

RADIO AGE

RESEARCH · MANUFACTURING · COMMUNICATIONS · BROADCASTING

Public Lib
Kansas City



JULY

1943



Two jobs we can all be proud of



Our big job at RCA is War Communications. Some of us are making the equipment without which no modern fighting force can wage total war. Others of us, in the NBC end, are using some of that equipment to inform, to entertain, and to inspire Americans in and out of uniform.

BUT THERE'S another vital war front that needs protection—and now! Planning the Peace is actually part of our war job. Obviously, we Americans at home can't let down our millions of fighting men—we must make this country something really nice to come home to. And just as important—we

can't let our war-production forces at home drift aimlessly once the delirious joy of the coming peace celebration is over.

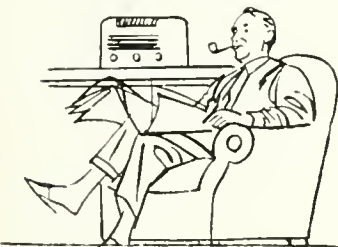
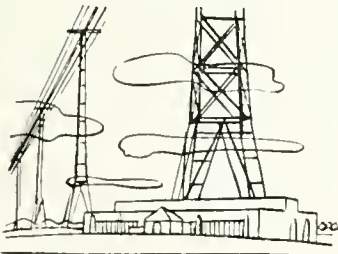
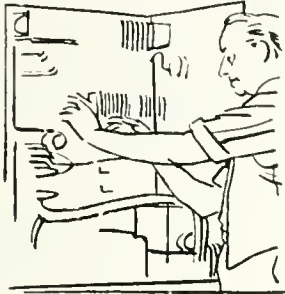
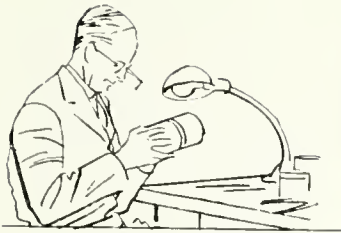
SO WHAT IS NBC doing about it? We happen to be the largest, and most effective "Round Table" in the world. We take that fact as a serious responsibility. Because of it, the people of America can "sit in" at meetings on Peace Plans. Through NBC facilities, America can formulate its ideas on winning the peace in the true spirit of democracy.

"FOR THIS WE FIGHT" is a new program that puts into action our NBC policy of "Telling the people."

SATURDAYS at 7 p. m. EWT, America listens to the post-war ideas of men such as: Cordell Hull, Sumner Welles, Justice Owen Roberts, Elmer Davis, Thomas W. Lamont, David Sarnoff, Matthew Woll, Senators Thomas and Austin, Nelson Rockefeller, and many others.

NBC SALUTES the cooperation and public spirit of those distinguished Americans who are making "For This We Fight" an important contribution to post-war planning. And, since this is strictly in the RCA family, we can all take a modest pride in being first in radio with a program so definitely in the public service.

The National Broadcasting Company



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VOLUME 2 NUMBER 4

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CONTENTS

	PAGE
RADAR—WARTIME MIRACLE OF RADIO <i>Story of Instrument's Development, Application</i>	3
RADIO ON THE "RACK" <i>"Torture Chamber" Tests Communications Units</i>	7
LOWER DISTRIBUTION COSTS SOUGHT <i>by E. W. Butler</i>	10
"FOR THIS WE FIGHT" LOOKS AHEAD <i>by Dr. James R. Angell</i>	12
RCA LABORATORIES WIN "E" AWARD <i>Part Played in Radar Development Told at Ceremony</i>	15
COMMISSION TO HARRIS <i>by Mark Woods</i>	17
RCA WAR PRODUCTION <i>Picture Story of Manufacturing for War</i>	18
WITH RCA—NORTH OF THE BORDER <i>by A. Usher</i>	20
DAYTIME PROGRAMS CHANGE <i>by Edgar Kobak</i>	24
"SEWING" BY RADIO SHOWN <i>Machine Developed by RCA Laboratories</i>	25
RCA LIFEBOAT SETS SAVE 84 <i>Crew of Torpedoed Ship Rescued</i>	26
RCA DEVELOPS STETHOSCOPE <i>Highly Sensitive Device Introduces New Sounds</i>	27
NEW ROLE SEEN FOR RADIO <i>Sarnoff Speaks at Stockholders' Meeting</i>	28
STATIONS BUILT FOR ALLIES <i>RCA Victor Installs Two 50,000-watt Units</i>	29
RCA CADETTES LEARN ABOUT RADIO <i>Girls in Training as Engineering Assistants</i>	30
FUTURE LINKED WITH SCIENCE <i>Sarnoff in University of Air Broadcast</i>	31
TESTING RADIO "7 MILES UP"	32
OUTLOOK OF POST-WAR TELEVISION IS BRIGHT	33
3 IN RCA VICTOR WIN WPB MERIT AWARDS	33
PRAISE FROM MORGENTHAU	34
NEW RADIO CIRCUIT OPENS	35
RCA TO SPONSOR RADIO SHOW "WHAT'S NEW?"	35

COVER—This fine picture of the American Flag, a photograph by Gray O'Reilly, is reproduced by RADIO AGE through the courtesy of the Woman's Home Companion.

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UPON THE OCCASION OF THE PRESENTATION OF THE ARMY-NAVY "E" AWARD TO RCA LABORATORIES AT PRINCETON, N. J.: LEFT TO RIGHT, SEATED, REAR ADMIRAL HAROLD G. BOWEN, USN; LIEUT. GEN. JAMES G. HARBORD, USA (RET.); GOVERNOR CHARLES EDISON OF NEW JERSEY, AND, STANDING, DAVID SARNOFF AND MAJ. GEN. ROGER B. COLTON, USA.



RADAR— Wartime Miracle of Radio

THE war has put a new word in the news. It is Radar, which means radio detecting and ranging.

r a radio
d ection
a and
r ranging

The letters r-a-d-a-r spell the same forward and backward. This gives a clue to its performance in using the radio echo, which is reflected by any object which the radar beam strikes. An airplane, for instance, acts as a "radio mirror" when it is intercepted by a radar beam.

In the United States, through foresight and encouragement as well as through their own scientific research, the Army and Navy played a vital part in cooperating with the American radio industry in the development of radar long before the war.

To give the American people "as much information as possible without endangering our own forces or helping the enemy," the Army and Navy in a joint release on April 25, 1943, defined radars as "devices which the Allies use to detect the approach of enemy aircraft and ships, and to determine the distance (range) to the enemy's forces."

The statement continued: "Ra-

dar is used by static ground defenses to provide data for anti-aircraft guns for use in smashing Axis planes through cloud cover, and by airplanes and warships. It is one of the wonders made possible by the electron tube.

"Radar is used for both defense and offense. In fact, the British, who call their similar apparatus the radio locator, say it was instrumental in saving England during the aerial blitz of 1940 and 1941. At that time the locators spotted German raiders long before they reached a target area, and thus gave the RAF and ground defenses time for preparation. Since then radar has stood guard at many danger points along United Nations frontiers and at sea, warning of the coming aerial and sea-borne enemy forces, and contributing toward victory in combat. The new science has played a vital part in helping first to stem and then to turn the tide of Axis conquest."

As a vivid illustration of radar's effectiveness in the hands of America's armed forces, James F. Byrnes, Director of War Mobilization, in an address broadcast from Spartanburg, S. C., said:*

"History will some day record the part radio and the radar have played in giving us fighting su-

periority over the Axis. But let me give you one instance. On the night of November 14, off Guadalcanal there lay a Japanese battleship. It was a stormy night. Eight miles away was a ship of our fleet. With the use of the radar our ship with its second salvo sank the Jap battleship in the blackness of night, eight miles away."

Helping to pave the way for such triumphs, the Radio Corporation of America as early as 1937 delivered experimental radar apparatus to the U. S. Army Signal Corps for aircraft location tests. RCA also produced, for the Signal Corps, portions of its first radar equipment, such as was in operation at Pearl Harbor.

A set of radar, designed and manufactured by the Naval Research Laboratory, was installed on the U.S.S. *New York*, late in 1938. At the same time RCA had built for the Navy an experimental radar equipment which was tested on the battleship *New York*. As a result of the tests, the Navy decided to develop additional radar sets, and in October, 1939, because of RCA's pioneer radar work, it was awarded contracts for six sets of aircraft detection equipment patterned after the original model built at the

May 31, 1943.

Naval Research Laboratory, and as installed on the U.S.S. *New York*. This was the first Navy service radar equipment order. The apparatus built by RCA was installed on U. S. naval vessels beginning in 1940.

Basic research work on apparatus and techniques for the locating of ships and planes by radio had been instituted by the Radio Corporation of America as early as 1932, when experimental equipment was constructed. Apparatus completed in 1934 was used for a series of cooperative reflection tests with the U. S. Army Signal Corps. Immediately, the Army indicated an interest in the possibilities of developing apparatus for detection of aircraft and ships.

Encouraged by this response, RCA Laboratories continued tests to determine what performance might be expected. The early apparatus, with further development and improvement, indicated possibilities of much better performance than the sound locators then in use. By demonstrations and discussions, the Army and Navy were kept in touch with the RCA research. In view of the possible military applications, no publicity was given to this development.

During 1937, operating equipment was completed and tested, indicating the direction and distance of reflecting objects, in much the same form as is now used in a large part of modern radar equipment. These developments had grown to such importance to the military services during 1937, that RCA was requested to put all of this work on a secret basis.

What was probably the first application of radar principles to aviation was achieved by RCA through equipment built and installed in its own plane in 1937, in connection with research on collision prevention apparatus. Many flights were made testing this apparatus during 1938 and 1939, showing the effectiveness in warning of collision between aircraft, or between planes and mountains, or other obstacles.

This equipment not only determined the altitude with accuracy, but was found able to detect objects ahead at a sufficient distance to warn of an impending collision. Owing to the close relationship between this apparatus and aircraft detection equipment, commercial announcement of these results was not possible.

"There is no question but that radar has changed the whole course of history," Rear Admiral Harold G. Bowen said when he spoke at the Army-Navy "E" Award ceremonies at RCA Laboratories.* His contact with the development of radar in the United States Navy goes back to October 1931, when he served as Assistant Chief of the Bureau of Engineering. As Director of the Naval Research Laboratory at Anacostia, D. C., he was designated Coordinator of all phases of the Navy's radar program in October 1940.

Reiterating that the Battle of England was won because the British had radar of their making to prevent the Germans from surprising the British planes on the ground, Admiral Bowen said "you can be assured that radar has played a highly significant role in our successful operations to date.

"Ever since the invention of radar, the Navy and the great electronic laboratories have been in constant and fruitful contact," he continued. "Our associations with RCA in this respect have been of long duration and most satisfactory. Of the first two radar sets that were sent to sea in 1938, one was manufactured by RCA and the other by the Naval Research Laboratory. The great progress of radar in the Navy and its gradual acceptance as a new fundamental contribution to war, dates from that time. The first sets purchased by the Navy from a commercial concern were six in number and were supplied by RCA.

"The story of radar is such an astounding story that it is regret-

*June 17, 1943 at Princeton, N. J.



table that all the history of this development cannot be made public at this time. In the history of technology, no art has ever developed so rapidly and no art was ever prosecuted at the same time in all branches—namely, research, development and production. Certainly no such complex art was ever brought to a state of usefulness so soon. This fact, of course, was due not only to the position of technology in the United States, but was also due to—first, the threat of impending war, and later, the war itself.

"The training of personnel to handle this new equipment was almost as great a task as the development of the equipment itself. Scientists who could not be spared from their work had to be used to operate the first sets aboard ship because no one else knew how to operate them. Schools were required to train operators and maintenance men.

"The whole electric and electronic industry and all of its labo-

British are rightly praised for having done a magnificent job in quickly applying this great weapon to prevent the Luftwaffe from striking a knockout blow. Nazi fighter bombers have tried in vain to sneak by the radar patrols to reach England by flying low, skimming the water in hopes that the beams might be sweeping the skies overhead and therefore miss them.

Lord Beaverbrook, Minister of State, in a broadcast appeal for volunteers to man the radio locators in England, said:

"It is the radio that destroys the enemy in the darkness, that seeks him out through the clouds. It is the radio that sends the avenging fighter to the place where he will meet the lurking enemy and bring him to destruction. . . ."

Radar, as is often the case with new scientific developments, sounds mysterious and complex. Yet there is a simple explanation of its principle that reveals how its magic is performed. A simple illustration is found in the echo.

The boy, who yoo-hoos at a cliff and hears the echo, is in effect illustrating the radar principle. The sound strikes an object and is reflected. Radio also has echoes. But, of course, radio travels much faster than sound; it travels at the speed of light, 186,000 miles a second. Knowing the speed of sound and light, also the time elapsed before the echo is heard, distance can be measured. For instance, knowing the velocity of the radio wave, and by recording the time required for the echo to come back, the distance to the object that reflected the signal can be determined.

The speed of the radio waves, however, is so great that it is only by the development of modern electronic devices that this measurement has been made possible. For instance, the time required for a radio wave to travel to an object 50 feet away and back again is only one ten-millionth of a second, yet radar can measure it.

The wonder of it is that out of the electromagnetic power "searchlighted" into space, the infinitesimal bit that may be reflected from

an airplane—a mere speck in the sky—can be detected as an echo. It bespeaks high tribute to the radio tube designers who have created the means of projecting powerful beams into the sky. And at the same time they have been able to produce receiving tubes of sufficient sensitivity to record the reflection of a plane as it flies through the invisible beam.

Radar, an important milestone in the evolution of radio, is no overnight development. Years of exploration of the ether—pioneering that opened up the ultra-short wave spectrum—are behind it, as well as research and engineering in radio circuits, special electron tubes, and the application of electronic techniques. Fortunately, science was ready when the frantic call went out for a device to combat the war plane. Radar came to the rescue.

Twenty-five years of peacetime scientific developments since 1918 have been marshalled into service to help win the Second World War. Veteran sailors marveled at the radio direction-finder of World War I. However, the old type of direction-finding has always required that the ship or plane to be located had to be transmitting a radio signal. Through the development of radar, vessels or aircraft can be found whether or not they are emitting radio signals. In the new form of radar direction-finding, position and distance may be determined without the cooperation of the object, the location of which is being determined.

Great has been the advance in this art of radio since the radio compass won fame at the Battle of Jutland, and aboard the NC-transatlantic flying boats on their historic hop across the sea in 1919. Radar is new magic.

In recent years there have been a number of radio scientists and engineers whose work has been directly concerned with putting radar together and in the development of components that made it practical. The basic researches of Dr. A. Hoyt Taylor, Leo C. Young, L. A. Hyland, Robert M. Page, Louis A. Gebhard, and M. H. Schrenk of the

ratories have played their part in this phenomenal story. Only in the United States could such a phenomenal development proceed so rapidly and result in such phenomenal production," said Admiral Bowen. "The greatest tribute is due the many who worked for so long in silence in so many laboratories to make it possible that the results of this development could be utilized in time to obtain a definite military advantage over our enemies."

Does the enemy know about radar? The fundamental principle is no secret. In fact, a main objective of one of the first Commando raids along the French coast on February 27, 1942, was to capture intact the equipment of a radar station at Bruneval, north of Havre—the mission was successful.

Aiming to cripple one of Germany's key defense weapons against land invasion and against Allied air attacks, RAF 4-motored Lancaster bombers on June 21, 1943, made a heavy raid on the radio-radar factory in Friedrichshafen with 500-pound bomb hits on all main buildings.

It has since been revealed that for many years America has been at the forefront of radar development, but because the war struck Britain first, it was there that this new aerial watchdog received its baptism of fire. Radar was rushed into action, and the

U. S. Naval Aircraft Radio Laboratory, Anacostia, D. C., in studying the Heaviside surface and radio echoes, added much knowledge that helped to open the way to radar. Gebhard, a veteran in wireless, who served in the Navy in the First World War, is credited with outstanding work in development of radar transmitters, embodying electronic principles.

Major General Roger B. Colton as Executive Officer and later as Director of the U. S. Army Signal Corps Laboratories at Fort Monmouth, N. J., early realized the possibilities of radar and contributed much in fostering development of the new device for military purposes.

Indicating the usefulness of radar to the Army, Major General Dawson Olmstead, then Chief Signal Officer of the Army, reported to the House Appropriations Committee:*

In the battle of Attu in Alaska, when our forces arrived and wanted to get men ashore in small boats, the weather made visibility so bad that the water could not be seen from the deck of a ship. The ships were berthed and the men landed by the use of radar.

Many research workers and engineers of RCA Laboratories have contributed to the radar program through the development of integral parts. The first steps were taken many years ago, when a program of research was instituted in the ultra-short wave radio spectrum, with emphasis on apparatus and techniques that would broaden the usefulness of radio service. This work led early into experiments with reflections of radio from

objects, and soon thereafter into radar. Ever since this pioneering period, Dr. Irving Wolff of the Laboratories has been associated with research work on many forms of radar, and much of this research has been under his direct supervision.

During the early work, Rene A. Braden and Dr. E. G. Linder were associated with Dr. Wolff and developed the apparatus used for the reflection tests. Later, George W. Leek joined the radar research group and has continued in this work. When the aircraft project began, Dr. W. D. Hershberger, R. M. Smith and C. E. Hallmark undertook this phase of the development.

Following the early research results, RCA engineers began the development necessary to make equipment ready for practical use. The group responsible for this and for engineering the first service radar equipment included John B. Coleman, J. Edwin Love, John E. Evans, C. A. Gunther, George Charrier and L. J. Wolf.

In the course of its development, many other RCA engineers have made notable contributions to radar. When secrecy restrictions are lifted, it will be possible to reveal some of the results and to give credit to the men who achieved them.

Thus the American radio industry, as the War Production Board has pointed out, has produced "the once-secret weapon which provides data to aim a gun accurately on a distant enemy plane invisible to a telescope."

What of radar's future? Does it have peacetime applications?

Commending the scientists and engineers of the Radio Corporation

of America for the vital part they have played in the development of radar, and in producing it for the Nation's use at a time when it was essentially needed, David Sarnoff, President of RCA, told them that RCA is proud of their achievement.

"Television and radar add new dimensions to radio," said Mr. Sarnoff, "wireless telegraphy was its first dimension and broadcasting its second. Application of these new developments of radio to peace, opens new fields of service on land, at sea, and in the air.

"Radio instruments will emerge from the war almost human in their capabilities. They will possess not only a sense of direction, but a sense of detection that will open new avenues of service. The radio direction-finder, which heretofore had only an ear, now also has an eye. The safety of aviation will be greatly enhanced for the aviator will be able to see the ground through clouds or darkness. By the scientific application of the radio echo, the radio "eye" will avert collisions, while the radio altimeter will measure the altitude and warn of mountains ahead or structures below.

"American inventive genius has contributed much to the creation and perfection of radar as a great offensive and defensive weapon. I am happy to report that RCA Laboratories have been in the forefront of radar research and development. The radio-electron tube was the key to its application. I believe it now can be said that by the use of radio and especially radar, the United Nations have been able to avert many disasters, save precious lives, and inflict severe damage upon their enemies."

*June 18, 1943



Radio on the "Rack"

MODERN INDUSTRIAL ENGINEERS AT RCA-INDIANAPOLIS DEVELOP TORTURE CHAMBER TO TEST WAR-VITAL COMMUNICATIONS UNITS

THE notorious Iron Lady of the medieval torture chamber, together with such devices of torment as rack, wheel, and thumbscrew, have nothing on the ingenious devices which modern industrial engineers have developed to put vital radio and sound equipment through their pre-battle paces.

Deep in the basement of the Indianapolis plant of the RCA Victor Division of Radio Corporation of America, situated like the dungeon of a castle, this modern "torture chamber" is the daily scene of harrowing trials by water, fire, submersion and shock—all in a good cause.

The victims are communication equipment, parts of radio apparatus, and sample materials under consideration for use in manufacturing radio, sound and electronic devices for the armed forces. The "executioners" are skilled radio engineers.

RCA Victor's torture chamber grew out of the Navy Department's need for equipment that could withstand the most strenuous use under virtually all conditions of climate and battle. These requirements demanded rigid, uncompromising tests to insure that this important communication equipment, destined for battle service in the air, on and under the seas, meet the Navy's specifications.

The subterranean chamber houses many ingenious devices especially contrived by Navy and RCA Victor engineers to simulate battle conditions, which the equipment will be called on to withstand and through which it must operate perfectly. Since this equipment may see service on any continent and on and under the seven seas, RCA's engi-

neers are confronted with the responsibility of designing equipment dependable in almost any conceivable set of operating conditions.

The torture devices (more politely called test equipment) permit engineers to observe how the equipment withstands punishment and eliminates the guess work from the question of how a piece of equipment or its materials will stand up under virtually any battle or climatic conditions to be found anywhere on the globe.

In the confines of the chamber, a piece of apparatus may be given a normal life time of service—within a single week. It is made to operate at temperatures as low as 40 below and as high as 260 degrees above zero. It may be made to function in man-made humidity rivaling the tropics or the blistering dry heat of a desert; under conditions of vibration and shock such as caused by bombs or cannon fire; in a salty atmosphere simulating waves dashing over the bridge of a ship; 40,000 feet up in the air, or 600 feet beneath the surface of the sea.

"Simulating these actual conditions," explains William J. Morlock, engineer in charge of RCA Victor's test development section, "the future behavior of the equipment and material can be accurately predicted. Thus the weaknesses of any



SHIPBOARD INTERCOMMUNICATION UNIT BEING BROUGHT FROM "TORTURE CHAMBER'S" WEATHER ROOM, WHERE IT OPERATED IN 140-DEGREE HEAT.

equipment are discovered before manufacturing in quantity is started."

As might be imagined, mayhem of no mean proportions is inflicted upon the equipment in the torture chamber. It is thumped, shocked, beaten, frozen, broiled, submerged, shaken, bounced, and all but boiled in oil.

Perhaps the most spectacular, though not the most violent, device in the torture chamber is the splash tester, which simulates rain or violent waves of water. Designed by Ray A. York, development engineer at the Indianapolis radio plant, who presides over the torture chamber, it is modelled after a shower room, but with a backboard where the

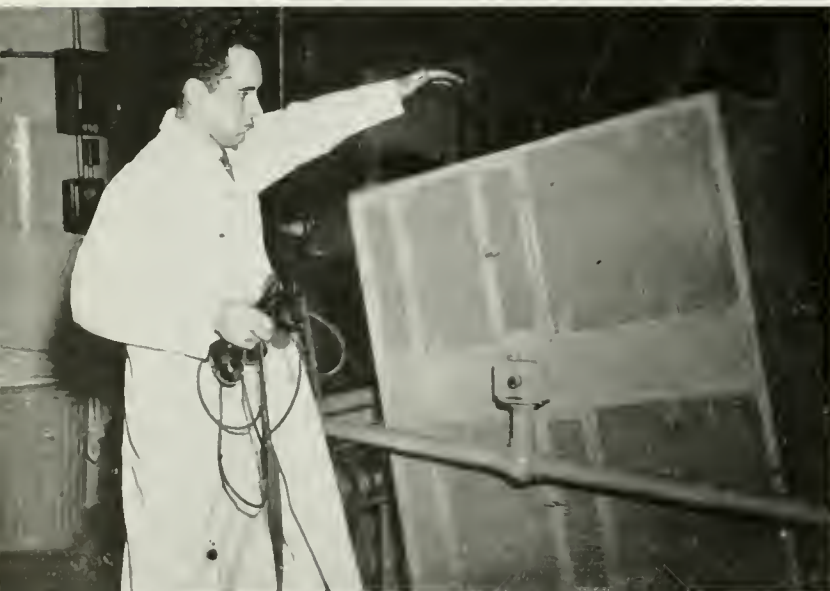
OUT OF A SPECIALLY CONTRIVED ICE BOX, WHERE THE TEMPERATURE DROPS TO 40 DEGREES BELOW ZERO, IS LIFTED THIS TRANSMITTER STATION.

[RADIO AGE 7]

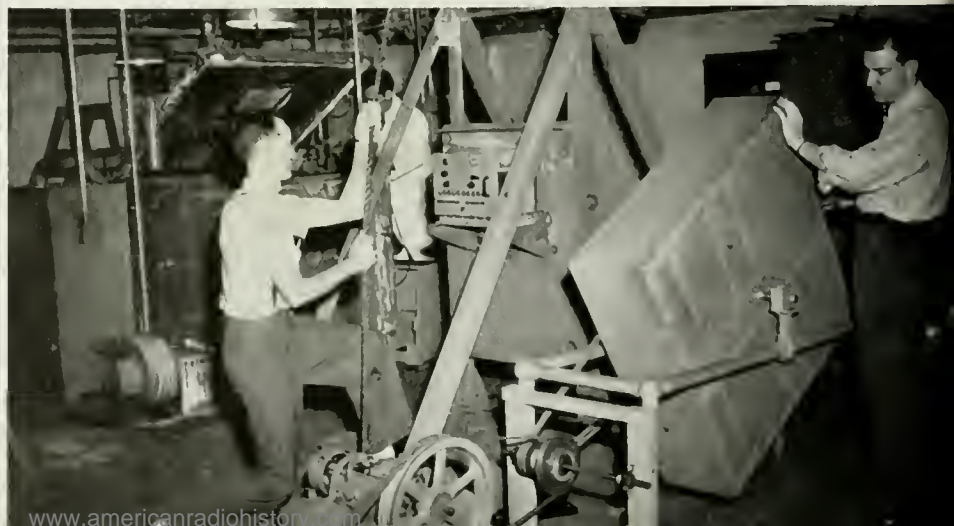




COMMUNICATION EQUIPMENT IS SUBJECTED TO THE POUNDING OF A SLEDGE HAMMER (ABOVE), SIMULATING GUN RECOIL. IN THE "TUMBLER" TEST (BELOW), A ROTATING BOX IN WHICH RADIO AND SOUND UNITS MAY BE DROPPED 1,000 TIMES, IS USED.



[S RADIO AGF]



IN THE PRESSURE TEST (LEFT), SOUND COMMUNICATIONS EQUIPMENT IS "LOWERED" TO THE EQUIVALENT OF 600 FEET OF WATER. THE INGENUOUS DEVICES IN THIS CORNER (BELOW) OF THE "TORTURE CHAMBER" AT RCA'S INDIANAPOLIS PLANT SHOW THAT THE ROOM IS APTLY NAMED.

equipment is placed. A revolving hose directs a stream of water around the equipment. The nozzle is regulated so that the water may be made to fall in a gentle sprinkle or at a 55-mile per hour blast, duplicating the breaking of waves against the ship while a storm is raging. Some form of this test, according to York, is given to nearly all equipment to be exposed to the elements.

Some equipment is also given the submersion test, designed by the U. S. Navy to test water-tightness. In this trial by water, the equipment remains for two or three hours in a tank of water and is tested under submerged conditions.

In some cases, the equipment undergoes an even more fanciful bit of torture in the high pressure test, also conceived by Navy engineers. Here the equipment is submerged in water in a pressure chamber, taken down to pressures equivalent to a depth of 600 feet, in order to check the equipment as to its ability to "take it".

According to York, the most popular corner of the torture chamber is the "weather room". This room is large enough to accommodate complete equipment and its operating personnel. Here equipment under test takes a beating from heat waves and cold spells, since temperature and humidity can be regulated over a wide range. Twenty-five thermo-couples measure the temperature of each component of the equipment and the tendency of any part to over-heat is observed.

For sheer brute torture the chamber boasts the shock test. This simulates gun recoil conditions which communication equipment must be able to withstand. The shock is applied by a heavy sledge hammer, which delivers a mighty blow against a heavy wooden board, on the front side of which the equipment under test is fastened. After twenty or more such blows are delivered to the operating equipment, it is checked to be sure that it has withstood this gruelling punishment.

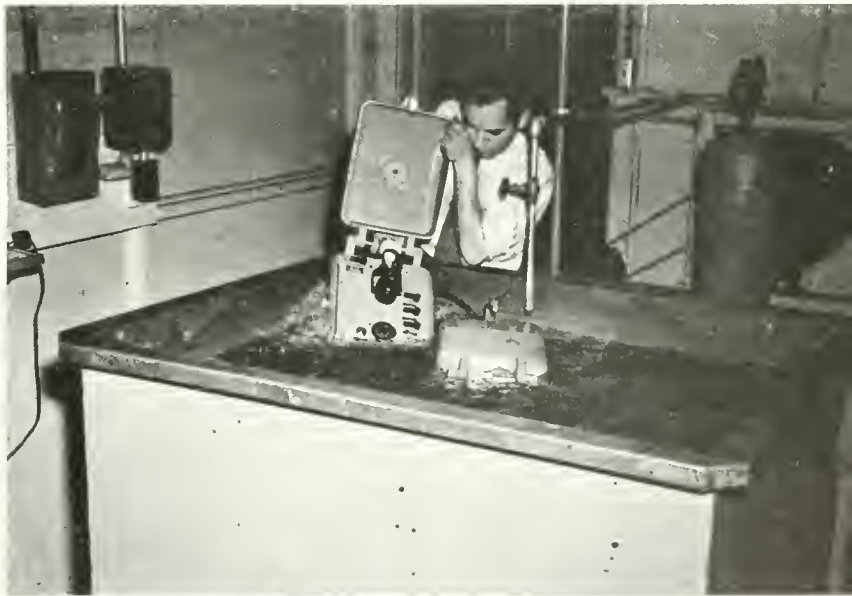
Still another ingenious instrument of "torture" designed by Engineer York is his salt spray tester. Reduced to human terms, it is nothing more or less than continuous series of severe cases of sun-burn after ocean bathing. Technically, it was designed to determine whether paint finishes on equipment can withstand salt corrosion. The equipment is given a three-minute salt spray, followed by a three-minute hot air blast. This cycle is repeated 100 hours during which ultra-violet ray, representing the sun, is shining on the equipment.

These are the feature attractions of RCA Victor's aptly called torture chamber. After a piece of equipment has passed through these gentle devices, and has survived, it is ready for quantity production and for use on the war front.

"No battle condition," remarks York, "could hold a candle to such tortures."



SALT SPRAY AND ULTRA-VIOLET RAYS PLAY ON NAVY COMMUNICATIONS EQUIPMENT IN THIS TEST (ABOVE) TO DETERMINE ITS CORROSION RESISTANCE. EQUIPMENT IS CHECKED FOR WATER-TIGHTNESS AFTER IT HAS BEEN SUBMERGED IN A LARGE TANK (BELOW) FOR A NUMBER OF HOURS.



BECAUSE NAVY TELEPHONES MUST NOT FAIL AT CRUCIAL MOMENTS, THEY ARE TESTED (RIGHT) UNDER SIMULATED STORM CONDITIONS. IN THIS SCENE (BELOW), SHIPBOARD COMMUNICATIONS EQUIPMENT IS UNDERGOING A 55-MILE-AN-HOUR BLAST FROM A WATER HOSE IN A SEA-WATER SPLASH TEST.



Lower Distribution Costs Sought

RAPID EXPANSION OF NEW MARKETS, MORE EFFICIENT METHODS OF DISTRIBUTION OF INDUSTRIAL PRODUCTS ARE AIMS OF SCIENTIFIC COMMERCIAL STUDIES MADE BY RCA RESEARCH GROUP

By E. W. Butler, Manager,
Commercial Research Dept.,
RCA Victor Division

EVERY time someone asks us what we do in the Commercial Research Department I get a little concerned about whether they fully understand the meaning of that word "research". Research is usually associated with test tubes, Bunsen burners, electrical laboratories, and lots of complex apparatus. But "research" isn't limited to the technical field. In fact you can "re" search or take a second look to pretty good advantage in a great many parts of your business.

Commercial research people are just ordinary commercial people who go about the job of taking a second look at our commercial problems. We define commercial research as the procedure of obtaining facts on which to base decisions.

We do not employ any crystal balls, fortune tellers, or clairvoyants. We do not attempt to predict when the war will end, or whether Dick Tracy will escape from his latest predicament. Similarly, there are many business problems which management cannot answer now. Some people believe that the immediate post-war era will witness the greatest boom known to mankind. Others think unemployment and high taxes will create a chaotic depression. The study of other factors, like inflation and free trade or high tariffs, can give you almost any answer you wish to prove.

In spite of these many perplexing questions, there are some sound conclusions which the business executive can get through research. That is, he can reach some sound conclusions if he will stop long enough to obtain facts and conduct tests through scientific procedures. Until now, the selling end of most

businesses has lacked the same rules and systematic procedures that have been accepted in accounting, manufacturing, and engineering. *It was to eliminate the use of personal opinion and substitute proved facts in policy-making that the management of our company set up a Commercial Research Department a little less than three years ago.*

We have great confidence in the post-war period, and the things we are doing are designed to help our company take full advantage of what may be the most interesting time in our country's history. For example, we believe that retail prices must be lowered and that this lower price must be obtained largely through reduced costs of distribution.

We know that we shall have many new products and that new markets can be opened for both old and new products. We believe that competition will be stronger and more aggressive and that our own sales methods must be revamped to cope with these new conditions.

But it is one thing to talk about lower prices and new markets and it is another thing to do something about them. Doing takes "know-how" and that is where Commercial Research fits in. We are trying to find out the "how" of our post-war job.

Perhaps you may wonder why RCA's Commercial Research Department is headquartered in Chicago when our home offices are located in New York and Camden, N. J. The explanation is simple. We market our consumer products through approximately eighty wholesalers and 15,000 retailers. Most of these distributors and all of the dealers represent independent capital. In Chicago, however, we have our own distributing house, with branches at Kansas City and Detroit. These are our only company-owned distributing points in the country.

It was recognized that Commercial Research needed a laboratory—not the kind of laboratory mentioned before with test tubes and Bunsen burners, but a practical sales laboratory where we could actually test our theories on lower distribution costs. To practice these theories on an independent distributor might not be too healthy, but there could be little wrong with trying out new ideas in a company-owned wholesale house where we have our own money invested. That is how we came to locate our commercial research activities in Chicago—in order that we might have a company-owned distribution unit at our disposal where we could put theories to actual test.

The success of stores following a simplified and economical pattern as exemplified by the voluntary or corporate chain is ample evidence of what can be done by streamlining distribution. Any manufacturer, like ourselves, who markets his goods through wholesalers and retailers finds a difficult problem when he sets about to see what can be done to reduce the cost of distributing his products. You cannot just say to these wholesalers and retailers that you have decided to cut the cost of distribution and therefore proceed to cut their discounts. Instead, you should know what constitutes an economical operation and what profit margin is required for such an operation.

Therefore, we are trying to determine through careful and painstaking study how to make our distribution more effective and less costly. We are conducting experiments to find out how to conduct a wholesale distributing business at the lowest possible cost commensurate with good service. This work includes time and motion studies exactly like those performed on the manufacturing production line. We have mechanized many operations in our warehouses; we have orig-

inated some new approaches to inventory control; and we have made considerable progress in streamlining accounting methods and eliminating unnecessary reports.

These theories have been put into actual operation and it is our objective to have a model pattern for distributor operation in the post-war period. We are also applying this same type of thinking to the problems of retailing our products. As a matter of fact, we have developed a pattern for self-service merchandising of records which is actually operating in one of the

wide survey of record buyers in which we interviewed more than 4,300 customers immediately after they had made a purchase. We found out what they had purchased, of our products as well as our competitors' merchandise; why they had purchased it and where they had heard about this particular record; how they had asked for the merchandise and how the clerk had responded, etc. So we are beginning to know the buying habits of our customers and how better to meet their needs.

We are also studying new mar-

So, in the post-war period it is possible that radio and other RCA radio-electronic products can find a new market in the railroad field. All of the information has been completely written down and is filed away for the day when we resume normal commercial activities. We are expanding these studies, too, into other fields. For example, we are just now starting on the packing industry. If planning can do the job—and we think it can—we are going to make a contribution toward keeping those plants busy that are now producing war materials.

Another section of our research deals with new products. Numerous new developments will be available for commercial use when this war is over, but before these new products can be put on the market it is necessary for management to know where the market is, how much volume can be anticipated, what prices are necessary to do a volume business, what styling will have the most appeal, etc. So Commercial Research is undertaking to study these new markets, in order that we may take full advantage of them in the post-war period.

Our business prior to the war was built predominantly on merchandise for the *home*. Because of the new products that have been developed in recent years there is every indication that *industry* will rank as our most important customer after the war. Generally speaking, we are much less familiar with selling merchandise to industry than we are with selling consumer products through wholesalers and retailers. Therefore we have set up a "test" selling procedure in one of our sales territories, which will get us the answers to this selling problem.

At the beginning of this story I said that the job of commercial research is the procedure for obtaining *facts* on which to base commercial decisions. It may strike you that we are going to a great deal of trouble and expense to dig up these facts and test our ideas. That is true, but it seems to be the only way to develop better methods, which will pay off in terms of more efficient distribution.



THIS MODEL SELF-SERVICE SHOP FOR PHONOGRAPH RECORDS, SET UP IN A CHICAGO DEPARTMENT STORE, IS UNDER EXPERIMENTAL DEVELOPMENT BY RCA VICTOR'S COMMERCIAL RESEARCH GROUP.

large Chicago department stores. Our tests with this super-market for records leave no doubt that the public likes the self-selection method of shopping for records. We have obtained material increases in sales volume over what this same department store got last year and over what other stores operated by the same company are now obtaining. It is quite possible that in the post-war period you may find record super-markets just like your grocery stores of today.

We are also getting acquainted with our ultimate consumer. For example, we conducted a nation-

kets that we may wish to reach after the war. Just as an example, one of our men spent almost a full year on an important railroad system, studying railroad methods and the possibilities of improving railroad efficiency or safety with the help of RCA products—present or future. On this assignment, he satisfied the ambition of every small boy of riding in the cab of a locomotive. By working in cabooses, in classification yards, in dispatchers' offices, in fact all over the system, he learned quite a bit about the railroad business and about its problems.

"For This We Fight" Looks Ahead

SERIES IN NBC UNIVERSITY OF THE AIR BRINGS TO MICROPHONE EMINENT LEADERS FROM ALL WALKS OF LIFE TO DISCUSS FUNDAMENTAL PROBLEMS FACING PEOPLE WHEN WAR ENDS



By Dr. James R. Angell

*Public Service Counselor
National Broadcasting Company*

THE radio program "For This We Fight", which the National Broadcasting Company started on the air June 5, may fairly be regarded as a landmark in radio history and indeed to some extent in our national history itself. Certainly it represents, so far as we are aware, the first time that during a great war a medium has existed which could bring directly to our citizens discussions of post-war aims and hopes by many of the country's most distinguished authorities. As planned, the series should enable citizens, literally by hundreds of thousands, to participate directly in organized discussions about the kind of world that they desire for the future.

The last great war left us a terrible object lesson of what may occur in a Republic like our own if the great mass of citizens have not been disciplined to face and under-

stand the peculiar problems which are created for all mankind at the conclusion of such a cataclysm. However much men may desire it, it is utterly impossible to go back at once or, indeed, to go back at all to the conditions which existed prior to the war. It therefore becomes imperative that intelligent thinking should be early devoted to an analysis of the problems which will inevitably have to be faced both at home and abroad when the present war comes to an end.

This does not mean that anyone lays claim to the ability to foresee exactly what is going to occur. Unavoidably, there is a wide area of uncertainty which only the event can resolve. Nevertheless, there are many aspects of the post-war issues whose existence can be confidently foreseen and for which it is therefore the part of common-sense to attempt to prepare. Moreover, there are many facts about those nations of the world which of necessity must participate in determining the character of the peace, with which it is highly important that our people should begin to acquaint themselves.

In lesser degree only, the same thing is true of our domestic problems. Most of us are painfully familiar with our own personal difficulties and not a few are aware of the perplexities faced by our communities, but relatively few of us have a truly national picture in mind and, in consequence, we are inevitably somewhat provincial in the attitudes which we take toward

the larger domestic issues.

The radio series which is now in question comprises a conscientious and thorough-going effort to bring out into the open in the most objective and non-partisan manner possible all the fundamental perplexities with which we shall be confronted the moment the fighting stops. Not only are we bringing to the microphone eminent leaders from every walk of life and from every part of the country to present their views on these issues, but we are also cooperating with two organizations which are peculiarly equipped to assist the nation in facing these problems.

Among the distinguished persons who have agreed to speak on the first series are the Secretary of State Cordell Hull; the Under-Secretary of State Sumner Welles; Isaiah Bowman, President of Johns Hopkins University; David Sarnoff, President of the Radio Corporation of America; Waldemar B. Kaempfert, Science Editor of the *New York Times*; John Foster Dulles, Chairman of the Commission to Study the Bases of a Just and Durable Peace on Behalf of the Federal Council of Churches; Senator Elbert D. Thomas, of Utah, Chairman of the Committee on Military Affairs; Senator Robert A. Taft, of Ohio, member of many important committees; Senator Warren R. Austin, of Vermont, member of the Senate Judiciary Committee; Rear Admiral Harry E. Yarnell, formerly Chief of Naval Operations; Elmer Davis, Director of the



OWEN ROBERTS



SUMNER WELLES



WARREN AUSTIN



DAVID SARNOFF



HARRY E. YARNELL

MATTHEW WOLL



O.W.I.; Matthew Woll, Executive Vice President, American Federation of Labor; James Carey, Secretary-General, Congress of Industrial Organizations; Eric Johnston, President of the United States Chamber of Commerce; James Lawrence Fly, Chairman of the Federal Communications Commission; Mr. Justice Owen Roberts of the United States Supreme Court; Nelson A. Rockefeller, Coordinator of Inter-American Affairs, and many others.

Topics of discussion cover a wide range, illustrated by the following titles: "Underwriting Victory," "Science and the Future," "Building the New World," "Making the World Secure," "Alternatives for War," "Food and Health in the Future," "The Role of Labor in the New World," "Peace through World Trade," "The Problems of Communication," "Education for Freedom," "The New Frontiers of Justice," "The Role of the Americas," and more particularly "The Role of the United States in the Post-War World."

The general subject of the second series is indicated by such topics as: "Business Plans for the Future," "The Promise of Tomorrow," "Labor's Part in War and Peace," "Farms, Food and Plenty," "Moving America's Goods," "Paying for Victory," "Housing America," "Public Works and National Welfare," "Distributing America's Goods," "Economic Security for

All," and "Guarding the Nation's Health."

Among the distinguished speakers being invited to participate in these programs may be mentioned: Senator Walter F. George of Georgia, Chairman of the Post War Plans Committee; Charles F. Kettering, General Manager of Research Laboratories of General Motors Corporation; Paul G. Hoffman, President of the Studebaker Corporation; Secretary of the Interior Harold L. Ickes; Assistant Secretary of State Adolph A. Berle; William Green, President of the American Federation of Labor; Philip Murray, President of Congress of Industrial Organizations; Wendell L. Willkie; Claude R. Wickard, Secretary of Agriculture; Herbert Hoover, ex-President of the United States; Juan T. Trippe, President of the Pan American Airways; George N. Shuster, President of Hunter College; Leroy A. Lincoln, President of the Metropolitan Life Insurance Company; Robert Moses, Park Commissioner of the City of New York; Leon Henderson, former Director of O.P.A.; Beardsley Ruml, Chairman of the Federal Reserve Bank of New York; Surgeon-General Thomas Parran, and several eminent representatives of our Allies among the United Nations.

The organization primarily concerned with the first series is the Commission to Study the Organization of Peace, which has been at work for some three years and has published important annual reports

which have attracted wide attention in the press. This group has had the benefit of probably the ablest scholarly authorities that the country affords in the several fields which are primarily involved. Furthermore, it has local group representation in several hundred centers throughout the United States. It is thus in a position to focalize thoughtful public opinion over a very wide geographical area.

James T. Shotwell, eminent historian and for many years the active head of the Carnegie Endowment for International Peace, is Chairman of the Commission. His intimate relations with our State Department over the years have afforded him unique opportunity to gain an appreciative understanding of our extraordinarily complex international problems. He has had extended experience abroad and has been in official contact with all the important organizations which have concerned themselves in the last few decades with the problems of peace. His presence at the head of the Commission affords the most convincing possible testimony to the absolutely objective and scholarly approach to the critical issues with which we are now confronted.

The Twentieth Century Fund, which has primary concern with the second series of programs dealing more explicitly with our domestic problems, is an institute for research in economic issues, having been established in 1919 and endowed by the late Edward A.

Filene. It is conducted by a board of distinguished trustees with an exceedingly able executive staff. It has made a specialty of important surveys affecting such matters as the tax problem, the national debt and government credit, the security markets, the budgeting of public health, labor and government, old-age security, the costs of distribution and the like. One has only to run down the list of names of the professional experts whom they have been able to employ to discover at once the outstanding character of the group. As a result, their findings have enjoyed from the first the widest recognition as authoritative and non-partisan. Mr. John H. Fahey is President of the Fund and Mr. Evans Clark, Executive Director.

It is perhaps too much to hope for complete success, but we are at least committed to making the effort to employ the new mass technique in radio in informing public opinion so that if possible we may as a nation avoid those negative and destructive consequences of World War I which came about through the hasty Post-War endeavors to enter into world commitments of which the public had been inadequately informed.

Needless to say, we shall not for a moment overlook the primary objective of winning the war, but we intend to do all that lies within us to make certain that this time we shall also win the peace. We are convinced that the chances for so winning the peace will be multiplied many-fold if we begin at once to give our best thought to the vast

problems which we shall presently have to solve and to the characteristic features of that future world for which our citizens are now giving their lives and their fortunes.

Should we wait for this discussion until victory is won and the binding ties of a common cause are partially dissolved in resurgent self-interest, we may well lose again the opportunity to turn the blood and destruction of today into tomorrow's world of enduring peace, new freedom and opportunity.

The two series are designed as far as practicable to be analytical and essentially educational in approach. That they may be as constructive as possible the effort will be made to avoid mere political argumentation and debate. The positive opportunities offered by victory will be stressed rather than the merely unfruitful negatives. Nevertheless, every effort will be made to present as wide a variety of significant points of view as possible. No one specific answer to any after-the-war problem will be urged nor will the prepossessions of any pressure group, political or otherwise, be promoted. Propaganda in any ordinary sense will be entirely taboo. The only propaganda will be that connected with the insistence on the importance of having our people give thoughtful attention to the problems inevitably involved in the Post-War world. Not only shall we be attempting to achieve this result through the spoken word on the air, but we are also resorting to the printed word whereby the substance of the broadcasts may be preserved for readers as well as

through the suggestion from time to time of stimulating and helpful bibliographies.

In conclusion, let me say that it is our firm purpose to make the broadcasts thoroughly practical and to avoid as far as possible merely vague generalizations. There will be opportunity for audience participation, not only through the concurrent discussion groups which will be brought together throughout the nation under the auspices of the cooperating organizations, but also through invitations to listeners to send in questions in advance with a view to having those which are obviously foremost in people's minds answered in the discussion periods on the air. We believe that these results will be greatly furthered by the cooperation of more than fifty nation-wide organizations that are participating in the creation of such listening and discussion groups. Outside the United States, the Canadian Association for Adult Education is arranging to make the series the study project of its discussion groups throughout Canada, numbering nearly 100,000 persons. A million leaflets are being distributed through all these groups and, as indicated above, each week's broadcast addresses are being published in leaflet form and distributed without charge to all who write for them.

As of the date of this writing 120 NBC stations are carrying the series, comprising so far as we are aware the largest radio network ever to broadcast any sustaining educational series.



ERIC A. JOHNSTON

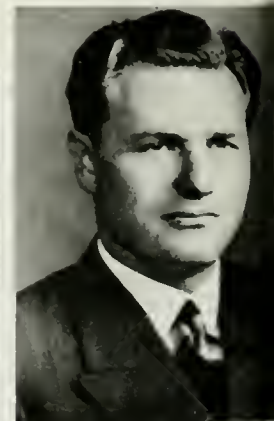
JAMES B. CAREY



J. F. DULLES



JAMES L. FLY



NELSON A. ROCKEFELLE



PRESENTATION OF THE ARMY-NAVY "E" FLAG TO RCA LABORATORIES AT PRINCETON, N. J. LEFT TO RIGHT—OTTO S. SCHAIRER, ALBERT ROSE, MAJ. GEN. ROGER B. COLTON, USA, AND REAR ADMIRAL HAROLD G. BOWEN, USN.

RCA Laboratories Win "E" Award

PART PLAYED BY RCA SCIENTISTS IN DEVELOPMENT OF RADAR IS TOLD AT PRESENTATION OF ARMY-NAVY EMBLEM TO PRINCETON GROUP—EMPLOYEES RECEIVE "E" LAPEL PINS

RADAR—detecting and ranging by radio—has changed the whole course of history, Rear Admiral Harold G. Bowen said June 17 at the presentation of the Army-Navy "E" Flag to RCA Laboratories, Princeton, N. J. The Battle of England was won, he said, because the British had radar to prevent the Germans from surprising the British planes on the ground, and he added, "you can be assured that radar has played a highly significant role in our successful operations to date."

Admiral Bowen spoke on the "E" presentation program with Gov. Charles Edison of New Jersey; Lieut. Gen. James G. Harbord, (USA, Ret.), Chairman of the Board of Radio Corporation of America; Maj. Gen. Roger B. Colton, USA, and Otto S. Schairer, Vice President of Radio Corpora-

tion of America, in charge of RCA Laboratories. The program was broadcast by NBC.

Referring to the story of radar as "astounding," Admiral Bowen said that in the history of technology, no art has ever developed so rapidly and no art was ever prosecuted at the same time in all branches—namely, research, development and production, as was radar. No such complex art was ever brought to a state of usefulness so soon, he said, and this was largely due not only to the position of technology in the United States, but first to the threat of impending war, and later, the war itself.

Paying high tribute to American scientists and research workers, Admiral Bowen continued:

"Ever since the invention of radar, the Navy and the great electronic laboratories have been in

constant and fruitful contact. Our associations with RCA in this respect have been of long duration and most satisfactory. Of the first two radar sets that were sent to sea in 1938, one was manufactured by RCA and the other by the Naval Research Laboratory. The great progress of radar in the Navy and its gradual acceptance as a new fundamental contribution to war, dates from that time. The first sets purchased by the Navy from a commercial concern were six in number and were supplied by RCA."

Speaking directly to the research workers, Admiral Bowen concluded:

"You who have been in the middle of things like I have, appreciate the enormous amount of technological development successfully completed before actual combat took place. You who participated in this effort made great contributions to

[RADIO AGE 15]



MAJ. GEN. ROGER B. COLTON PRESENTS ARMY-NAVY "E" LAPEL PINS DURING CEREMONY TO GROUP REPRESENTING EMPLOYEES. THEY ARE SOPHIE MELORO, GEORGE W. PARRY, CHARLES THIEL, ANTHONY CUOMO, AND GEORGE W. LECK.



REAR ADMIRAL HAROLD G. BOWEN AND MAJ. GEN. ROGER B. COLTON RECEIVE FROM GEORGE W. LECK (AT THE MICROPHONE) SIGNED PLEDGES FROM EMPLOYEES OF RCA LABORATORIES TO CONTINUE THEIR HIGH PERFORMANCE IN THE WAR EFFORT.

win the war long before the war started. To you we are indebted for our present technological excellence. But not content with what you accomplished before the war, you are still contributing to the war with conspicuous success."

General Harbord, in opening the ceremonies, pointed out that the "E" award was being "given, not for the production of instruments of war, but for the production of ideas that make such instruments possible.

"This is a war in which, in the long run, ideas forged on the anvil of science and research are more penetrating than bullets, more powerful than high explosives. Both as a company and as individuals, we are proud that ideas born in RCA Laboratories have had penetration and power in contributing to the development of radio, radar and kindred fields, and to the success and safety of America's fighting forces—on land, on sea, and in the air."

Governor Edison, introduced by General Harbord, who presided at the ceremonies, congratulated RCA Laboratories on winning the "E" award for high accomplishment in the war effort. "By winning it," he said, "you have also bestowed honor upon this State."

Governor Edison said that RCA Laboratories have become a pride of New Jersey. He referred to the Laboratories as a "great Electron

House—the gateway to a better world and a foundation of the future."

"The radio-electron tube has become the heart of all radio, and it is extending its usefulness far afield into industry and into the home," said Governor Edison. "The tiny electron has worked wonders in service to mankind and has established a great record in the war. It travels with the Fleet, with the Air Force, and with the Infantry, because this is a War of Science. On this historic occasion, we may look upon the "E" as a tribute to the electron and a tribute to the research men who have achieved excellence in putting the electron to work as one of the most powerful influences for the preservation of civilization."

Otto S. Schairer, Vice President in Charge of RCA Laboratories, assisted by Miss Mary Di Domenico and Albert Rose of the Laboratories staff, accepted the "E" flag from Admiral Bowen, "as an emblem of high accomplishment which will inspire us not only to continued but to greater efforts to win this war speedily.

"To that end, and to a victorious peace," said Mr. Schairer, "we pledge our utmost service to the Nation."

Major General Colton, as representative of the Under-Secretary of War, presented "E" lapel insignia to employees of RCA Laboratories.

They were received by a representative group, Anthony Cuomo, Miss Sophie Meloro, George W. Parry, Charles Thiel, and George W. Leck. In making the presentation, Major General Colton read the following citation:

"For meritorious and distinguished service to their country in its time of need, the Army-Navy Production Award is presented to the men and women of the Laboratories of the Radio Corporation of America. By their unflinching spirit of patriotism, by their acceptance of high responsibility, by the skill, industry and devotion they are showing on the production front of the greatest war in history, they are making an enduring contribution not only to the preservation of the United States of America, but to the immortality of human freedom itself."

GOV. CHARLES EDISON OF NEW JERSEY, SPEAKING DURING THE CEREMONY, SAID THAT RCA LABORATORIES HAD "BESTOWED HONOR UPON THIS STATE."



Commission to Harris

BLUE NETWORK ENGAGES NOTED AMERICAN COMPOSER TO WRITE HIS SIXTH SYMPHONY—WORLD PREMIERE NEXT SPRING



By Mark Woods

*President,
Blue Network Company*

IT ISN'T OFTEN that business takes time out to become a patron of the arts, because such radical departure from the long prescribed methods of commercial operation is not without a certain aspect of danger. For, with the arts belonging to the people, no staff of financial wizards, however invincible on home grounds, dares trespass on public domain without strong elements of reasonable doubt.

With this in mind, when the Blue Network commissioned Roy Harris, the noted American composer, to write his sixth symphony, we made no demands or even requests. It was reward enough when he assured us that the commission would enable him to compose a major choral symphony created around an American scene, and probably dedicated to the American service men.

Specifically, Harris will devote a full year to composing a work which will center around one of the many stirring events in the life of Abraham Lincoln—an event which will be as topical today, in this time of stress, as it was during Lincoln's presidency.

The world premiere will take place in the spring of 1944, with the new symphony played by the Boston Symphony Orchestra conducted

by Dr. Serge Koussevitzky. It will be heard over the Blue Network, through whose facilities Harris' Fifth Symphony, first Fifth to be composed by an American, was heard both here and abroad on February 27 in its world premiere.

The case of a corporate body becoming a patron of the arts has its interesting points. While on the surface one might not anticipate such a procedure, a bit of thought on the subject should reveal the fact that when an industry owes its existence to the good will of the public, (and what industry doesn't?) it isn't too far fetched to hope that it might meet some of its obligations to the public in other ways than those with which the organization is primarily concerned.

There are the dividends which cannot be measured against the dollar sign—such as subsidizing of group insurance, hospitalization, old age pensions, housing developments for employees, and last but not at all least, the cultural and spiritual enjoyment encountered with the presentation of a comprehensive work of art.

History tells us that the subsidy of the arts is nothing new. For centuries the creators have been carried through their trying days by patrons gathered from the ranks of royalty and riches. And that brings to mind the strange apathy which the patrons have ever shown toward lending assistance to the composer, truly the step-child of the arts. Certainly Mozart, and Schubert, and Beethoven, were anything but favorites of the gods, all of them taking little more than their tattered clothes to the grave. Tchaikowsky and Wagner were more fortunate to some extent, both having had what we now might term "sugar daddies." And America's record is not better—consider Stephen Foster.

It remained for Dr. Koussevitzky to make a strong case for the composer on the day of the announce-

ment that Harris was being commissioned by the Blue to write his sixth symphony. Dr. Koussevitzky, one of the greatest champions of all time for the cause of the living—living, mind you, not the dead—composer pointed out that when orchestras find themselves in hot water, they find themselves a financier, that once the musician survives his early martyrdom, he has easy sailing, and that the music goes round and round for the gain of all but lo, the poor serious composer. Without him the whole structure of music would dry up and blow away, yet he is permitted to shift for himself, to pine away in obscurity and, more to the point, insecurity.

Now, this is no brief for a grandiose plan to form a "feed the composer guild", but I am heartily in accord with Dr. Koussevitzky's theory that there should be some concrete interest in the practical ramifications of composing—permitting the composer to live. Lending an ear to the composer is all right as far as it goes, but it stops too far short of lending the pocket-book, or a reasonable facsimile thereof, toward the upkeep of said composer.

SERGE KOUSSEVITSKY (STANDING, LEFT) AND MARK WOODS JOIN ROY HARRIS (SEATED) IN EXAMINING ONE OF THE NOTED AMERICAN COMPOSER'S SYMPHONIC SCORES.



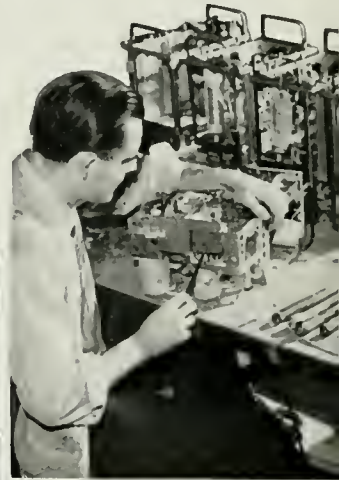
[RADIO AGE 17]

RCA WAR

EMPLOYEES OF RCA VICTOR DIVISION
"E" AND MARITIME COMMISSION AW



MANPOWER AND MACHINES COM-
BINE TO FASHION RADIO-ELEC-
TRONIC EQUIPMENT FOR WAR AT
RCA VICTOR'S CAMDEN PLANT.

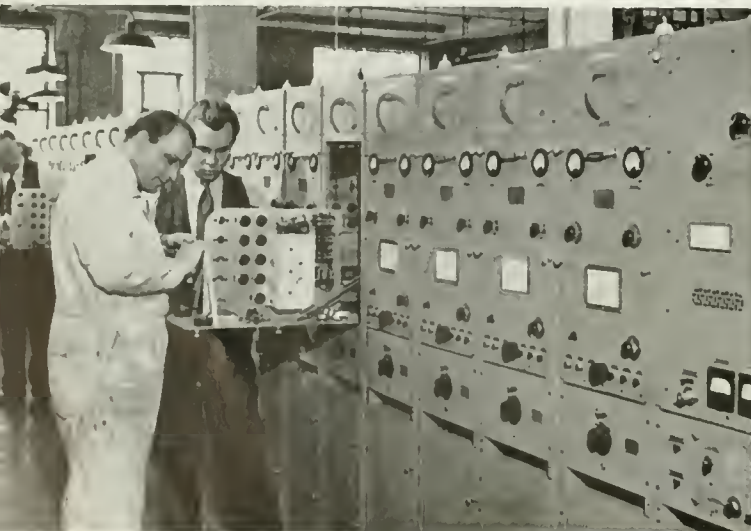


COMMUNICATIONS EQUIPMENT
RCA VICTOR'S CAMDEN PLANT
BOMBERS. TUBES THAT
PURPOSES ARE STABILIZED
AT RCA VICTOR'S HARRISON

THIS BLIND MAN'S SKILLED FINGERS ARE CONTRIBUTING
TO WAR PRODUCTION IN THE RCA VICTOR PLANT AT CAM-
DEN, N. J. ASSEMBLY WORK ON TRANSMITTER COILS
(BELOW) IS PERFORMED BY GIRLS IN THE NEW YORK
PLANT OF RADIOMARINE CORPORATION OF AMERICA.



THESE SMALL RADIO DIRECTION FINDER LOOPS
ARE BEING COMPLETED BY RADIOMARINE FOR
WAR SERVICE AT SEA.



RADIO AUTOMATIC ALARMS AT RADIOMARINE ARE
ADJUSTED BEFORE DELIVERY TO U. S. SHIPS.



PRODUCTION

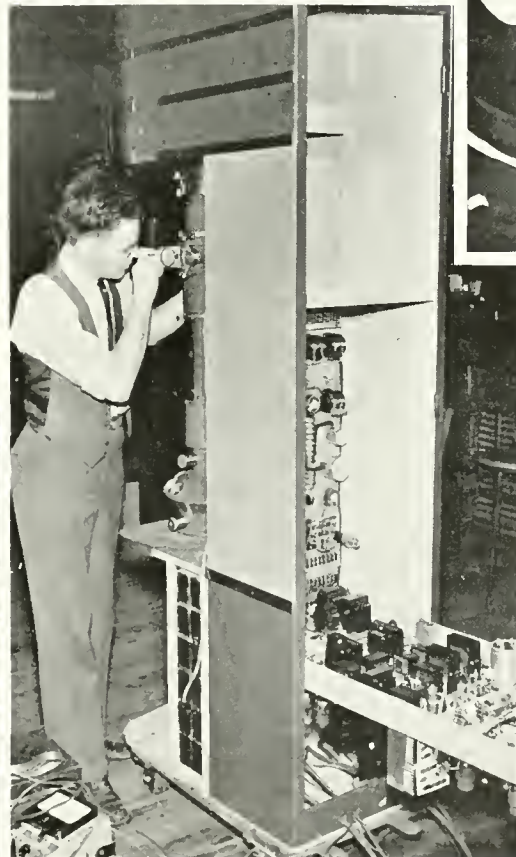
RADIOMARINE. WINNERS OF ARMY-NAVY
 GOLD MEDAL FOR CONTINUING OUTSTANDING EFFORT



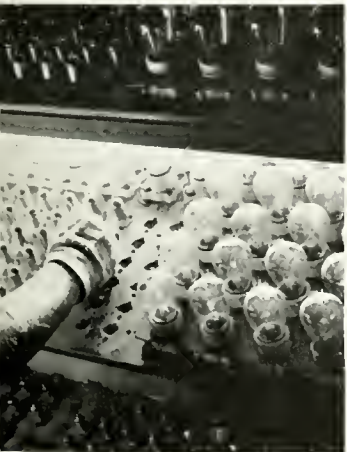
AS VITAL NEW TOOLS OF SCIENCE
 AT WAR, ELECTRON MICROSCOPES
 ARE ASSEMBLED (BELOW) BY RCA
 VICTOR FOR WAR PROJECTS ONLY.



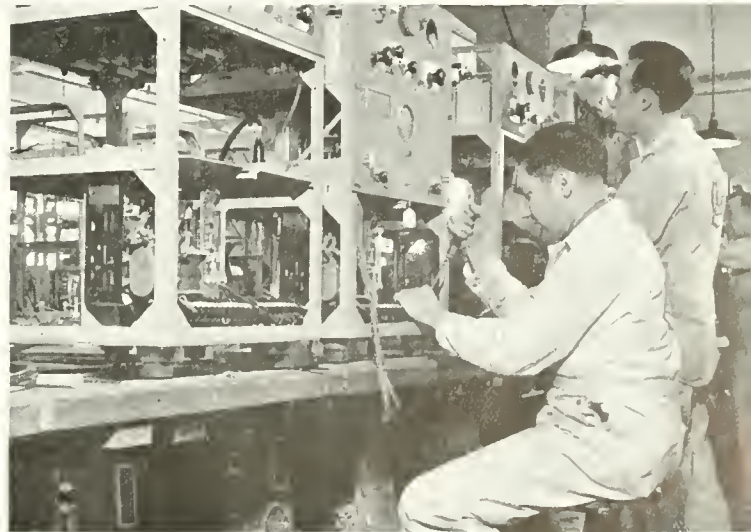
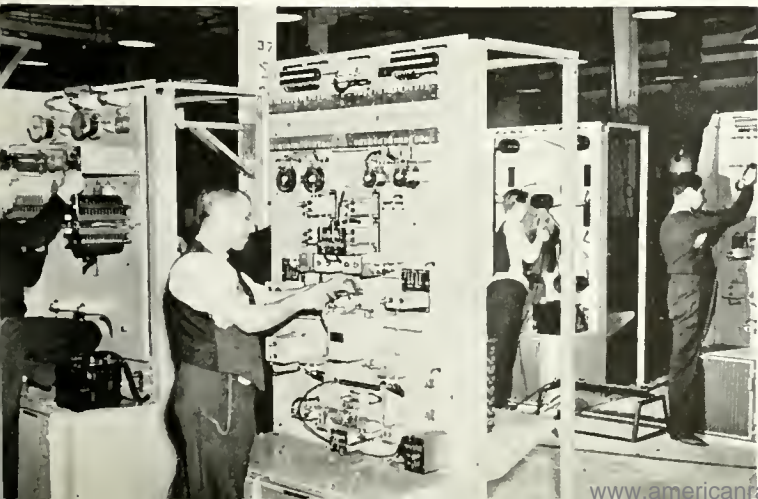
BEING TESTED (ABOVE) AT
 DESTINED FOR LONG-RANGE
 MANY RADIO-ELECTRONIC
 "AGING RACK" (BELOW)
 PLANT.



"SUBMERGED" WAS MARKED ON THIS BATTLE-DAMAGED
 COMMUNICATIONS EQUIPMENT (ABOVE) SENT TO RCA
 VICTOR FOR RECLAMATION. SEALING TOGETHER PARTS
 OF MINIATURE TUBES (BELOW) IS ONE OF MANY STEPS
 IN MANUFACTURING AT RCA VICTOR IN HARRISON, N. J.



RADIO TRANSMITTERS IN THE RCA VICTOR
 PLANT AT CAMDEN, N. J., PASS ALONG THE
 FRONTLINE OF PRODUCTION.



RADIOTELEPHONE UNITS FOR SHIPS SERVING IN
 THE WAR EFFORT ARE PRODUCED BY RADIOMARINE.



DURING HIS FIRST VISIT TO A RADIO COMMUNICATIONS MANUFACTURING PLANT IN CANADA, THE GOVERNOR GENERAL, THE EARL OF ATHLONE, (CENTER) STOPPED TO INSPECT THE WORK OF ONE OF THE EMPLOYEES IN RCA VICTOR COMPANY LIMITED'S MONTREAL FACTORY.

With RCA—North of the Border

ORIGINAL DEVELOPMENT AND ENGINEERING OF RADIO EQUIPMENT FOR CANADA'S ARMED FORCES CONTRIBUTE TO WAR EFFORT—PRODUCTION FACILITIES IN MONTREAL EXPAND

By A. Usher

*Advertising Manager,
RCA Victor Co. Limited,
Montreal, Canada.*

NORTH of the border, in the manufacturing section of Montreal, Canada's largest city, radio engineers, draughtsmen, laboratory assistants and office and factory workers in the modern plants of RCA Victor Company Limited, are working overtime—designing, developing and manufacturing radio communications equipment for the navies, armies and air forces of Canada and her sister nations in the British Commonwealth, and for other United Nations.

When Canada went to war, in September, 1939, it had already assembled a staff of technicians and radio communication experts that

would give the young Dominion a strong right arm in the radio field. The complete story of its achievements may not be told until after the war is won—but already it makes a remarkable wartime chapter that will thrill future generations of Canada.

The wartime achievements of RCA Victor Company Limited, and the phenomenal growth of the Canadian company until it has become the most important radio engineering and manufacturing organization in the Dominion of Canada, really began in 1936, three years before Hitler launched World War II by marching into Poland. That year RCA Victor, manufacturer of phonographs, records and radio receivers for domestic use, concluded what is now known in the company as the pre-expansion era and began its remarkable career in radio engineering and production.

The new policy, developed at a

time when few perceived the approaching war clouds and the danger to Canada and a free world of a Nazi-ridden Germany, was based on the important part that radio communications would play when those war clouds finally burst.

Immediate steps were taken to anticipate the needs of Canada, not only for radio equipment and the facilities to manufacture it, but also for the engineering skills, backed by imagination and vision in the radio communications field. It was a great ambition, but the company was determined that in this vital new field of modern warfare Canada would stand on its own feet and be self-sufficient. Consequently there began a period of company expansion, followed by recruiting of engineers and technicians, followed again by a general staff expansion and entry into serious production and development work in radio.

[20 RADIO AGE]



E. C. GRIMLY, HEAD OF RCA VICTOR COMPANY LTD., PINS THE MERIT AWARD DECORATION ON THE LAPEL OF MAJOR GENERAL LA FLECHE, MINISTER OF CANADA'S NATIONAL WAR SERVICES.

As war drew nearer, RCA Victor steadily increased its facilities, improved its techniques, until when war finally came, it occupied a leading place in Canadian radio. It had built and installed radio transmitters across Canada for the Canadian Broadcasting Corporation and important private stations. It had served the quickly-growing airways with special transmitters and cone of silence markers, 100 per cent designed in the company's engineering laboratories just before the war.

For four consecutive years, before devoting its facilities entirely to war production, it produced and sold more radio receivers than any other manufacturer in Canada. The company was steadily forging a fine reputation as a designer and maker of peacetime communications equipment.

In December, 1938, eight months before the war, the company established a new engineering department and set it to work in a small temporary building on the Montreal factory site. Meanwhile new modern quarters were being built. First job of this new department was to build two 50,000 watt transmitters for C.B.C.

During the summer of 1939—those last fateful months—a new,

two-story building, glass-walled, fully-equipped with the latest in machines, laboratories and test equipment was completed and the engineering and manufacturing staff moved in. Then in 1940 additional space was needed to keep up with expansion of manufacturing facilities and a two-story, temporary type building was erected to accommodate shipping departments, space in the manufacturing buildings formerly occupied by these departments thus being made available for increased production. Growth continued, however, and with it the need for still more space. So, in 1941, a third building was constructed, a two-story wing connected to the one completed in 1939, which provided still greater facilities for the manufacture of war products. Finally, in 1942, it was decided that still another major addition would have to be made if RCA Victor was to carry the rapidly-increasing war load. Construction of another building, eliminating 30,000 square feet of obsolete space and replacing it with 100,000 square feet of new space, commenced in the summer of 1942. The new wing was completed in 1943. With this building occupied the company has approximately 335,000 square feet of manufacturing space, of which 315,000 is devoted solely to the production of war equipment.

When the Canadian Government reduced production of civilian radio equipment in October, 1941, the company had already changed its plant to an all-out war basis. This change-over was completed without interference with war production

which was already under way and involved no shut-downs or delivery delays, even though it was necessary during this period to change techniques from mass production of domestic sets to mass production of highly technical war equipment.

Great as was the change in this radio organization during the last three years of the thirties, in the face of a threat of war, it has been even greater since hostilities commenced. Today the company has doubled the percentage of women it employs, and finds women workers as proficient as men in the type of work they are doing. It has withdrawn its staff of radio field salesmen and delegated to them the work of procurement, teaching them to serve as expeditors. The space formerly occupied by the wood-working cabinet factory is now used for war equipment and a small plant in nearby Verdun accommodates the wood-working section, which is also engaged in war work, making shell containers, mess tables, etc.

Figures may be cold, but those which may be published without betraying military secrets give a graphic picture of the progress made by this Canadian member of the RCA Family. Net sales during 1942, for instance, were three and a half times the 1936-37 average. For 1943 it is estimated they will be more than six times as large—practically all war production. The payroll has grown correspondingly. In 1936 there were 717 employees, in 1937 there were 747. By September, 1939, the total had grown to 875, a year later it was 1,198 and

IDEAS FOR IMPROVED PRODUCTION AND INCREASED EFFICIENCY COME FROM THIS GREATER WAR PRODUCTION COMMITTEE. SEEN HERE IN REGULAR SESSION.





CANADA'S WOMEN ARE PLAYING AN IMPORTANT PART IN WAR PRODUCTION. OF RCA VICTOR WORKERS IN MONTREAL, 46 PER CENT ARE WOMEN.

in 1941 the figure was 1,588. Last year 1,959 employees worked in the Canadian plant and the total for March of this year was 2,563. Since 1936 the staff has increased three and a half times.

Figures, however, do not begin to tell the story. New buildings, increased personnel, steadily increasing shipments of communication and sound equipment—all these are the exterior and visible signs of the company's progress since 1936. And all of these constitute an important company contribution to the winning of the war. But even more important, and increasingly so, are the contributions being made through the company's original development and engineering work which is far greater in quantity, and far higher in quality than the actual size of the company would indicate.

Engineering and designing sections of the company are staffed by approximately 70 engineers, draughtsmen, model makers and laboratory assistants. With this engineering organization, admittedly the finest in the Canadian radio industry, the company is now completely equipped to handle all its own technical problems, initiating its own developments and pioneering in certain fields and is qualified, on the basis of accomplishment, to rank as a working partner in the RCA Family.

As a tribute to the progress and

high professional respect enjoyed by RCA Victor, it is interesting to point out that the company has been retained as consultants not only to conduct technical surveys but also to engineer, design and develop communications systems and equipment.

Equipment designed, developed and manufactured by the engineering products division, for instance, is used by the Ferry Command, the Canadian Department of Transport, Trans-Canada Air Lines, the Royal Canadian Navy, the British Admiralty, the Royal Canadian Air Force, the Royal New Zealand Air Force, the Chinese Government, and other Allied forces, including those of the United States. Much of it is still on the secret list, some of it only partially so. And enough may be told to indicate the importance of the contributions this member company of the RCA Victor family is making to the United Nations' war effort.

A pre-war development, still in extensive use all over Canada, including the Yukon skyways between Edmonton and White Horse and along other Arctic air routes, is the system of airport traffic controls designed for Canadian civil airways. Of distinct Canadian design, these fan and cone-of-silence markers have saved many a plane in the north country. A 500 watt, low frequency transmitter, developed and manufactured by the company, is

also used for communications along the northern route.

The company has, since the war, originated radio transmitter-receiver intercommunication equipment for trainer planes and an improved radio-transmitter-receiver for fighter aircraft. The latter equipment is designed for army co-operation, communication from fighter craft to its own base, from plane to ship or for tactical use in the air squadron with plane-to-plane communication. Faced with a specific problem of designing a high-powered set that would be useful at high altitudes, the company's engineers originated a high power transmitter for bomber aircraft with a wider frequency range, more power than previous sets and usable up to extremely high altitudes. This is believed to be the only high-powered set in the world that can be used at such altitudes. Six months' development work were needed to solve the altitude problem alone.

Known to United Nations forces on all fronts is the Canadian designed AT3, regarded as an outstanding ground and mobile transmitter. Designed originally by RCA Victor for the Royal Canadian Air Force it is also used by the Canadian army overseas, the Ferry Command, and various United Nations air forces, including the Chinese. This was RCA Victor in Canada's first big development job and with it the company won its spurs in the communications war.

After more than a year's development and experimental work the company produced a precision frequency measuring instrument for both air and ground use. Of advanced design, smaller and lighter than previous models, this compact set possesses accuracy equal to that of the best previous designs. When the United Nations began preparing to pass from the defense stage to attack, the company also designed a portable hailing equipment, useful for landing parties. Men wading ashore may carry a piece of equipment in each hand and maintain communications with their headquarters aboard ship.

Unusual and extremely efficient, too, is the "super switch-board" or multiple remote control and tone-keying equipment through which it

is possible to control up to 20 transmitters. Developed for the Royal Canadian Navy this set is used at shore stations and provides unification of big communications establishments.

The company's transmitter developments attracted interest outside the Canadian and British armed forces and as a result Camden entrusted to the Canadian company the designing of a 2 KW medium frequency telegraph transmitter to their specifications. The first sets manufactured from this design went to Africa for air transport use.

There are numerous other radio developments born in the modern engineering laboratories of RCA Victor in Canada. But the most spectacular of all, to date, is the 100 KW low frequency telegraph transmitter designed for the Royal Canadian Navy for long-distance, point-to-point transmission. This is a 100 per cent RCA Victor of Canada development; it is sensational in operation and has been adopted by the British Admiralty. Its post-war possibilities are unlimited. Its details are for the present at least, strictly secret.

RCA Victor in Canada also leads the Dominion in antenna design. Several engineers able to engineer any type of antenna for any frequency are on the development staff and they have designed, built and installed broadcast and high frequency directive antenna systems across the Dominion. Among their outstanding achievements is the development of an adapter—which bears the engineer's name—involving a method of greatly improving radiation efficiency of vehicle and tank antennas. This adapter, mili-

tary authorities claim, almost doubles the output of present equipment. Tank commanders in Africa proved its value during the Libyan and Tunisian campaigns. In the antenna field, in addition to carrying on its own development and engineering work, the company does designing and developing for others in the Canadian radio industry.

Another important job was the revision of an English-design vehicle wireless set which, in its improved form, is now being used by the British and Canadian armies and also for lend-lease accounts in China and Russia. This equipment is being manufactured in large quantities by RCA Victor of Canada.

A number of new features were introduced when the Canadian designers took over the British set. The results of their labor are contained in a set which is easier to operate, gives better communication and has lower battery drain. The latter point is of particular importance. On the African desert, engineers pointed out, tanks used to go in hiding sometimes for as long as two weeks. They had to remain silent but be in constant touch with their headquarters and able to receive all messages. At the same time they were unable to run their motors to charge their batteries, and had to have sufficient juice in the batteries to start up when the orders came to move. Battery drain, therefore, was a matter of urgent importance and the new set, by overcoming this problem, helped in winning the Battle of Libya.

On another development engineers in this section spent two

years improving tank set components, originating a new antenna and new base for antenna to swing, enabling it to take more punishment and at the same time doing away with the need for rubber. It is now hoped to do away entirely with rubber from the whole set. Other improvements engineered include increasing range without increasing battery consumption, a new armored fighting vehicle set which will do much more than previous equipment in less space. Both these contributions will add greatly to peacetime radio after the war.

All these engineering developments are important. Through them RCA Victor in Canada has contributed to the fighting strength of the United Nations. But behind the development program, behind the skilled engineering and design, there rests the great manufacturing facilities of this producing organization which is daily increasing its capacity and output. Radio communications equipment manufactured in this Montreal plant was used in the deserts of Africa; it has accompanied Commandos on their raids into Norway and it went with the Canadians to Dieppe. It has served, too, in the Pacific, with the forces of the Australians and New Zealanders and it is helping the Russians and the Chinese.

As important as its ability to design and improve is the company's capacity to produce. RCA Victor Company Limited has during four years of war justified all the efforts that went into its pre-war expansion.

Buy War Bonds

THIS BUILDING, WITH A TOTAL AREA OF 335,000 SQUARE FEET OF MANUFACTURING SPACE, IS THE PLANT OF THE RCA VICTOR COMPANY IN MONTREAL, CANADA. TO PERMIT GOOD LIGHTING, IT IS DESIGNED IN A "U" SHAPE.



DAYTIME PROGRAMS CHANGE

Blue Network, After Survey of Radio Listening Habits, Introduces Broadcast Innovations in Schedule — "Why" of Success is Outlined



By Edgar Kobak

*Executive Vice President,
Blue Network Company*

BLACK CATS and an umbrella opened in the house bring bad luck—and a daytime radio program which does not portray the everlasting agonies of a beautiful female is doomed to defeat.

"Nonsense," said the Blue Network, which refuses to believe in superstitions. "Three of a kind—all superstitions. Women do not turn pale with fear if they hear a variety or musical program while the sun is shining. Let's find out the truth."

It was in this mood that the Blue set out to conduct a survey of daytime listening habits which would give a complete picture of the daytime radio audience. Urging us on were the advertisers who wanted to take advantage of the lower time cost of the daytime hours but hesitated to compete with the dramatic serials, many of them seemingly as well-established as Rommel once appeared to be in North Africa.

With the brains of our program department teeming with new ideas for daytime programs, and several programs which had broken with tradition already on the air, we determined to get the housewife's opinions about what she hears during the daytime hours, the types of programs to which she listens and, incidentally, the effect of wartime activities on listening. Our questions were answered by 5,000 house-

wives in 77 cities, towns and farm communities.

Our findings dumped in the lap of the daytime serial heroine the most difficult problem of her career. Because we backed up our contention that a considerable proportion of the programs currently broadcast are wasted on deaf ears and that there is a demand for a new type of program. The result of the survey, in short, gave the "why" of the success of the Blue's innovations—to mention only two—"Breakfast at Sardi's," sponsored coast-to-coast by Kellogg and Minute-Man Soup, and Coca-Cola's "Morton Downey."

How did we arrive at these conclusions? Here are the facts. While 79 per cent of the total network commercial daytime hours are devoted to dramatic serials, only 50 per cent of the total listening time is devoted to this type of program. Only 53 per cent of housewives listen to daytime serials, and 36 per cent of all housewives and 28 per cent of those who do listen to the serials think there are too many on the air. The fact that one per cent think there are too few might be of interest to a psychiatrist.

In contrast, 20 per cent say there are too few serious music programs, 12 per cent say there are too few popular music programs, while only 10 per cent say there are too many of the latter.

That daytime listeners want new and varied types of entertainment can be seen in the discrepancy between daytime hours and total listening time devoted to serials, and the demand for a different type of program.

The findings on the most popular types of programs—81 per cent of radio families listen to news, 53 per cent to serials, 49 per cent to popular music, and 32 per cent to serious music—indicate that sponsors of daytime serials fail to reach the 36 per cent of women who use their sets daily but listen to other types of programs.



MORTON DOWNEY, SHOWN HERE IN HIS CHEF'S GARB, IS SCORING A SUCCESS IN ONE OF BLUE NETWORK'S NEW PROGRAMS.

In line with our consistently-stated belief that "the program's the thing" was the finding that nine out of ten radio families turn on their sets at some time during the day, for an average of 2.6 hours, but, contrary to general opinion, only 19 per cent of the women leave their sets tuned to one station and 51 per cent listen only to certain programs.

With regard to the effect of wartime activities on daytime radio habits, 26 per cent of the housewives say they are listening more to their radios during the daytime. Another interesting discovery is the fact that 7 per cent of the radio homes now have men engaged in night shifts who were not so employed a year ago, indicating that nighttime programs have lost 7 per cent of the male audience—now available at some time during the day.

Our survey did not attempt to prove that the Blue Network is the best advertising medium—in fact, we asked no questions about station or network likes and dislikes. We merely grew impatient with what we considered an unjustified taboo and chose the most forthright method of overthrowing it. The findings are available to all networks and agencies alike. We did, incidentally, bolster our reputation as an organization which is not afraid to think along new and untried paths in a business which too often bows to tradition.

"SEWING" BY RADIO SHOWN

New Electronic Machine Developed by RCA Laboratories for Use In Fabricating Plastic Materials Demonstrated to War Manufacturers

AN electronic "sewing" machine that uses radio-frequency current instead of needle and thread to join plastic materials was demonstrated to war equipment manufacturers and members of the press for the first time June 2 at the Camden, N. J., plant of the RCA Victor Division of the Radio Corporation of America.

Although the new apparatus was primarily conceived as one of many post-war radio-electronic developments, the demonstration was held to show its possible applications to war equipment production. An experimental model was used, as developed by C. N. Hoyler and R. A. Bierwirth, under the direction of Dr. George H. Brown, research scientist of the RCA Laboratories at Princeton, N. J.

While the machine is still in the developmental stage and has not been placed in production, Fred W. Wentker, manager of the electronic apparatus division of RCA, pointed out that news of its development has already attracted considerable notice among many war manufacturers. Some of these war manufacturers are hopeful, he said, that

the new device will help break bottlenecks in production where conventional processing methods have been found inadequate to meet urgent war needs.

Instead of needle and thread, the RCA Electronic "Sewing" Machine uses radio-frequency current; instead of ordinary woven cloth, it works on thermoplastics and thermoplastic coated fabrics—the new synthetic materials that are finding wide application in the making of raincoats and caps, weather balloons, and in the packaging of many types of food and oils, to mention only a few.

It "stitches" a thin solid seam that is air- and water-tight, creating a bond that is stronger than the material itself. It does this simply and easily, thus promising to overcome many fabrication difficulties involved in usual processing methods as applied to thermoplastics.

The radio sewing machine was created to meet a definite need in the sheet plastics industry. Thermoplastics, tough resilient material, can be rolled into large cloth-like sheets or can be used to form an air- and water-tight coating on



A TOBACCO POUCH MADE OF THERMOPLASTIC MATERIAL IS "STITCHED" TOGETHER IN A DEMONSTRATION OF RCA'S ELECTRONIC SEWING MACHINE.

standard fabrics. When cut into patterns, the sections are usually put together by sewing with thread, by cementing, or by fusing with externally applied heat. None of these methods has been found to be entirely satisfactory.

Heat fusing has always appeared to be the most desirable method. The hot-iron methods which have been employed, however, have proved far from satisfactory for many applications because of the difficulty in maintaining uniform temperatures, because the materials stick to the heating plates, and because the materials tend to extrude when pressure is applied.

By generating heat inside the material itself and by using a minimum of pressure, RCA's electronic sewing machine eliminates these difficulties, according to Dr. Brown.

This is what happens. The material to be sealed, or "sewed," is fed across a table top through two small rollers which serve as the "needle."

A small radio-frequency generator is connected to these rollers. As they pull the material along, they cause a concentrated beam of radio frequency current to pass through the material. Heat is generated by a dielectric loss, or, in other words, by the struggle of the current to get through the closely packed molecules of matter which compose the material. The heat, together with a very light pressure, causes thermoplastics to fuse, or weld, in a tight bond.

RADIO-FREQUENCY CURRENT TAKES THE PLACE OF NEEDLE AND THREAD IN THE ELECTRONIC SEWING MACHINE (LEFT) AS DEMONSTRATED BY RCA LABORATORIES.

THIS DEVELOPMENTAL MODEL (BELOW) OF THE ELECTRONIC MACHINE, WHICH IS BEING GIVEN NUMEROUS PRACTICAL TESTS, LOOKS LIKE CONVENTIONAL TYPE.



Somewhat similar in appearance and operation to the conventional sewing machine, the electronic device derives its heating current from a low-power oscillator. A small electric motor with foot pedal control drives the rollers. Ordinary alternating current of 110 volts supplies the power for both the motor and the oscillator.

Laboratory tests, according to Dr. Brown, have revealed the elec-

tronic machine as an effective instrument for the handling of such thermoplastics as vinylite, koroseal, and pliofilm. All three of these materials are being used in a widening field of practical applications.

Other methods of applying the same general principle to the problems of fabricating thermoplastics are under development in RCA Laboratories. It is possible, for instance, to use specially arranged

electrodes in presses to seal the seams of a garment, or other product, in a single quick operation.

Development of the electronic sewing machine is another advance in a new field, which RCA scientists call "radiothermics." Heat generated by radio-frequency currents can be used in case hardening, annealing, welding, riveting, gluing, laminating, and in drying of wood, paper, textiles and other materials.

RCA LIFEBOAT SETS SAVE 84

Crew from SS Stag Hound, Using Combination Radio Telegraph-Telephone Units After Ship Is Torpedoed in South Atlantic, Is Rescued

RADIO'S vital war-time role of saving life at sea is sharply emphasized in the story of 84 men who recently returned to New York after their ship, the *SS Stag Hound* of the United States Lines, was torpedoed and sunk off the coast of South America.

Adrift several hundred miles at sea in two lifeboats, which lost sight of each other, the *Stag Hound* crew maintained voice communication by radiotelephone, and contacted four potential rescue vessels in the two days that elapsed before they were picked up.

Both the *Stag Hound's* Captain, Harold H. McCaw, and radio operator, Edward F. Wall, credited the lifeboat's special radio equipment—a combination radiotelegraph-telephone unit, powered by hand-cranked generator—with effecting their rescue.

The story was revealed in a letter G. F. Ravenel, Vice President of the United States Lines, owners of the *Stag Hound*, wrote to Charles J. Pannill, President of the Radiomarine Corporation of America which built and installed the lifeboat radio apparatus.

"I think you will be interested in knowing that the Captain and the entire crew of one ship that was

torpedoed arrived in New York today," said Mr. Ravenel. "The Captain reports that the radio sets performed perfectly. They were able to establish telephone communication between two lifeboats which were so far separated that they were out of sight even in the daytime. They contacted by use of Morse code four ships, giving their position. These ships decided amongst themselves which one was nearest and which should effect the rescue. This was accomplished two days later, but in the meanwhile the lifeboats were able to give their exact position every four hours.

"On the whole, the performance could not have been better, and it is Captain McCaw's opinion that these radio sets may very well have been the means of saving the lives of all men in both lifeboats. We desire to thank you for this contribution to the saving of life at sea during these times."

Wall, the radio operator, who served in the Navy on a destroyer in World War I, also was high in

his commendation of the lifeboat radio equipment. He added:

"Too much praise cannot be given the simplicity and efficiency of the type set we had in the two lifeboats. The beauty of these sets is that they can be worked by telephone or telegraph so that in case the operator is missing or injured anyone in the lifeboat can work the set. Another feature—no batteries have to be bothered with, and naturally the set could be used day after day without its source of power being reduced."

Guy Addresses Engineers

Frequency modulation, used in combination with the ultra high frequencies, provides so many points of superiority over amplitude modulation on medium frequencies, for many public and private radio services, that its use will be rapidly extended after the war. Raymond F. Guy, NBC Radio Facilities Engineer, told the combined conference of the Institute of Radio Engineers and the American Institute of Electrical Engineers, meeting recently in Cleveland. Guy's paper was titled "FM versus AM on the Ultra High Frequencies."

RADIOMARINE EMPLOYEES SIMULATE EMERGENCY CONDITIONS IN DEMONSTRATING LIFEBOAT SET, A COMBINATION RADIO TELEGRAPH-TELEPHONE UNIT.

[26 RADIO AGE]



RCA DEVELOPS STETHOSCOPE

*Highly Sensitive Instrument Introduces Many Sounds of the Human Body
Doctors Have Never Been Able to Hear—Clarity and Range Increased*

A NEW acoustic stethoscope has been developed in RCA Laboratories so sensitive in its range of hearing that it introduces many sounds doctors have never heard.

In much the same way that the RCA Electron Microscope is opening unseen worlds in the submicroscopic realm, this stethoscope, developed by Dr. Harry F. Olson, promises to widen the study of sound within the human body. The beat of the heart, normal or abnormal, respiratory rattles, peristaltic squeaks, murmurs and groans, all are amplified to facilitate diagnosis, based upon the structure of sound.

It has been found that the sounds of the body range from 40 to 4,000 cycles, the full range of which are covered for the first time by the new stethoscope. Above 4,000 cycles most of the sounds in the body are so weak that they are masked by the ambient random noises generated within the body. It is explained that respiratory sounds such as wheezes and the rushing of air are of a complex nature. Therefore, in designing the new stethoscope to gain maximum intelligence the instrument transmits all frequencies over the range from 40 to 4,000 cycles without attenuation or discrimination. The ordinary stethoscope has an effective range between 200 and 1,500 cycles.

The advantages of the new stethoscope, according to Dr. Olson, come from the fact that it couples the ears of the diagnostician much more closely to the human body through the employment of a reversed taper tube which results in greatly improved matching of the acoustic elements. Thus, sounds

produced by the organs of the body are heard more clearly and their range is greatly widened.

In fact, so many new sounds are heard with the instrument, Dr. Olson said, that a filter is built into it to enable the user, by simply turning a knob, to limit the range at will. This was done at the suggestion of one of the testing physicians in order to prevent confusion until the meaning of the new sounds can be determined through further study. It also makes the stethoscope a more flexible tool of the doctor.

In discussing the practical application of the acoustic stethoscope, Dr. Olson pointed out that the conventional type of instrument is not effective with the lower sound frequencies of the heart or with the higher frequencies produced in the chest. The new stethoscope is expected to be invaluable by making these frequencies available to the physician.

"By the application of modern acoustic principles, the new stethoscope has been developed in which the disadvantages of existing stethoscopes have been eliminated," said Dr. Olson. "As a result, the performance of the new stethoscope is far superior to existing instruments."

Detection of weak sounds by means of an ordinary stethoscope is limited, according to Dr. Olson, by the presence of noise which blankets the desired sound. "For the most part," he said, "such extraneous sounds are caused by the movement of clothing, and room noises, most of which are air-borne. The new stethoscope is insensitive to air-borne noise because



DR. HARRY F. OLSON, LEFT, EXPLAINS TO H. D. BENSON, LABORATORY TECHNICIAN, THE PRINCIPLES OF THE NEW ACOUSTIC STETHOSCOPE.

of the high mismatch between the air and the stethoscope."

"The ordinary acoustic stethoscope," Dr. Olson continued, "is one of the most useful instruments which the physician uses in mediate auscultation (study of body sounds by the stethoscope). By means of the stethoscope the physician is able to study sounds produced within the heart, lungs, stomach, intestines, or other portions of the body, and to determine whether normal or abnormal conditions exist as indicated by sounds. Obviously, it is the structure of the sound, which involves the intensity, the fundamental frequency, and the harmonic components, that makes it possible to diagnose normal or abnormal conditions by auscultation."

The stethoscope was invented in the early years of the Nineteenth Century by a French physician, R. T. H. Laennec. Until now, there has been very little advance in its basic design.

Dr. Olson has been in charge of RCA's acoustics research as related to radio, sound motion pictures, and phonograph sound pickup and reproduction for many years. He is recognized as one of the country's leading authorities on acoustics.



DR. A. D. SUMMERS, COMPANY PHYSICIAN, WITH THE AID OF A NURSE, TESTS THE NEW STETHOSCOPE ON ONE OF THE RCA LABORATORIES EMPLOYEES.



DAVID SARNOFF, PRESIDENT OF THE RADIO CORPORATION OF AMERICA, ADDRESSES SEVERAL HUNDRED PERSONS AT THE ANNUAL MEETING OF STOCKHOLDERS.

NEW ROLE SEEN FOR RADIO

Sarnoff. Speaking at Stockholders' Meeting, Says Radio Will Electronize the Industries of Peace as It Has Instruments and Industries of War

ENVISAGING outstanding opportunities for American enterprise in the postwar period, David Sarnoff, President of Radio Corporation of America, addressing the annual meeting of stockholders on May 4, said that radio will electronize the industries of peace as it has electronized instruments and industries of war.

Research and invention coupled with lessons learned in the war, and the accumulated demand caused by obsolescence, all will be released to re-cast radio for its new role in a world, which Mr. Sarnoff described as having been made smaller by aviation and by radio itself.

"Radio is not primarily an instrument of war," said Mr. Sarnoff. "It is above all things an indispensable implement of peace and culture. In our Country it is a servant of the people, regardless of geography, of age, or creed, or color. In the interest of the Nation and its welfare, we must not lose sight of the part radio will play in the future. Although we must first serve the present—lest there be no future—it is our duty to look beyond the horizon of war to survey our task in helping radio to meet its post-war responsibilities.

"With peace will come new indus-

trial opportunities and world-markets, new services and greater efficiency enhanced by wartime lessons in conservation. These opportunities will bring problems that will call for clear thinking not only nationally but on an international scale as well.

"Radio is the one agency of mass communication which can bring all people everywhere within earshot of the great problems of peace and of the social and economic solutions that will be proposed. The war has proved the effectiveness of international short-wave broadcasting. Radio has won distinction as 'the Voice of the Freedoms.' It can be the world-wide voice of peace for whatever agency the victorious United Nations may agree to set up to preserve the peace of the world. The promotion of peace and good will, the reconstruction of the world, and the competition for new markets will require still greater expansion in this field."

While war has brought terrific energy to many fields of discovery and development, Mr. Sarnoff said that none has felt the impact more than radio. Predicting that radio instruments will emerge from the war almost human in their capabilities, he said that they would

possess not only a sense of direction, but a sense of detection that will open new avenues of service. For example, the radio direction finder, which heretofore had only an ear, now also has an eye.

"The safety of aviation will be greatly enhanced, for the aviator will be able to see the ground through clouds or darkness," continued Mr. Sarnoff. "By the scientific application of the radio echo, the radio 'eye' will avert collisions, while the radio altimeter will measure the altitude and warn of mountains ahead or structures below.

"American inventive genius contributed much to the creation and perfection of the great offensive and defensive weapon, known in the United States as radar. The word means radio detecting and ranging. I am happy to report that RCA Laboratories have been in the forefront of radar research and development. The radio-electron tube was the key to its application. To prevent information from reaching the enemy which might facilitate their development of radar, news concerning it was restricted in the United States until recently. I believe it now can be said that by the use of radio and especially radar, the United Nations have been able to avert many disasters, save precious lives, and inflict severe damage upon their enemies.

"Television and radar add new dimensions to radio; wireless telegraphy was its first dimension, and broadcasting its second. Application of these new developments of radio to peace, opens new fields of service on land, at sea, and in the air."

The challenge to radio, however, does not all come from science, Mr. Sarnoff said, for radio has vast social as well as scientific and economic implications. For instance, electrons operate in response to the changeless laws of nature. But the performance of radio is regulated by the laws and actions of men—political laws which are subject to change.

"Freedom of the air, whether in broadcasting or television, ranks in importance and responsibility with freedom of the press," said Mr. Sarnoff, "and freedom of enterprise, in the case of radio joined



THE AMERICAN FLAG, FLANKED BY PENNANTS SYMBOLIC OF RCA'S OUTSTANDING WAR EFFORT, MADE A COLORFUL BACKDROP FOR THE STOCKHOLDERS MEETING.

with proper governmental regulation, is the surest guarantee of the greatest possible service to the people. From such free enterprise has come America's cultivation of science which is proving to be its salvation in the war. America's men of science have thrown up ramparts around Victory, and have provided armor for the preservation of liberty. They have made this country the most powerful industrial nation in the world, competent to be the arsenal of Democracy.

"When the full story of wartime

radio is told, RCA, I believe, will be the symbol of 'first in war' in all phases of radio—research and invention, engineering and development, manufacturing and communication," said Mr. Sarnoff. "Our job ahead is to maintain RCA and radio 'first in peace.' With this our aim, we have a Post-War Planning Committee preparing for all phases of radio development. From scientific research to industrial results, we shall do our utmost to help win the war, to serve the peace, and to help in shaping a better world."

STATIONS BUILT FOR ALLIES

RCA Victor Designs and Installs Two 50,000-Watt Broadcast Units for Belgians and Fighting French on the West Coast of Africa

FROM bases on the West Coast of Africa, American-made radio is helping to launch a new offensive against the Axis, with two new stations spearheading the propaganda attack, according to information just received by the International Department of the RCA Victor Division of Radio Corporation of America, which supplied and is installing the stations.

The Radio Station of the Belgian Government, speaking through its powerful new 50,000-watt RCA transmitter, is now on the air daily from Leopoldville in the heart of Belgium's African empire. Its broadcasts are beamed primarily at Belgium, and it has set as its first

task the bringing of the true picture of the progress of the war to Belgians under the Axis heel and, in other important ways, aiding the cause of the United Nations.

Across the Congo River from Leopoldville, in Brazzaville, French Equatorial Africa, the antennas of another RCA transmitter are rising.

"The Voice of Free France," a 50,000-watt radio station that will carry Fighting French news to France and all parts of French colonial possessions from French Equatorial Africa, is now nearing completion and will soon join the United Nations network in its propaganda war against the Axis, it was revealed by RCA Victor.

The "Radiodiffusion Nationale Belge" and "La Voix de la France Libre" will speak to their own peoples in their own tongues and penetrate all corners of their homelands and their overseas domains with news, music, drama, and inspiration. Its mission was expressed by the Belgian station on its inaugural program when it declared:

"Our broadcasts are bombing missions. Our radio bombs carry the truth and this is explosive, too."

At a recent dinner, representatives of the Fighting French Government and the Belgian Government expressed to executives of the RCA International Department, service staffs and engineers, their appreciation of the manner in which the African assignments were handled. Close collaboration between Belgian and Fighting French representatives and the Radio Corporation of America was sustained on these assignments from the beginning.

Although details of the project and the problems and difficulties encountered in assembling, transporting and erecting the RCA transmitter cannot be revealed, the accomplishments are significant of this collaboration. The equipment of the Leopoldville transmitter was first to arrive. One month after it had reached the Congo port, the staff of the Leopoldville station, assisted by an RCA installation engineer, had the transmitter in operation—in just half the time normally required.

The new west African stations represent a new stage in the war of radio. They are ultra modern in every detail of their equipment. Tropical temperature and humidity, two of radio's natural enemies, are counter-attacked by a suitable choice of insulating and impregnation materials and air-conditioning, RCA revealed. Both stations are equipped for RCA Radiophoto service.

These two additions to what might be called the United Nations network will strongly support the stations in England, the United States and South America already reaching the seething underground forces in Axis occupied countries. They have further assignments in the war of communications.

RCA CADETTES LEARN ABOUT RADIO

Girls Selected From All Parts of Country by RCA Victor Division Receive Special Courses of Training as Engineering Assistants at Purdue University in Indiana

INTRICACIES OF A LARGE POWER PRESS ARE EXPLAINED BY SHOP INSTRUCTOR TO PATRICIA VAN HOOS AND DOROTHY O'DEA, RCA ENGINEERING CADETTES.

WANDA KEPNER WIELDS A SOLDERING IRON AS SHE STUDIES RADIO REPAIR UNDER THE GUIDANCE OF PURDUE LABORATORY INSTRUCTOR F. J. TREBBY.



ALL OF THE GIRLS IN THIS GROUP (LEFT) RECEIVING INSTRUCTIONS ON TELEVISION TUBES ARE FROM THE HARRISON, N. J., PLANT OF RCA VICTOR. THESE THREE INDIANAPOLIS GIRLS (BELOW) ARE BEING TAUGHT WORKSHOP PRACTICES.



FUTURE LINKED TO SCIENCE

Achievements of Physical Science Must Not be Blamed for the Ills and Evils in the World, Sarnoff Says in University of Air Program

RECOGNIZING that both physical and social science weave the pattern of our civilization, David Sarnoff, President of Radio Corporation of America, participating on the "For This We Fight" program of the NBC Inter-American University of the Air, June 12, directed his discussion on the role of physical science as an influence that shapes the future.

Emphasizing the fact that it is not only the rate at which science brings changes, but the rate at which man's mind accepts those changes that is extremely important, Mr. Sarnoff pointed out that achievements of physical science create new social problems which in turn call for new solutions by society. One of the reasons for the difficulties in which humanity finds itself today is that progress of social science has lagged behind physical science, he said. Therefore, physical science is not to be blamed for the ills and evils that have befallen the world.

"When science is guided by the true spirit of man, it triumphs," said Mr. Sarnoff. "When commanded by the evil-doer, it fails because justice is not on that side. Those who brought war against the United Nations have applied science to destruction. They have attempted to make men behave as electrons. We use science to regiment electrons, but not to regiment the minds of men.

"Powerful as a weapon of war on the side of Justice, and priceless as an instrument of Peace, science shapes our destiny. On scattered battlefronts, on land, on sea, and in the air, science is enlisted in the drive to Victory. Behind the battlelines, in the research laboratories of America, scientists are forging new ideas in the white heat which war applies to invention. For every new idea, and every new instrument produced, there is but one test—what can it do to help win the war quickly? Today, the flame of science burns under one crucible—the crucible of Victory.

"When the day of that triumph dawns over the United Nations, out of the vanishing clouds of war will arch a rainbow of promise projected by science. It will blend from the darkness of the passing storm into the sunshine of a bright future achieved by those who have fought for justice, freedom and faith. Science is a hope of civilization."

While science is a powerful factor in the conduct of this war, science will be more powerful in winning the peace, Mr. Sarnoff declared, because wartime developments in electricity and electronics, physics and chemistry, metallurgy and medicine, will be converted into the triumphs of peace. The new instruments and synthetic materials developed for war are foreseen as invaluable aids in reconstruction and rehabilitation, and in strengthening international goodwill and understanding.

"While it is true that the perpetrators of this war have perverted science to diabolical use, it is also true that science is a powerful force in preventing the triumph of evil," Mr. Sarnoff continued. "Those who took up the sword in an attempt to live and conquer by it, erroneously believed that by diverting science to warfare they could wage hostilities successfully even on a global scale. They took radio and the airplane, both invented for peaceful pursuits, and sought to use these swift agencies of science to cover a vast battlefield in the hope of a quick victory. They believed that they had science as their ally on a world-wide front. But they have discovered that science is not the exclusive agent for the forces of Might. Science can fight on the side of Right, and be the ally of Justice.

"American research and ingenuity were challenged by nations which had adapted American inventions to war and destruction. But America which created them, harnessed them to Victory on a scale undreamed of by the enemy. In this war, America is now the center of war production. It is

the radio-electronic center of the world. America will be equally quick to shift its wartime scientific achievements to help the world at peace.

"We have learned from the peacetime records of aviation that the airplane is more than a fuselage propelled through space. It is science on the wing. Science is the soul of the plane. Were it not for research and engineering, aircraft could not climb into the stratosphere to win Victory. Nor, without radio, could hundreds of bombers dive at targets in the darkness with split-second precision to destroy the malignant forces that would obliterate civilization and with it the progress of science itself. In our bombers, on board the convoy, in the submarines, on battleships, in tanks and afoot with the infantry, the products of science are on constant guard to protect our future.

"One of the master keys of science—the radio-electron tube—is helping to open the way to Victory," said Mr. Sarnoff. "Everywhere—whether in the South Pacific or over the Mediterranean, on the Atlantic-Pacific sea-lane or on the Russian front—this magic tube is on duty. It is an eternal light. . . . Electrons are no longer confined to wires. They are free to work in a vacuum. Their activity within radio tubes has an influence that extends across the boundless universe. In the conquest of space, science shapes our future."

Sponsors NBC Symphony

Alfred P. Sloan, Jr., chairman of the General Motors Corporation, and Niles Trammell, president of the National Broadcasting Company, announced on July 1 that the NBC Symphony Orchestra's Sunday broadcasts under the batons of Arturo Toscanini, Leopold Stokowski and Frank Black will be sponsored on the full NBC network for a year by General Motors. First broadcast under the General Motors banner will be on Sunday, August 1, 5:00 to 6:00 p.m., EWT.

Since its formation six years ago, the NBC Symphony has been a sustaining public service feature.



TECHNICIAN RECORDS OPERATING DATA FROM THE COMMUNICATIONS UNIT BEING TESTED IN THIS RECENTLY DEVELOPED ALTITUDE CHAMBER.

mechanisms. Low temperatures and pressures bring about changes in these delicate mechanisms which may cause current leakage, disabling electrical discharges, known among engineers as "flashovers," and other failures which usually will not occur at normal altitudes.

This chamber is cone-shaped, about four feet high and five feet in diameter at its base. It is just less than one-inch thick and capable of withstanding tremendous shocks and pressures. Normally, before assembly on its bombing plane, holes are bored for the business ends of machine guns and heavier weapons. In RCA's adaptation into a stratosphere test chamber, the holes are omitted, thus enabling the engineers to make it air tight. An air tight seal is accomplished by fitting a heavy platform, arranged for mounting radio apparatus under test, with a ring of soft rubber. The test chamber cone is then lowered until its base rests on the rubber ring. As the air is withdrawn by a powerful suction pump, the atmospheric pressure on the outside of the chamber forces it down into the rubber ring and creates a perfect air seal.

TESTING RADIO "7 Miles Up"

Aircraft Radio and Electronic Equipment Seen in Operation in Simple Altitude Test Chamber Created by RCA Victor's Engineers

A NEW amazingly simple altitude test chamber for aircraft radio and electronic equipment, in which engineers can now for the first time see the entire apparatus in operation under conditions duplicating the stratosphere seven miles up, has been developed by the RCA Victor Division of the Radio Corporation of America. This simple chamber, constructed of the transparent nose cone of a bomber, is helping to speed delivery of radio equipment to air services from the Company's Camden plant where two of these new chambers are now in operation.

Built of transparent Plexiglas, a plastic developed by the Rohm and Haas Company, the chamber is actually the unfinished nose of a famous American bombing plane. Because of the transparent construc-

tion, it makes possible the complete testing and inspection of any piece of radio apparatus by several engineers at one time and materially speeds test work. This new construction has eliminated the difficulties found with standard test chambers which are constructed of metal and permit vision only through small portholes.

Defects in design, which normally would remain hidden until actual high altitude flights could be made, are now spotted at a glance. An entire complement of test instruments and meters may be connected to the apparatus under test and plainly viewed by the project engineers. At seven and one-half miles up, many things can happen to aircraft radio and electronic equipment, since apparatus of this type incorporates many delicate

New Discoveries

NO one realizes better than the scientist that each of his new discoveries is but a small drop in the ocean of infinite knowledge. No one appreciates better than the scientist the unlimited grandeur and mystery of the Universal Plan.

The man who says, "I have faith only in what I can see and understand," is one who has put his mind in a straight-jacket. Our knowledge of man, and of the forces within and above him, is infinitesimal compared with our ignorance. Man does not even understand himself, let alone the universe.

DAVID SARNOFF

(In an NBC broadcast marking the 20th anniversary of the "National Radio Pulpit.")

OUTLOOK OF POST-WAR TELEVISION IS BRIGHT

RCA Research Director Beal Tells Institute of Finance in New York of Great Potentialities

TELEVISION, with its electronic eyes made sensitive to ordinary light, will emerge from the war strongly qualified to become a vast post-war industry giving employment to many people in various fields associated with the new art, Ralph R. Beal, Research Director of RCA Laboratories, said June 1 in discussing "Radio-Electronic Research" before the Institute of Finance at the New York Stock Exchange. The spectrum of tiny wavelengths, measured in centimeters, he said, is being opened by the development of new radio tubes bringing possibilities to radio greater in scope than all of its past.

Predicting unparalleled progress in other fields as well as in radio, Mr. Beal said the potentialities stimulate the imagination of research scientists to visions of new and unexpected horizons in the fields of physics, chemistry, metallurgy, biology and in many industries.

Commenting on the post-war prospects of television, Mr. Beal continued:

"We now have electronic television. As an added service in broadcasting it has potentialities which surpass those of other mass communications services of information, education and entertainment. With post-war television broadcasting stations connected into networks, events of the nation will pass in review on the picture screens of home television receivers. Larger and brighter pictures of greatly improved quality will be realized and research and development plus genius in design and production will bring the television receiver set within the range of the average pocketbook.

"Post-war television will use electronic camera tubes which will be improved more than one-hundred-fold in sensitivity, and that is not the limit. This will make it possible

to pick up scenes with ordinary amounts of illumination. Night events, theatre performances, opera and many other programs which utilize artificial lighting will come well within the range of camera tube sensitivity. The problems of heat and glare in television studios have been solved.

"And then we have theatre television with possibilities as a post-war service. For the first time in the centuries of theatre history, a means is available for bringing to theatre audiences the thrills and drama of events as they occur in real life. Electronic methods have made it possible to produce pictures of theatre-screen size. RCA Laboratories demonstrated a picture about twenty feet wide shortly before the outbreak of the war."

Envisaging automatic radio relay stations as the key to network television, Mr. Beal told how the television pictures would be flashed from city to city to home audiences. At the same time he depicted interconnecting circuits carrying television pictures of events directly from the scene of action to theatres in different cities.

3 IN RCA VICTOR WIN WPB MERIT AWARDS

Two Men and Woman Given Honors for Suggestions That Speed War Production Effort

TWO certificates of individual production merit and one honorable mention were awarded to RCA Victor Division employees in the War Production Board's list of honors announced by the Office of War Information on May 31.

The awards were:

CERTIFICATE OF INDIVIDUAL PRODUCTION MERIT

Charles Chudoba, machinist, RCA Victor Division of Radio Corporation of America War Production Committee, Harrison, New Jersey, suggested a way of preventing burnt out coils on induction heating equipment, which not only saves 350 pounds of copper but also 450 man hours per year. He proposed enclosing the coils in fibre glass sleeves,

which prevents sweat, oxide and scales from short circuiting the turns of the coils. The sleeves have been in use for three months without a single burnout. Chudoba has been at RCA Harrison for 3 years.

CERTIFICATE OF INDIVIDUAL PRODUCTION MERIT

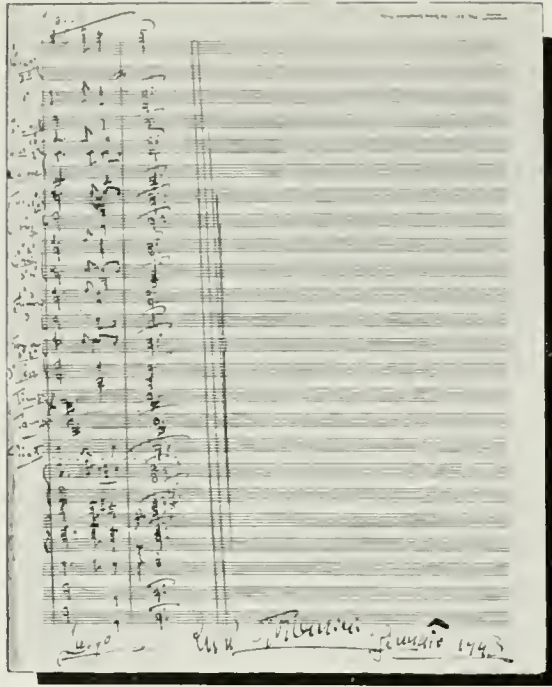
Gerald Thinner, working group leader, RCA Victor Division of Radio Corporation of America—CIO Electrical Workers, War Production Drive Committee "To Beat the Promise," Camden, New Jersey, suggested a new process of lapping electrodes which has speeded up production and delivery of vital parts in communications manufacturing. Electrodes were formerly lapped by hand with a production cycle of two minutes per electrode. Thinner suggested that twelve electrodes be put on plates similar to the method used for crystals; and that they then be lapped down to requirements. This method consumes ten minutes for twelve electrodes, or approximately 8 10ths of a minute per electrode. Thinner, 23 years old, lives in Runnemede, New Jersey, and is a graduate of Audubon High School. His employment at RCA Victor began in September of 1939.

HONORABLE MENTION

Mrs. Ann Keefe Drewes, chief statistical clerk, RCA Victor Division of Radio Corporation of America Production Committee, Harrison, New Jersey, decided that the hectograph machine could be used on certain forms to eliminate both a three-day wait necessary for filling out by pen and ink and the cost of making photostatic copies. Mrs. Drewes has been employed at RCA Harrison for 3 years, starting as a clerk. She completed a course in Comptometry before gaining her present position. Her Production Committee says of her suggestion: "The idea shows clearly that the people who do clerical work can submit ideas which will aid our War Effort, in the same manner as that of a Production Worker."

Wins Safety Trophy

The Camden plant of RCA Victor, on recommendation of the National Safety Council has been awarded the Liberty Bell for excellent safety record in 1942. The presentation was based on the plant's record of 22 per cent reduction of time lost through accidents.



AUTOGRAPHED SHEET FROM ARTURO TOSCANINI'S ARRANGEMENT OF THE "STAR SPANGLED BANNER," WHICH BROUGHT \$1,000,000 IN WAR BONDS.

PRAISE FROM MORGENTHAU

Secretary of Treasury Thanks Toscanini and NBC Symphony Orchestra for Easter Concert that Raised \$11,190,045 in War Bond Purchases

DEAR MR. TOSCANINI:

You have my warmest thanks for Sunday's concert. You expressed in music the might and power and fierce resolve deep down within all of us to battle to victory—a resolve that is sometimes hard to express in words.

Please tell the NBC Symphony Orchestra for me that I wish I were able to thank each of them personally for the performance.

It is gratifying to know that admissions to the concert resulted in sales of Second War Loan Bonds totalling more than ten million dollars—money that will fight for the right of man to utter his beliefs and feelings openly and sincerely, whether in music or words.

Sincerely,

(Signed)

HENRY MORGENTHAU, JR.

Thus did Secretary of the Treasury Henry Morgenthau, Jr., thank Arturo Toscanini and the NBC Symphony Orchestra for the Easter Sunday War Bond concert, which netted Uncle Sam's fighting war chest \$11,190,045 in bond purchases.

The concert took place in Carnegie Hall in New York and featured Vladimir Horowitz, noted concert pianist and son-in-law of Maestro Toscanini in an all-Tschai-kovsky program. So great was the interest in the concert that \$10,190,045 in bonds was purchased by ticket holders as admission to the hall. The audience literally "hung from the rafters". Many members of the press gave up their prerogative of press passes so that more seats in New York's largest concert hall would be available for the bond sale.

An additional sum of \$1,000,000 was raised by auctioning the original manuscript of Toscanini's own

arrangement of the "Star Spangled Banner". Robert St. John, NBC correspondent and commentator, asked for the bids over the air. The winning bid of \$1,000,000 came from W. T. Grant of Kansas City.

This was one of many times that Toscanini has lifted his baton to flay the dictators. In the season 1941-42, he conducted the NBC Symphony in a series of five special bond concerts. And again this summer Toscanini uses his art in the cause of freedom.

Realizing that war recognizes no seasonal letup, Toscanini offered his services to the Treasury Department for four summer concerts. The broadcasts, scheduled for the regular Summer Symphony broadcast time, Sundays on June 20, July 18 and 25, and September 19, at 5 p.m. (EWT), take place before audiences composed entirely of service men and women. Maestro Toscanini extended invitations to nearby posts of the Army, Navy, Marines, Coast Guard and Maritime Service. The invitations were promptly accepted.

In addition to the official thanks of the Treasury Department for the Easter Concert, Toscanini and the orchestra received warm praise from music critics for the musical excellence of the program. Toscanini has always contended that great art can flourish best in an atmosphere of liberty and justice.

Photophone In Australia

With the aid of portable RCA photophone equipment especially designed for this rugged job "down under," remote battle stations in Australia are enjoying sound pictures as part of the Army's entertainment-for-morale program. Mobile units travel thousands of miles under difficult conditions. Their performance has been hailed enthusiastically by the troops. RCA Photophone of Australia, subsidiary of RCA, supplied the equipment to the Australian military forces.

The "vans," as the Australians call them, were designed to operate at great distances from sources of replacements. They were built to bring the sound and projection equipment safely through rough country.

NEW RADIO CIRCUIT OPENS

Presidents Roosevelt and del Rio, Communications Leaders Exchange Greetings As RCAC Begins Telegraphic Service Between U. S., Ecuador

AN EXCHANGE of messages by President Roosevelt of the United States and President del Rio of Ecuador on May 1 marked the opening by R.C.A. Communications, Inc., of the first direct radiotelegraph service between the two countries.

Several other messages transmitted in observance of the opening included exchanges of greetings by Senor Alberto Wright, Ecuador's Minister of Communications and Public Works, and James Lawrence Fly, Chairman of the Federal Communications Commission, Washington, D. C.; Lieut. Gen. James G. Harbord, Chairman of the Board, Radio Corporation of America; David Sarnoff, President of RCA, and William A. Winterbottom, Vice President and General Manager, R.C.A. Communications, Inc.

In reply to Senor Wright, who said that radiotelegraph service between the two countries "is a new link which no doubt will make even closer the bonds of friendship which unite the Ecuadorean and North American peoples," Mr. Sarnoff said:

"I fully share the sentiments expressed in your kind message that the new radiotelegraph circuit link-

ing the sister Republics of Ecuador and the United States will bring our peoples even closer together in tightened bonds of friendship, and have full confidence that the improved and more economical communication service inaugurated today and made possible by the friendly cooperation of your Government will also further enhance the cultural and commercial relations between our two countries."

Said General Harbord, in reply to Senor Wright:

"In behalf of the officers and directors of the RCA organization, I wish to thank you for your kind felicitations upon the opening of direct radiotelegraph service between Ecuador and the United States and to express my gratification that through the miracle of modern radio, the voice of Ecuador may now be heard around the world."

The new service operates over a direct radio circuit between New York and Quito, capital of Ecuador. It was pointed out by Mr. Winterbottom that until now, a cable monopoly in Ecuador has prevented that country from engaging in radiotelegraph operations with other nations.

work of a season. The total playing time of the five nominations made it necessary to allot two full-hour broadcasts of the NBC Summer Symphony to the official "re-hearing" of the works by the full roster of the Critics Circle. Olin Downes, critic of the *New York Times* and chairman of the Circle, spoke on the first broadcast.

The first program included Morton Gould's "Spirituals for String Choir and Orchestra," William Schuman's "Prayer—1943" and Paul Creston's "Symphony No. 1." The second broadcast presented Aaron Copland's "A Lincoln Portrait" and Roy Harris's "Symphony No. 5." Winning composition, determined by the final balloting, was the Creston symphony.

RCA TO SPONSOR RADIO SHOW "WHAT'S NEW?"

Sarnoff Announces New Weekly Program Starting September 4 On Blue Network

A NEW one-hour radio program headlined "What's New?" will be sponsored by the Radio Corporation of America, it was announced July 20 by David Sarnoff, President of RCA, who said that the contract has been signed with the Blue Network for the premiere on September 4 over 158 stations from Maine to Hawaii. The show will be broadcast on Saturdays from 7 to 8 P.M. EWT. Don Ameche, star of radio and screen, will be master of ceremonies.

The theme of the performance will be a weekly kaleidoscopic broadcast of "What's New" throughout the world—in news, science, sports, theatre, films, music, art, education, books, agriculture and the home. In fact, anything new and important will qualify for a place on this program designed to keep listeners up-to-the-minute on the world's latest developments in all activities.

Eye-witness and first-hand reports will be featured. New songs, new artists, new heroes, new wonders will qualify to give the program a fast pace. Timeliness will be the keynote of the sixty minutes, as radio skips from New York to Hollywood, and to other places at home and abroad where something new is to be microphoned.

"This program covering a broad scope and possessing a challenging theme will afford splendid opportunity from week to week to reveal radio as a new and modern art form at its best," said Mr. Sarnoff. "With variety in talent and always something new, the aim in showmanship will be to present a timely performance of interest to listeners of all ages. We will draw upon the latest in radio art technique and in science to make this a program of high quality entertainment for Americans in all walks of life."

Critics Select Symphony

The cause of the modern composer got a substantial boost on Sundays, May 30 and June 6, when the NBC Summer Symphony Orchestra, under the baton of Frank Black, cooperated with the Music Critics Circle of New York in the presentation of two broadcasts embracing five new works nominated by members of the circle for the designation of "best American orchestral composition of the 1942-1943 season."

This was the second annual quest conducted by the Critics Circle—an organization of music reviewers of New York newspapers and several magazines—for the topnotch new

Buy War Bonds



Towers that talk . . .

Tall towers of slender steel. A spider web of steel flung across the sky. A small building. Nothing more.

Nothing more?

Much, much more—for this is radio. And in radio as in man, the things unseen count most. Like the power of the human spirit, the energy of radio is invisible.

From the silence of these towers comes to Americans afloat and ashore—on ships and at naval bases—the ringing words of America's leaders, the lilt and lift of radio music, the saving grace of radio humor, the thrills of radio drama—inspiration, encouragement, the touch of home—the tonic interlude of entertainment in the grim grind of war.

This is the work of America's broadcasters, in which RCA is proud to assist. Through years to come radio broadcasting will render service now but dimly realized—not only in standard broadcast, but in short-wave, FM, television, and facsimile—in these, too, RCA's special

knowledge, extensive facilities and tireless research will play their part.

RCA's resources are today concentrated on war production. And RCA equipment is at work on all the seven seas, maintaining dependable lines of communication between ship and shore—ship and ship—ship and plane. Helping to safe-guard our convoys—to coordinate our forces for defense and attack—to locate, strike and crush the enemy.



RCA BROADCAST EQUIPMENT

RCA VICTOR DIVISION • RADIO CORPORATION OF AMERICA • CAMDEN, N. J.



THE BLUE NETWORK SALUTES



THE WOMEN'S NATIONAL RADIO COMMITTEE AND THE WINNERS OF ITS ANNUAL AWARDS



In the decade that it has been in existence, The Women's National Radio Committee (representing 25 national organizations with a membership of over 17,000,000 women) has made an important contribution to radio broadcasting. Through its Annual Awards—and its public recognition of outstanding radio programs—the Committee has been an influence in improving the standards of entertainment on the air.

This year again, for the ninth time, the Committee has announced its Awards winners.

And this year, the awards are largely in recognition of the effectiveness with which the winners have served the nation's war effort.

The Blue Network is glad to pay public tribute to the Women's National Radio Committee; to the National Broadcasting Company and the Columbia Broadcasting System, each of whom carries one of the winning programs; to all the sponsors whose programs won awards; and to all the writers, actors, singers, musicians and technicians on the programs.

HERE IS THE FULL LIST:

PROGRAM	CLASSIFICATION	NETWORK	SPONSOR
Metropolitan Opera	Music	BLUE	The Texas Company
Cavalcade of America	Drama	NBC	DuPont Company
Let's Pretend	Young People's Programs	CBS	Sustaining
Raymond Gram Swing	News Analyst	BLUE	Socony-Vacuum Company
Town Meeting of The Air	Forum	BLUE	Sustaining

We of The BLUE would be less than human if we were not both glad and proud that three out of the five winners are Blue

Network programs... In addition to the winners, we salute the following programs which won Honorable Mention:

Music: New York Philharmonic (CBS) and The Telephone Hour (NBC)

Drama: Lux Radio Theatre (CBS); This is Our Enemy (MBS); One Man's Family (NBC)

News: H. V. Kaltenborn (NBC) and Gabriel Heatter (MBS)

Forum: Chicago Round Table (NBC); Quiz Kids (BLUE); American Forum of The Air (MBS)

Young People's Program: Rainbow House (MBS) and The Aldrich Family (NBC)

And these citations: to station WQXR, New York, for "Music programs of unusual quality and interest"

and to station WMCA, New York, for "the program furthering democratic ideals and public service"

The Blue Network

A RADIO CORPORATION OF AMERICA SERVICE





These, too, are fighting flags of freedom . . . In ever-increasing numbers, flags like these fly over America at war. They are symbols of the strength of a free people, aroused in spirit, united in purpose. Battle flags of Victory today . . . they are won by the energy and skill that will build a better world tomorrow.

SERVICES OF RCA WHICH HAVE WON OUR COUNTRY'S HIGHEST WARTIME AWARDS

Army-Navy "E" flags awarded to: RCA Victor Division, Camden, N. J., January, 1942—with two stars for continued excellence.

RCA Victor Division, Harrison, N. J., August, 1942—with one star for continued excellence.

Radiomarine Corporation of America, New York City, September, 1942—with one star for continued excellence.

RCA Laboratories, Princeton, N. J., May, 1943.

Maritime Commission "M" Pennant and Victory Fleet Flag awarded to: Radiomarine Corporation of America, New York City, February, 1943.



Radio Corporation of America