

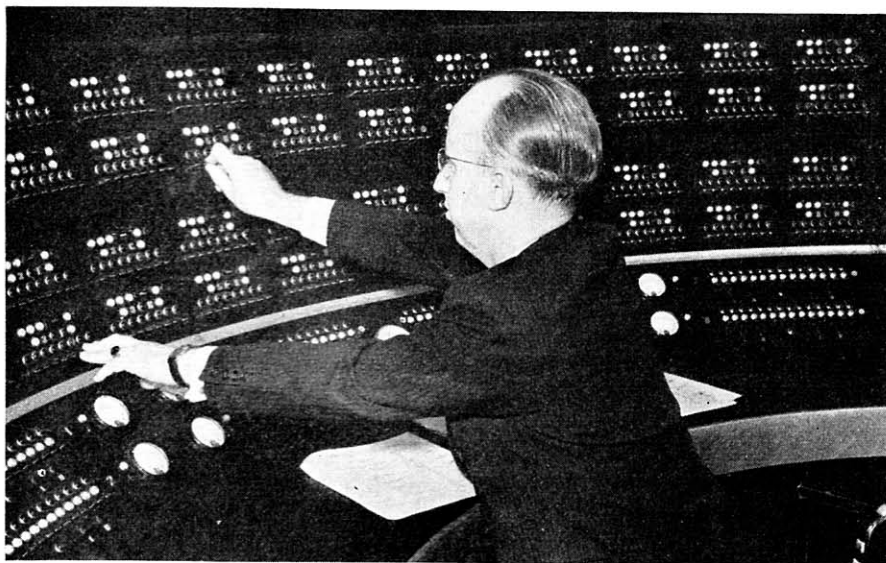
NBC DEFENSE NET

Adequate protection is guaranteed for program transmissions by independently-powered broadcast stations

by NILES TRAMMELL

President NBC

Born in Marietta, Georgia, July 6, 1894. He attended school at Sewanee Military Academy and the University of the South. When the U. S. entered the World War he was commissioned 2nd Lt. in the regular army at Ft. Leavenworth, Kans. He saw military service at Ft. Snelling, Minn., Camp Devens, Mass., and at Fort Benning. After the war he was 1st Lt. in the 36th Inf., 12th Div. Joined the National Broadcasting Company as salesman in March 1928. On July 12, 1940, he became NBC president.



Master Control Board, center of NBC's vast network, located at Radio City.

Power Control Desk showing miniature supervisory equipment on panels.



THE war in Europe, now in its third year, has given thoughtful Americans, mindful of the defense of the nation, many lessons. But of all these, two stand out high above the rest. The first is a lesson in national unity. The other is in the defense use of the gifts of science.

We have seen a nation whose men and women were so deeply engaged in factional quarrel that they forgot to protect the rich heritage that was theirs until at last, poisoned with intrigue and torn by dissension, they were crushed under merciless, swiftly moving engines of war.

We have seen also the movements of divisions armed to the teeth with almost fantastic adaptations of scientific discoveries. Dive bombers, mechanized and motorized land units, military parachutes—these are only a few of this war's new weapons. Radio is certainly one of these. It has been used on the battlefield to coordinate movement of airplane and tank and motorized unit.

Radio broadcasting, too, has been pressed into service. It may be an aggressive force. We know "Lord Haw Haw" and "O.K." well, even on this side of the Atlantic. I am more concerned here with radio's use as a strictly defensive weapon, for broadcasting has a vital sector to hold on this front.

International conflict, in our world, is "total." The decisive factor, apparently, is industrial productivity. The fate of a nation hangs on its assembly lines and the men and women who tenaciously stick to their posts to produce an ever-mounting product of arms and clothing, food and fuel. Incendiaries and demolition bombs rain down from the skies to paralyze industry, to shatter the morale of the civilian population. It is here that broadcasting becomes a force of incalculable power, both as a practical instrument of defense and as a stimulant to that living patriotism without which a nation's arms are sapped of their strength.

The radio industry, cooperating with government agencies, has given much thought to the uses of radio broadcasting in national defense. We have laid plans for fitting it into practical schemes for protecting our great cities and our industrial lifelines. Nationwide plans have been completed for the emergency use of standard broadcasting stations in air-raid warnings and other messages, communiques and various types of announcements.

We must assume that civilian defense will have national, regional and local aspects. Civilian defense in its national aspect, must confine itself to broad educational efforts and instruction in practices of universal application, together with what messages the national leadership has to communicate to the people. For that purpose we already have admirable facilities in several networks that stretch from coast to coast and from Canadian border to the Rio Grande frontier with Mexico. These could be joined together in what the *Defense Communications Board* has called a "super-network."

A radio-in-defense survey recently completed showed that of the approximately 880 operating broadcasting stations in the standard broadcast band, nearly 500 were already connected, by wire circuits, to the proposed super-network for national defense. Another 132 stations with studios in cities now served by components of the proposed super-network, require only local circuits to effect their union with the network. Finally, 240 were situated along the network lines so that short wire circuits would tap them into the network. Ordinary telephone lines could be pressed into service to bring 12 remaining stations into the defense structure.

Civilian defense will also have regional aspects. Different geographical areas will face different defense problems. New England, for instance, with its thickly populated industrial centers, will have quite different plans laid for the defense of its textile and machine tool plants from those applicable to the oil fields of east Texas, Louisiana or Oklahoma.

Here it becomes possible to use radio broadcasting to coordinate the activities of all associated defense units of a particular region. Approaching bomber fleets, for instance, would send not one, but many, local units to their posts, since an attack might include more than one industrial center. Radio broadcasting might be used as the "alert."

Locally, radio broadcasting is of paramount importance, for it is the voice which speaks once and is heard simultaneously by all. It may sound the alarm that sends every man to his defense job, ready for action. It may be the control that moves civilian forces from one quarter to another where the need is greater.

Technical adjustments necessary for successful use of radio broadcasting in civilian defense would be quite extensive, particularly in fitting the broadcasting pattern to national and regional defense schemes. We have indicated that the present national networks, augmented by the addition of more stations, would form a super-network for defense purposes. It would probably be found, also, that special technical facilities would have to be added to connect regional and local broadcasting networks and stations for defense purposes to strategic



Police Capt. J. J. Martin releases inaudible pulse to control alert receiver.

control points. New circuits could accomplish this end.

Broadcasting in the national defense, it has been pointed out, will be only as successful as it is free from either accidental or deliberate interruptions. In the case of most broadcasting stations, now these interruptions are so rare as to be practically negligible. Since the most frequent source of such breaks is power failure, adequate protection for power supplies must, in many instances, be incorporated into present transmitting plants. One-tenth of the nation's stations are now equipped with independent generating plants, enabling them to continue broadcasting up to the moment that such a station is destroyed. Other stations have more than one source of public power; but in perhaps the majority of cases broadcasting stations must take new precautions against being forced off the air by power failures.

For the nation-wide super-network, the existing 45,000 miles of program transmission circuits make alternative routes available to 308 of the 310 cities now being served. From this it is apparent that a break in any particular transmission circuit, during a nationwide broadcast over the super-network, could be compensated for by simply re-routing over another transmission line.

Adequate protection is guaranteed for these program transmissions by

battery reserves in 4,000 relay centers, by multiple independent public power supplies in 800 relay centers. Emergency power is available at 50 centers from completely independent generating plants and more than 200 power plants are available throughout the country.

There are many other aspects of the problem of assuring continuous operations of the nation's broadcasting plant in times of emergency which I shall not go into here. But before I leave the strictly practical applications of broadcasting in national defense let me illustrate radio's work with two instances.

The *National Broadcasting Company* recently suspended network service for fifteen minutes to test a plan for nationwide transmission of confidential information during an emergency period. More than 200 NBC commentators and newsmen from Atlantic to Pacific tuned in at a predetermined minute to hear Major General Robert O. Richardson, Jr., and Rear Admiral Arthur J. Hepburn explain, from Washington, the public relations policies and methods of the War and Navy departments.

The public meanwhile listened to local musical and news programs, completely unaware that the national network had been diverted to confidential use.

On another occasion Mayor Fiorello
(Continued on page 107)

H. LaGuardia, *Director of Civilian Defense*, participated in a demonstration of the ingenious new RCA Alert Receiver. Word that "enemy" planes had been sighted over Long Island was relayed from Mitchell Field to Radio City. There a civilian defense official pressed a button that sent a robot signal, completely inaudible, over the carrier wave of Station WJZ. That signal tripped a relay in the Alert Receiver whose loudspeaker was then ready to receive any message the defense official had to transmit.

The robot wave may start a siren to warn the public. It may set a bell ringing on the Alert Receiver to awaken sleeping air wardens, or it may be the impulse that lights various colored signal lamps on the front of the receiver.

In the all-out effort to defend democracy, radio broadcasting stands as a great national asset. Technically, its great power derives from the base fact that American radio can carry a message from one source simultaneously into practically every home in the land. Greater, however, is the fact that our people have faith in the American system of broadcasting. They know its impartiality in dealing with news and opinion, its initiative in presenting fine entertainment, its conscientious efforts to use an incomparable instrument of mass communication for the high purposes of education.

Today American radio commands the loyalty of 100,000,000 regular listeners.

Two things are essential to the maintenance of national morale by radio. The first is an uninterrupted flow of information and news to the American people. The second is a continuance of entertainment, and aids to relaxation, to lift up the spirits of the people in times of stress; to help preserve, as far as possible, the pattern of normal life.

Radio's part in gathering and spreading news, views and opinions needs no review here. President Roosevelt's recent tribute admirably expressed radio's achievement as a news agency. "Today the need is greater than ever that broadcasting should perform its function as a medium of public information," he said. "Factual and accurate news made available to all of our people is a basic essential of democracy. Radio has done its job well in this field." Radio should be permitted to carry on that tradition of accuracy and freedom. —50—

The Columbia Broadcasting System and the Mutual Network are fully organized to handle any emergency that may arise. Space does not permit a complete analysis of the situation. We find our great broadcast nets prepared to transmit all information of interest to the American public.—Editor.



**"Keep 'em Rolling
Keep 'em Flying..."**

RIDER RADIO BOOKS ARE DOING THEIR SHARE!

**IN
ARMY
NAVY
COAST GUARD
SIGNAL CORPS
INDUSTRIAL
TRAINING**

★ On land—on sea—in the air—communication is a vital factor dependent upon skilled men to design, operate and maintain the complicated equipment. That is why we are proud of the many branches of the various services that employ Rider Radio Books in the training of radio technicians. Whether you are interested in the basic theory of radio, the application of that theory, the use of instruments, the maintenance of radios, or the possible future developments in the electronic field—you will find a Rider Book listed below that you should read today.—So, check the listings below and send in your order RIGHT NOW!

Automatic Frequency Control Systems

From the simple type of A. F. C. circuit to the most complicated push-pull control circuit... you will find them all clearly explained in this book. A rare combination of theory and practice. 143 pages. \$1.25.

Cathode Ray Tube

A universally used testing device in radio and electrical fields, the cathode-ray tube—giving accurate information about electrical wave forms—is invaluable in radio maintenance operations, laboratories and electrical research. A classic, written in clear, easily understood style, this book is now in its 8th printing. More than 25,000 copies have been sold. 338 pages. \$3.00.

Servicing by Signal Tracing

A new idea!—An exposition of the theory of operation of all radio type receivers, amplifiers, television, etc., in terms of what happens to the signal. This is the most fundamental system of analyzing defects in communication systems.—It has been embraced by thousands of professional radio repairmen in all parts of the world. Written by the creator of that system—in a style that is easy to understand. 360 pages. \$3.00.

Vacuum-Tube Voltmeters

The subject of this new book is one of the favorite tools of radio engineers and other laboratory workers. Vacuum-Tube voltmeters are explained here from the theoretical as well as the practical angles. 179 pages. \$2.00.

An-Hour-A-Day-With-Rider Series

Fundamental books every radio beginner should head to provide a solid foundation for further study on Alternating Currents in Radio Receivers on Resonance and Alignment on Automatic Volume Control on D-C Voltage Distribution

Each book contains 96 pages and is bound in hard covers. Price 90¢ each.

★★★★★★★★

And for the Maintenance of Radio Receivers in the Homes of America, Radio Servicemen Use

RIDER MANUALS

A well informed public is as essential to civilian morale as a well informed military command is to the morale of an army. Thus the professional serviceman serves his country well by quickly repairing a defective home radio. To increase the speed of locating troubles, all wide-awake servicemen use all twelve Rider Manuals.

Abridged Rider Manuals I to V—2000 pages—\$12.50.

Rider Manuals Volumes III to VI—covering sets issued each year between 1932 and 1935—\$8.25 each.

Rider Manuals, Volumes VI to XII—covering sets issued between 1935 and 1941—\$11.00 each.

New Rider Book on "AUTOMATIC RECORD CHANGERS AND RECORDERS"

Complete servicing information. Explanatory text, diagrams and drawings. Approximately 700 pages... \$6.00.

Frequency Modulation

Explains FM. Introduces the principles underlying this important new type of radio transmission that has become an important factor. This book also goes into the maintenance of FM receivers. Instantly popular when published a year ago, its sales have consistently mounted. 136 pages. \$1.50.

The Meter at Work

Elementary treatise covering theoretical as well as practical aspects of all kinds of "small" electric meters. The unusual construction of this book—separating text and illustrations—makes it easy for you to read and get the facts quickly. Read this book to be sure you get the meters best suited to your needs. 152 pages. \$1.50.

Oscillator at Work

This book explains how to get maximum utility from your present oscillator and how to test and repair all kinds of oscillators. A practical book for the man who uses oscillators. 243 pages. \$2.00.

JOHN F. RIDER PUBLISHER, Inc.

404 FOURTH AVENUE, NEW YORK CITY

Export Division: Rocke-International Elec. Corp., 100 Varick St., N. Y. C. Cable: ARLAB