) gloves to slip over the rubber gloves might



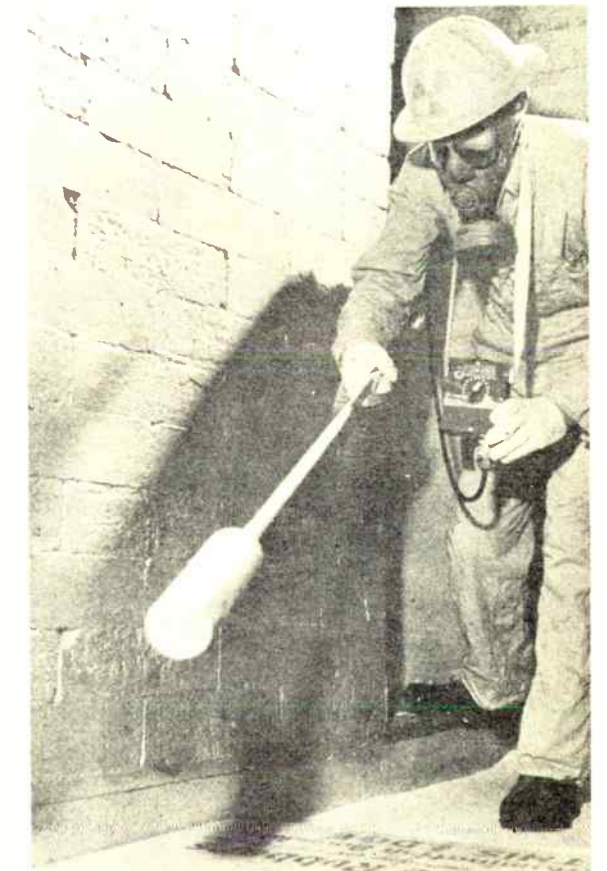
be helpful in the event of attempting to move heavy timbers or working in debris.

HEAD COVERING—Some sort of tight-fitting cap, preferably of the type used by surgeons, covering the hair as completely as possible, should be worn.



COVERALLS—(preferably of a light color and loose fitting to tuck into your boots or overshoes) will provide an effective and practical working outfit that can later be discarded along with your other clothes when you have left the radioactive area.

BOOTS OR OVERSHOES—will prevent radioactive particles adhering to your shoes and at the same time will be most helpful in working in flooded areas. If overshoes or boots are not handy, you can wrap your shoes with cloth which can be discarded later along with any radioactive particles.



(Above) An advance monitor entering an area of high radioactive contamination. (The average individual would not require such elaborate protective devices.)

WHAT TO DO IF BOMB FALLS WITHOUT WARNING

Your first indication of an atomic bomb burst will be an awesome glare in the sky hundreds of times brighter than the sun. **DON'T LOOK AT THIS GLARE. YOU WILL EXPOSE YOUR FACE AND BODY TO FLASH BURNS AND DEADLY RADIATION.**



1. IF YOU ARE IN THE OPEN, DROP TO THE GROUND INSTANTLY, BACK TO THE LIGHT, AND TRY TO SHADE YOUR BARE FACE, NECK, ARMS AND HANDS. THIS WILL NOT PROTECT YOU FROM GAMMA RAYS BUT WILL PROTECT YOU FROM BURNS which can hurt you far beyond the limits of radiation effects. (See photo No. 1)

KEEP YOURSELF DOWN FOR AT LEAST 10 SECONDS. THE IMMEDIATE DANGER IS THEN OVER AND YOU CAN GET UP AND LOOK AROUND AND DECIDE WHAT TO DO NEXT—IF YOU ARE ABLE.

2. IF YOU ARE IN THE STREET, DUCK BEHIND A TREE OR INTO A CORNER OR A DOORWAY IF IT

IS ONE LEAP OR SO AWAY. BEND OVER, BACK TO THE LIGHT, SO AS NOT TO EXPOSE UNPROTECTED PARTS OF THE BODY—BUT IF SHELTER IS SEVERAL STEPS AWAY, DO NOT TRY TO MAKE IT. FALL TO THE GROUND AS IF YOU WERE IN THE OPEN AND THEN WAIT 10 SECONDS.

THEN PRESS YOURSELF TIGHTLY AGAINST A BUILDING IF YOU CAN, TO AVOID SHATTERED GLASS OR FALLING BRICKS. (See photo No. 2)

3. IF YOU'RE AT HOME OR IN THE OFFICE, DROP TO THE FLOOR, BACK TO A WINDOW, OR CRAWL BEHIND A DESK OR TABLE. THERE IS A LITTLE TIME LAG BETWEEN THE GLARE AND THE BLAST WAVE, SO FOR A FULL MINUTE STAY AWAY FROM THE WINDOWS AND THE DANGER OF FLYING GLASS. SAFEST PLACE INSIDE A BUILDING IS AGAINST AN INTERIOR PARTITION WHICH MAY BE STRONG ENOUGH TO RESIST COLLAPSE.

(See photos No. 3 and 3A)



WHAT TO DO IF YOU HAVE ADVANCE WARNING

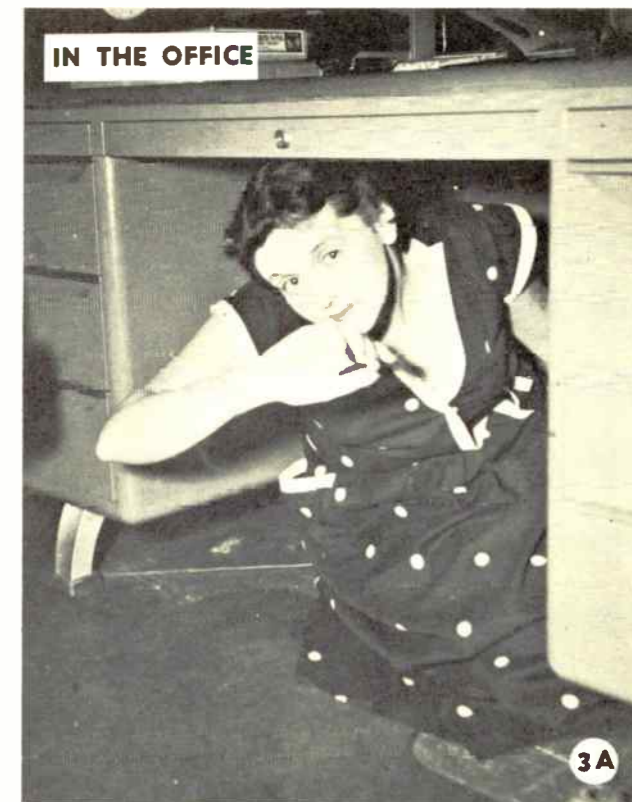
THE WARNING SIGNAL TO TAKE COVER WILL BE A THREE-MINUTE WARBLING BLAST OF SIRENS. (Three one-minute blasts separated by two-minute intervals means "all-clear.") When the warning is heard . . .

1. Move at once to designated shelters or disperse as directed. In the event special shelters have not been prepared, go to the nearest subway or deep basement.

2. If no adequate shelter is nearby, you can still protect yourself against flying debris and some of the heat effect. Get away from frame buildings and trees. Lie down, preferably in a ditch, behind a wall, in a ravine. Protect your eyes from the flash by covering your eyes with your arm. If not, you may be temporarily blinded. Remain under shelter for a few minutes after the blast, to be sure all flying debris has landed.

3. If able, try and help any injured people near you. Administer first aid when possible. Put out any small fires in your vicinity. Each home should have a fire extinguisher available, as chances are that city water pressure will be gone.

4. When you have done what you can in your immediate vicinity, report to the place designated by civil de-



fense authorities, as you will be needed to help in rescue work, evacuation of wounded, general fire fighting, and other emergency jobs. If no place to report has been designated, see if you can aid any of the emergency crews who will be in operation.

5. After the initial rescue work is done, check with a radiological defense man as to the safety of the area.

6. Take a shower and scrub thoroughly three or four times to remove any radioactive materials that may have gotten on you, using sodium bisulphite or potassium permanganate if badly contaminated, and if advised by competent authorities to do so.

7. Change your clothes, discarding the clothes you wore in the affected areas, especially shoes. **Bury them! Do not burn them!**

8. When feasible, check with a radiological defense adviser and a doctor to make sure you are well and safe.

9. Do not spread rumors. Enough confusion will exist without adding to it.

AVOID PANIC — BE CALM . . . MASS HYSTERIA CAN SERIOUSLY HAMPER ORGANIZED DEFENSE