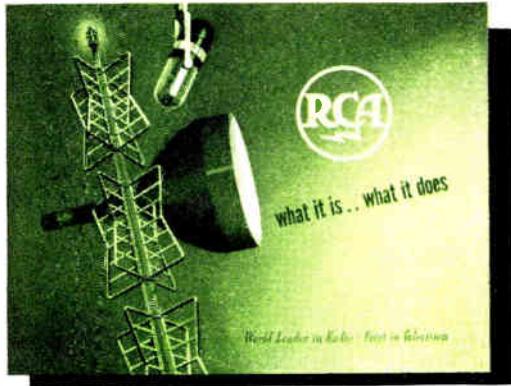




what it is . . . what it does

*World Leader in Radio – First in Television*



what it is . . . what it does

answers to questions often asked

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**RADIO CORPORATION OF AMERICA**  
 RCA BUILDING, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.  
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RCA Building, Radio City, New York, the home of Radio Corporation of America and the National Broadcasting Company.

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# F O R E W O R D

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**T**HE year 1949 marks the 30th anniversary of the Radio Corporation of America, with its radio and television resources and facilities dedicated to the service of the Nation and its people.

When RCA was formed in 1919, it began operations with 457 employees. Today, it employs 41,300. For more than a quarter of a century, the skill of RCA workers has kept pace with the challenge of science and the commercial progress of radio and television. The research of its scientists provides a constant flow of technical knowledge to expand and to strengthen radio and electronics as a bulwark of scientific preparedness and national security.

Throughout the world, RCA is a symbol of radio progress. It has spun an international communications system around the earth, linking more than sixty countries. It gave America its first nationwide radio networks, and led in the development of worldwide broadcasting. The voice of the United States has been put within listening range of every person on earth. Through radio broadcasting and television, it provides facilities and services that entertain and inform people everywhere, in every walk of life.

In industry, hundreds of new types of electron tubes have been developed to lift man's burdens, enhance his safety and add to his pleasures. The phonograph has been electronized. Short waves and microwaves have been harnessed for new services that emphasize America's preeminence in radio. Dedicated to pioneering in every phase of radio, as a science, art and industry, RCA has served the Nation in peace and in war.

RCA scientists created the all-electronic system of television. They

created Ultrafax, Shoran and Teleran. They led in pioneering radar, loran, radio relay stations, FM (frequency modulation), radio-heat, and the electron microscope.

The RCA monogram is a mark of quality and superior craftsmanship. It is a symbol of the Radio Age, of the "know-how" gained from thirty years of scientific research and engineering.

Behind all RCA products and services stands RCA Laboratories, one of the world's foremost centers of radio and electronic research. The new ideas developed in these Laboratories continually lead to new discoveries and inventions. They advance radio and electronics for increased utility in the home, on the highways, on the seas, on the airplanes, and in industry.

The results derived from extensive experience and engineering knowledge, supported by vision, optimism and long-range planning, amply justify the millions of dollars which RCA has invested in scientific research. Charted by actual service, television is bringing new pleasures in entertainment, education, and information to an audience of ever-increasing millions. The great accomplishments of this new art — which is radio born anew — have justified RCA's years of pioneering to bring television into the service of the American home.

As a science, radio has limitless horizons. The search for new knowledge is unending. Backed by the vision of its scientists, the talent of its engineers, the confidence of its stockholders, and the ability of its management and employees, the Radio Corporation of America — in this, its Thirtieth Year — stands upon the threshold of a greater future — *World Leader in Radio — First in Television.*

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# RCA

## BOARD OF DIRECTORS

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DAVID SARNOFF  
Chairman of the Board



FRANK M. FOLSOM  
President



ARTHUR E. BRAUN



GANO DUNN



EDWARD F. McGRADY



NILES TRAMMELL



EDWARD J. NALLY



JOHN T. CAHILL



JOHN HAYS HAMMOND, JR.



GEORGE L. HARRISON



CHARLES B. JOLIFFE



HARRY C. INGLES



## WHAT IT IS . . . WHAT IT DOES

### **What is "RCA"?**

The letters "RCA" are the initials of Radio Corporation of America, the parent of: RCA Victor Division, National Broadcasting Company, Inc., RCA Laboratories Division, RCA Communications, Inc., Radiomarine Corporation of America, RCA International Division, RCA Institutes, Inc., RCA Service Company, Inc., and RCA Victor Distributing Corp.

### **What led to the formation of RCA?**

Prior to and during the first World War, the United States depended largely upon foreign-owned cables and wireless stations for communication with many important parts of the world. Great Britain was the communications center of the world. The war revealed to Americans that radio offered a new and competitive system; an opportunity to win preeminence for the United States in radio communication.

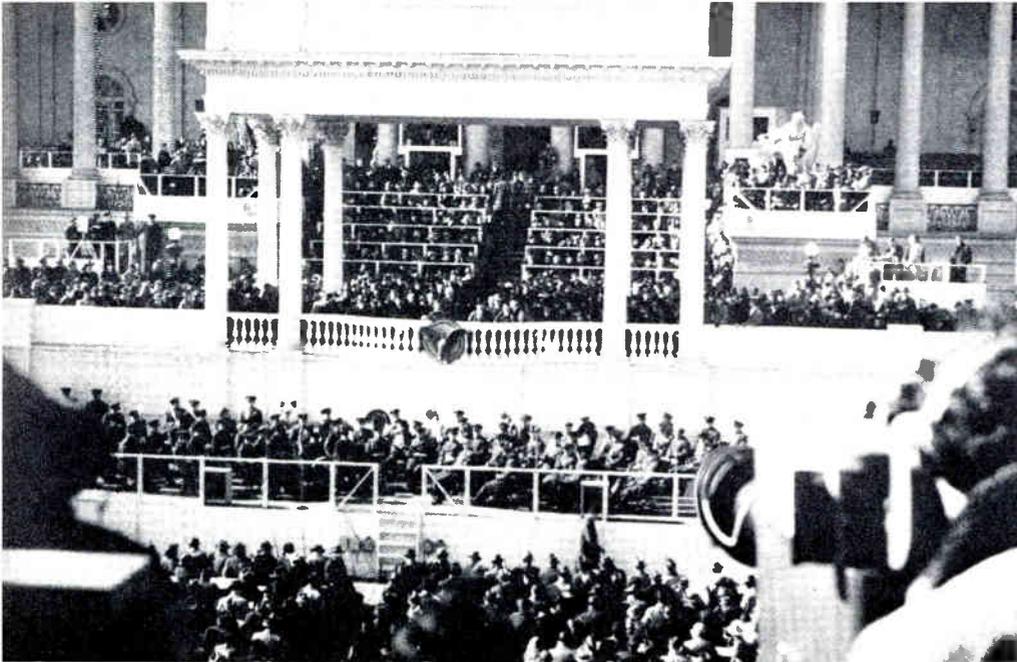
Subsequently, RCA was formed as a result of suggestions by officers of the United States Navy. Arrangements were made to acquire the assets of the Marconi Wireless Telegraph Company of America. A charter was granted RCA under the corporation laws of the State of Delaware on October 17, 1919. The business

and property of the American Marconi Company were acquired by RCA on November 20, 1919. On December 1, 1919, RCA began business as an all-American organization. Its charter provides that no person shall be eligible for election as a Director or officer of the Corporation who is not at the time of such election a citizen of the United States. The charter also specifies that the Corporation may, by contract or otherwise, permit such participation in the administration of its affairs by the Government of the United States as the Board of Directors deem advisable. A clause in the charter provides that at least 80% of the RCA stock outstanding shall be held by citizens of the United States.

The first Chairman of the Board of RCA was Owen D. Young; the first President, Edward J. Nally; David Sarnoff was Commercial Manager.

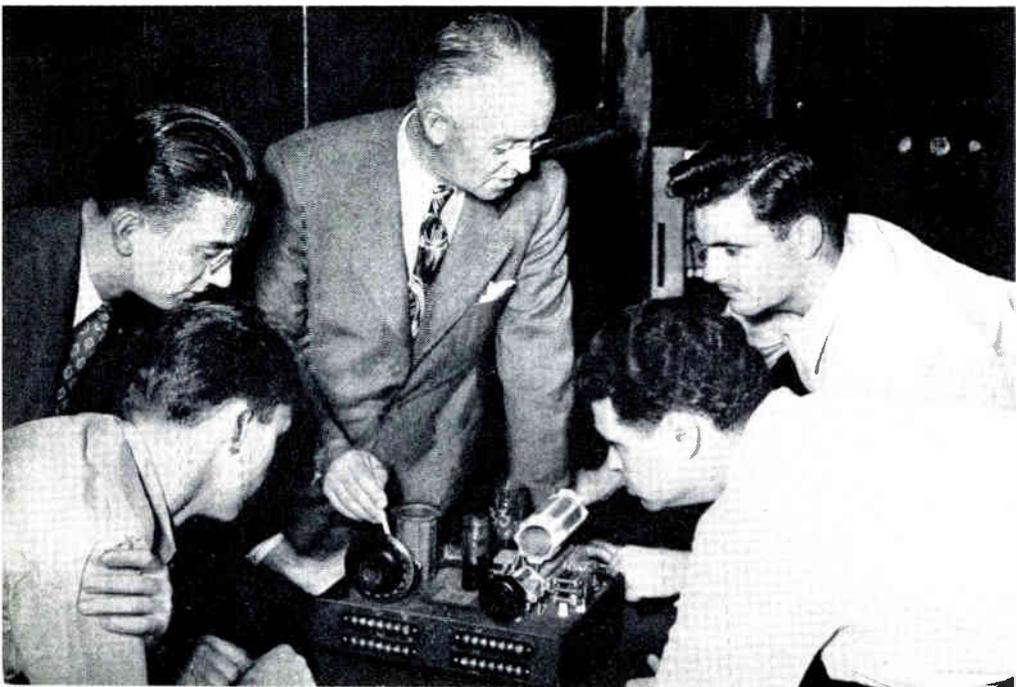
### **Where are the RCA executive offices?**

Headquarters of Radio Corporation of America are in the RCA Building, 30 Rockefeller Plaza, New York City. This building is the tallest skyscraper in Rockefeller Center, popularly known as "Radio City".



*NBC television cameras made it possible for scenes of the Truman inaugural to be viewed by millions from Boston to St. Louis.*

*Students at RCA Institutes receive expert instruction in the theory, design and operation of radio receivers.*



### ***What is the nature of RCA's business, as outlined in its original charter?***

To send and receive signals, messages and communications; to create, install and operate a system of communication which may be international; to improve and prosecute the art and business of electric communication; to radiate, receive and utilize electromagnetic waves; to create, manufacture and sell goods and merchandise, and to hold and own patents, patent rights, copyrights and other real and personal property of every description.

### ***What are the industrial activities of RCA?***

Radio Corporation of America is one of the world's foremost radio organizations. Through its various divisions and wholly-owned subsidiaries, it is engaged in various phases of radio: research and engineering, design and development, manufacturing, domestic and foreign sales, communications, broadcasting and technical training.

### ***Is RCA engaged in electronics?***

Yes: RCA has pioneered in the science of electronics, and its Laboratories are a foremost center of radio-electronic research, the key of which is the radio or electron tube. The RCA Victor Division, one of the world's leading manufacturers of electron tubes, makes a wide variety of electronic apparatus.

### ***Does RCA have a centralized display of its products and services?***

Yes: the RCA Exhibition Hall at 36 West 49th Street, New York, displays the latest RCA radios and Victrola radio-phonographs, television receivers, electron tubes, electron microscope, phonograph records and marine radio equipment. In addition, animated exhibits explain the operation of domestic broadcast networks and of world-wide radiotelegraph circuits. Admission to the RCA Exhibition Hall is free.



*The faces of the RCA 16-inch television tubes receive a fluorescent coating on which the electron beam "paints" the picture.*

**How many people are employed by RCA and its subsidiaries?**

On March 1, 1949, RCA and associated companies had 41,348 employees.

**What are RCA's personnel and labor policies?**

The management recognizes that the loyal cooperation of employees is of basic importance to the success and progress of RCA. The Company maintains, in all of its units, competent personnel administration, and a wide variety of educational training, social, and recreational facilities is provided. Employment is on the basis of merit and efficiency as determined by such factors as character, dependability, skill, intelligence, and physical fitness.



*Glass television picture tubes, which are heated to almost 1300° F. in production, are given final inspection.*

It is the Company policy to pay as high wages, under as favorable hours and working conditions in similar classes of work, as those prevailing in the areas in which the Company's plants are located or operations are carried on. In instances where employees choose to bargain collectively, the employing company deals willingly and frankly with their authorized representatives. At present, there are in force a number of contracts between the various companies and 43 separate bargaining agencies. Of these, all but 9 independent unions are affiliated with the A. F. of L., or C.I.O.

Edward F. McGrady, who for four years had been Assistant Secretary of Labor, in 1938 became RCA's Vice President in charge of Labor Relations and a member of the Board of Directors.

**Who owns Radio Corporation of America?**

Ownership of RCA is widely distributed among approximately 206,000 stockholders, in every state of the Union. No stockholder of record holds as much as 3% of the total outstanding voting securities of the Corporation. Less than 5% of the stock is held by foreign stockholders.

**What is RCA's capital stock?**

There are two classes of RCA stock:

|   | Shares<br>Outstanding |
|---|-----------------------|
| \$3.50 Cumulative First Preferred ..... | 900,824               |
| Common .....                            | 13,881,016            |

**Do RCA stocks pay dividends?**

Quarterly dividends have been paid regularly on the Preferred stock. In 1948 these dividends amounted to \$3,152,800. On the Common stock, dividends have been paid annually at the rate of 20 cents per share for ten years, from 1937 through 1946. The dividend declared December 5, 1947 and paid January 27, 1948 was increased to 30 cents per share, and on December 3, 1948, was increased to 50 cents per share. The Common stock dividend, amounting to \$6,928,522 was declared on December 3, 1948, and together with the dividend paid on Preferred stock on January 24, 1949, amounted to \$10,081,322.

During the ten-year period, 1939 to 1948, dividends paid to stockholders amounted in total to \$65,074,717 or 53.4% of net profits (after taxes) earned during this period. Of this amount \$31,820,660 was paid to preferred stockholders and \$33,254,057 to common stockholders.



*"Queen Anne" model of the RCA Victor television receiver equipped with a 16-inch metal-cone kinescope provides a direct-view picture of 126 square inches.*

### What was RCA's volume of business in 1948?

The Consolidated Gross Income of Radio Corporation of America and its domestic subsidiaries for the year 1948 was \$357,617,231.

| <b>WHERE IT CAME FROM</b>           |                      |               |
|-------------------------------------|----------------------|---------------|
| RCA*                                | \$270,572,705        | 75.7%         |
| NBC                                 | 70,949,218           | 19.8%         |
| RCA Communications and Radio-marine | 21,133,728           | 5.9%          |
| Less Inter-Company Transactions     | <i>5,038,420</i>     | <i>1.4%</i>   |
| <b>Total</b>                        | <b>\$357,617,231</b> | <b>100. %</b> |

| <b>WHERE IT WENT</b>  |                      |               |
|---|----------------------|---------------|
| Cost of Raw Materials, Supplies, Sustaining Program Talent, Rent, Sales and Advertising; Payments to Affiliated Broadcasting Stations; Research, Administration, and Other Operating Expenses | \$181,788,988        | 50.8%         |
| Wages and Salaries to Employees   | 123,500,620          | 34.5%         |
| Depreciation and Amortization   | 6,353,976            | 1.8%          |
| Interest  | 561,567              | .2%           |
| Taxes   | 21,390,033           | 6.0%          |
| Dividends to Stockholders   | 10,081,322           | 2.8%          |
| Carried to Surplus  | 13,940,725           | 3.9%          |
| <b>Total</b>  | <b>\$357,617,231</b> | <b>100. %</b> |

\* Including the operations of RCA Victor Division, RCA Laboratories Division, RCA International Division and domestic subsidiaries other than the three subsidiary companies listed here.

Italic figures denote decrease.

### What is RCA's record of earnings for the past 10 years?

The earnings of Radio Corporation of America and its domestic subsidiaries during the ten-year period from 1939 to 1948 inclusive, were as follows:

| YEAR                  | GROSS INCOME         | NET PROFIT BEFORE FEDERAL INCOME TAXES | FEDERAL INCOME TAXES | NET PROFIT AFTER FEDERAL INCOME TAXES* | PERCENTAGE OF GROSS INCOME |                      | EARNINGS PER SHARE ON COMMON STOCK |
|-----------------------|----------------------|--|----------------------|--|----------------------------|----------------------|------------------------------------|
|                       |                      |  |                      |  | PROFIT BEFORE TAXES %      | PROFIT AFTER TAXES % |                                    |
| 1939                  | \$110,494,398        | \$10,149,511                           | \$ 2,066,700         | \$ 8,082,811                           | 9.2                        | 7.3                  | .350                               |
| 1940                  | 128,491,611          | 13,364,656                             | 4,251,500            | 9,113,156                              | 10.4                       | 7.1                  | .425                               |
| 1941                  | 158,695,722          | 26,566,316                             | 16,373,600           | 10,192,716                             | 16.7                       | 6.4                  | .502                               |
| 1942                  | 197,024,056          | 28,077,287                             | 19,074,850           | 9,002,437                              | 14.3                       | 4.6                  | .417                               |
| 1943                  | 294,535,362          | 36,316,452                             | 26,124,000           | 10,192,452                             | 12.3                       | 3.5                  | .505                               |
| 1944                  | 326,421,913          | 40,211,191                             | 29,947,900           | 10,263,291                             | 12.3                       | 3.1                  | .512                               |
| 1945                  | 279,503,615          | 30,484,068                             | 19,167,000           | 11,317,068                             | 10.9                       | 4.0                  | .588                               |
| 1946                  | 236,980,770          | 14,346,353                             | 3,361,300            | 10,985,053                             | 6.1                        | 4.6                  | .564                               |
| 1947                  | 314,023,572          | 29,481,557                             | 10,712,000           | 18,769,557                             | 9.4                        | 6.0                  | 1.125                              |
| 1948                  | 357,617,231          | 41,071,047                             | 17,049,000           | 24,022,047                             | 11.5                       | 6.7                  | 1.503                              |
| <b>ANNUAL AVERAGE</b> | <b>\$240,378,825</b> | <b>\$27,006,843</b>                    | <b>\$14,812,785</b>  | <b>\$12,194,058</b>                    | <b>11.2</b>                | <b>5.1</b>           | <b>.649</b>                        |

\* The figures for 1945, 1946 and 1947 are after charges to the reserve for post-war reconversion expense, and those for 1945 and 1946 are after adjustments for tax credits, all as set forth in the financial statements for those years. For 1939 and 1940, the figures include foreign subsidiaries.

**What are the working capital and net worth of RCA?**

RCA's working capital (the excess of current assets over current liabilities) at December 31, 1948, amounted to \$87,392,895.

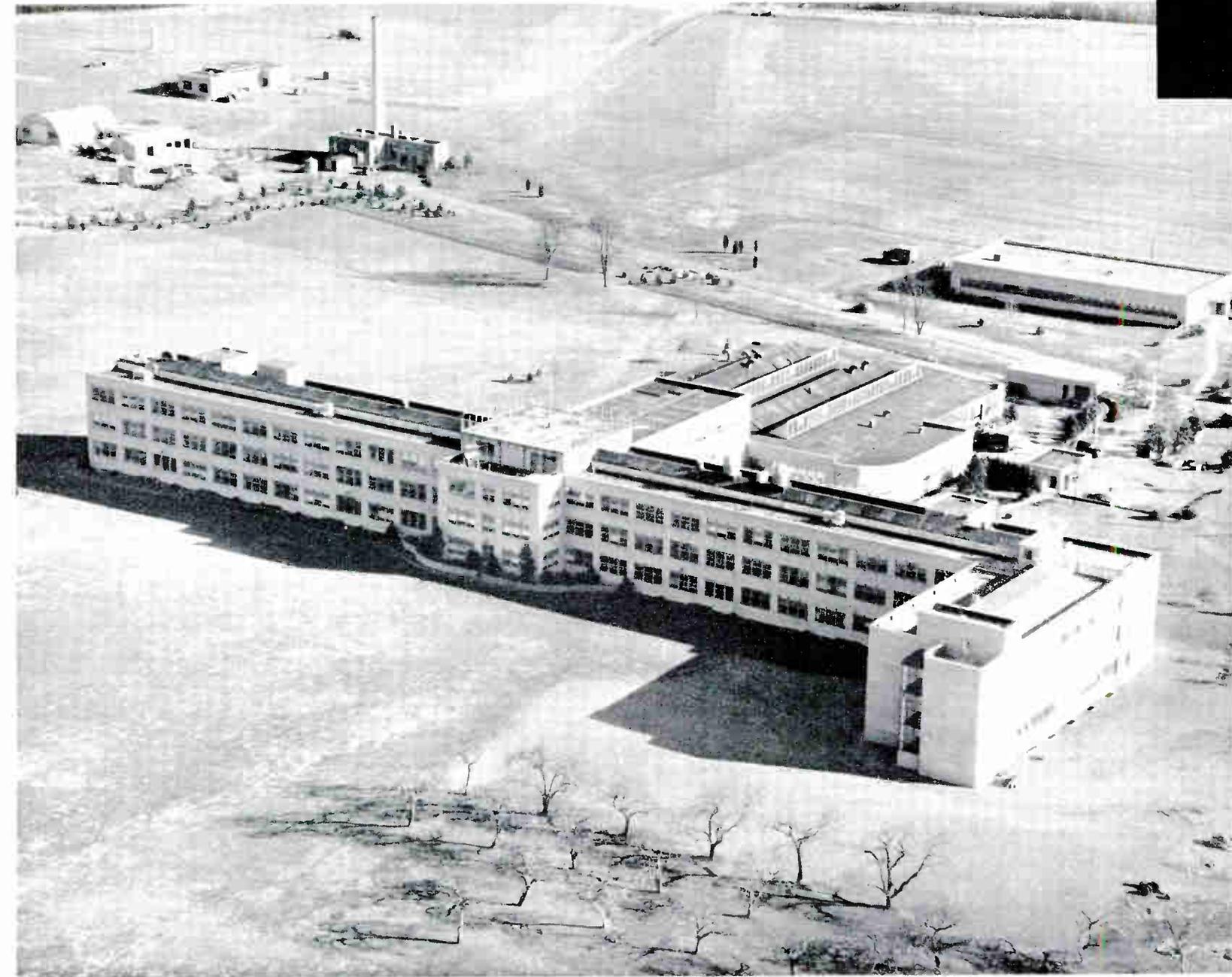
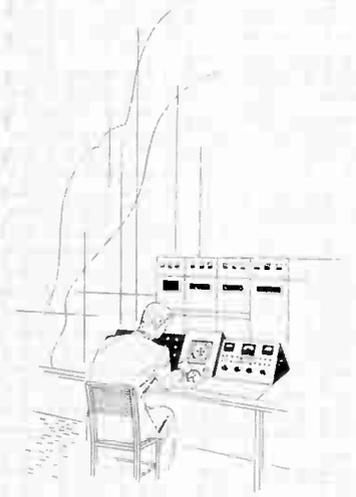
The total assets, liabilities and capital of Radio Corporation of America and its domestic subsidiaries, as shown by its consolidated balance sheet on December 31, 1948, were as follows:

| <b>ASSETS</b>                                       |               | <b>LIABILITIES AND CAPITAL</b>            |               |
|---|---------------|---|---------------|
| Current Assets                                      |               | Current Liabilities                       |               |
| Cash and Government Securities .....                | \$ 52,261,219 | Accounts Payable and Accruals .....       | \$ 43,272,795 |
| Notes and Accounts Receivable (less reserves) ..... | 48,135,122    | Provision for Federal Income Taxes .....  | 26,302,926    |
| Inventories .....                                   | 64,288,997    | Dividends Payable .....                   | 7,716,722     |
|   | -----         |   | -----         |
| Total Current Assets .....                          | \$164,685,338 | Total Current Liabilities .....           | \$ 77,292,443 |
|   |               |   | -----         |
| Investments in Foreign Companies .....              | \$ 5,331,308  | Bank Loans .....                          | \$ 40,000,000 |
| Plant and Equipment (less reserves) .....           | 68,001,846    |   | -----         |
| Patents (less reserve) .....                        | 6,299,928     | Reserve for Contingencies .....           | \$ 3,654,780  |
| Other Assets .....                                  | 3,906,056     |   | -----         |
|   | -----         | Net Worth consisted of                    |               |
| Total Assets .....                                  | \$248,224,476 | General Reserve .....                     | \$ 5,441,301  |
|   |               | Capital Stock, at a stated value of ..... | 42,336,473    |
|   |               | Earned Surplus .....                      | 79,499,479    |
|   |               |   | -----         |
|   |               | Total Net Worth .....                     | \$127,277,253 |
|   |               |   | -----         |
|   |               | Total Liabilities and Capital .....       | \$248,224,476 |
|   |               |   | -----         |

NOTE: The Assets, Liabilities and Capital, as tabulated on this page, are merely a summary of the Consolidated Balance Sheet of RCA on December 31, 1948. For complete facts and figures, please refer to the Annual Report of Radio Corporation of America for the year 1948.

RCA Laboratories, Princeton, N. J., one of the world's foremost centers of radio, television and electronic research.

**RESEARCH**





*DR. C. B. JOLLIFFE,  
Executive Vice President  
in Charge of  
RCA Laboratories Division*

## RESEARCH

### **What is the policy of RCA toward scientific research?**

Radio Corporation of America has always recognized that research is a true guarantee of continued progress and a bulwark of national security. Consequently, since the formation of RCA, research has been a major activity. Research is centered in RCA Laboratories Division. The main laboratory buildings are in Princeton, N. J., with outlying locations in New York: Newark, N. J.; Riverhead and Rocky Point, New York; Chicago, and Washington, D. C. As befitting one of the foremost centers of radio and electronic research in the world, the search for knowledge at RCA Laboratories is continuous.

### **What is the purpose of RCA Laboratories?**

The primary aim of RCA Laboratories is to increase the usefulness of radio and electronics to the Nation, to the public and to industry. Scientific investigations conducted by RCA are directed toward gaining new knowledge, toward improvement in methods and devices for every branch of radio, electronics and their production and operation processes, and toward the creation of new products and services.

While developing projects, speedily applicable to commercial needs, and conducting research to provide a constant flow of new technical knowledge, RCA continues close cooperation with the military services of the United States, conducting specific research to help guarantee the scientific and technological preparedness and security of the Nation.

To provide additional facilities for this type of research, a new building has been completed on the grounds of the Princeton Laboratories.

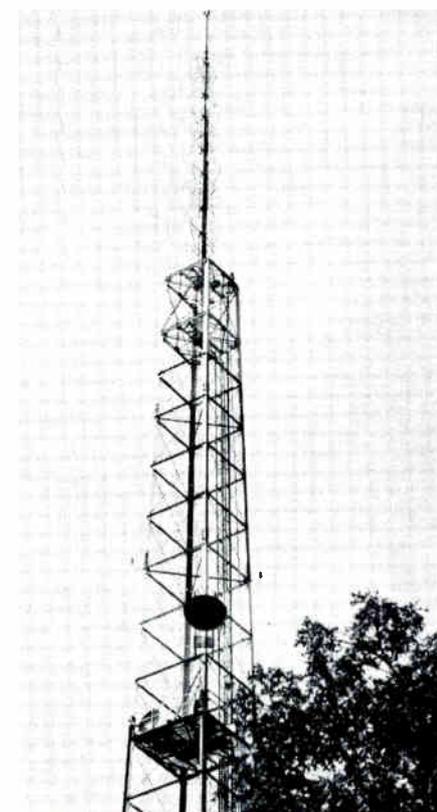
### **Is RCA research confined to radio?**

Modern radio is closely allied with many branches of science such as electronics and acoustics and, as radio progresses, new sciences are continually being brought within its horizon. RCA has extended its research into many fields such as optics, chemico-physics, and nucleonics. Studies which have resulted from this work, or as by-products of radio and television research, include fluorescent and phosphorescent materials, the electron microscope, specialized work in plastics and the application of radio-frequency heating to industrial processes.

### **Are research and engineering activities of RCA limited to RCA Laboratories?**

As a logical adjunct to research, each company and division of RCA has its own engineering department to assist in the solution of engineering problems, to conduct applicable product engineering and to exercise immediate engineering supervision over technical operations. These engineering departments include staffs at the National Broadcasting Company headquarters in Radio City as well as at each NBC-owned broadcasting station,

*Extensive experimental transmissions on ultra-high frequencies were conducted by RCA from this television antenna of WNBW, Washington, D. C.*



at each plant of the RCA Victor Division, at RCA Communications, Radiomarine Corporation of America, and RCA International Division. In addition, RCA Service Company and the faculty of RCA Institutes consist almost entirely of engineering personnel.

### **What is Ultrafax?**

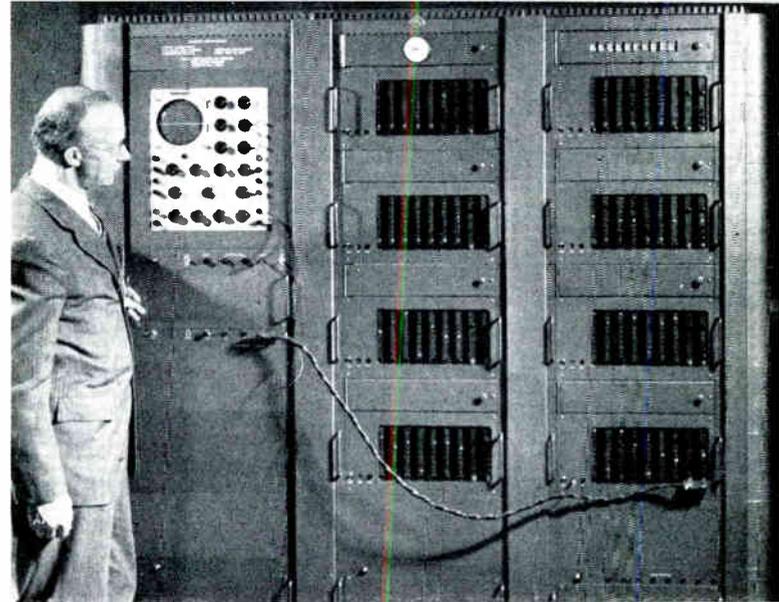
Ultrafax is a new system of high-speed communications capable of transmitting and receiving written or printed messages and documents at the rate of a million words a minute. The system, a development of RCA Laboratories, combines elements of television with the latest techniques in radio relaying and high-speed photography. Key factors of the invention are: first, high-speed of transmission; second, ability of television to transform pages of information for transmission as pictures at the rate of 30 a second; third, a method of rapid film processing, developed by Eastman Kodak Company, which delivers film ready for printing or projecting, in 40 seconds.

### **Does RCA publish information concerning the results of its research and engineering?**

Scientists and engineers of RCA are active contributors to leading technical journals, and also present technical papers at engineering meetings throughout the country. In addition, RCA Laboratories Division publishes for the Corporation the quarterly technical journal, *RCA Review*, as well as various technical and engineering books, indexes and pamphlets.

### **Does RCA make its inventions and patents available to other manufacturers?**

RCA makes available to competitive manufacturers in radio and related fields its inventions and patents by means of patent licenses at moderate royalty rates. By this means the accomplishments of RCA scientists are promptly made available to serve the government and the public in the most efficient manner. To assist its licensees, RCA Laboratories Division maintains an Industry Service Laboratory through which licensees are kept



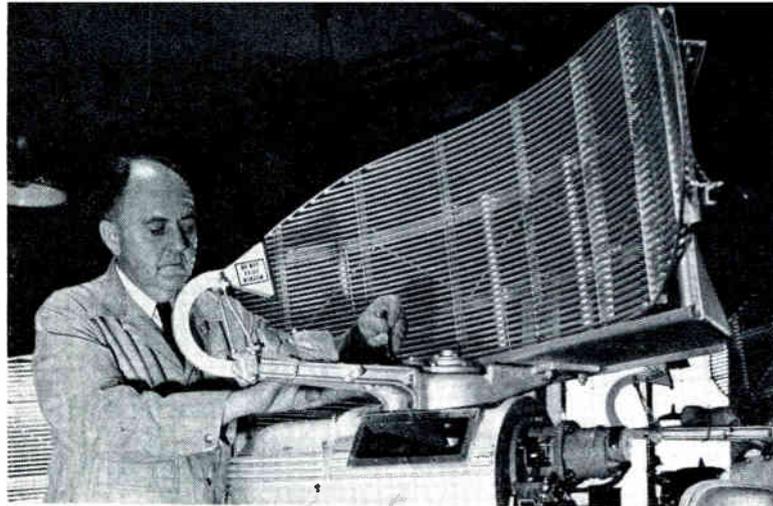
*Electronic counters, developed at RCA Laboratories for testing the velocity of projectiles, are able to measure time intervals with an accuracy of one ten-millionth of a second.*

informed of new technical developments, advised how best to apply them, and given assistance in the solution of technical problems. In addition to several completely equipped laboratories, the Industry Service Laboratory maintains a mobile field laboratory which provides test and measuring equipment that can be employed under all conditions in any location, for studies in relation to television, frequency modulation, facsimile and standard broadcasting.

### **What are some of the outstanding developments of RCA research?**

RCA pioneering research has been responsible for many of the outstanding contributions in radio and electronics. High on the list of developments is electronic high-definition black-and-white television, rapidly expanding into an important service to the public. Further research on RCA simultaneous all-electronic color television resulted in improvements in the direct pick-up color camera and in the naturalness of the color reproduction.

Pursuing original investigations in ultra-high frequencies, new



*Radiomarine shipboard radar antenna being assembled.*

applications have been made in the spectrum of microwaves, including uses in television, radar, and in automatic radio-relay stations.

A new transmitter circuit permits multiple operation of transmitter tubes at ultra-high frequencies, thus simplifying the problem of getting higher power for services above 500 megacycles.

To reduce interference between television stations on the same channel, a system of synchronizing the carrier frequencies of the stations was developed. It was first put into operation between NBC stations in Washington and New York.

Research in the field of microwaves has led to a new method of frequency stabilization using radio absorption effects on certain gases. The stabilization obtained at microwave frequencies compares favorably with that provided by the use of quartz crystals on lower frequencies.

Research in television, which led into the realm of electron optics, has brought numerous outstanding developments, including the RCA electron microscope, which enables the human eye to see deeply into the submicroscopic world. Recent research in this field has been concentrated on specimen-handling techniques which, when combined with a specially developed lens, makes it possible to follow some of the structural changes occurring in growing bacteria.

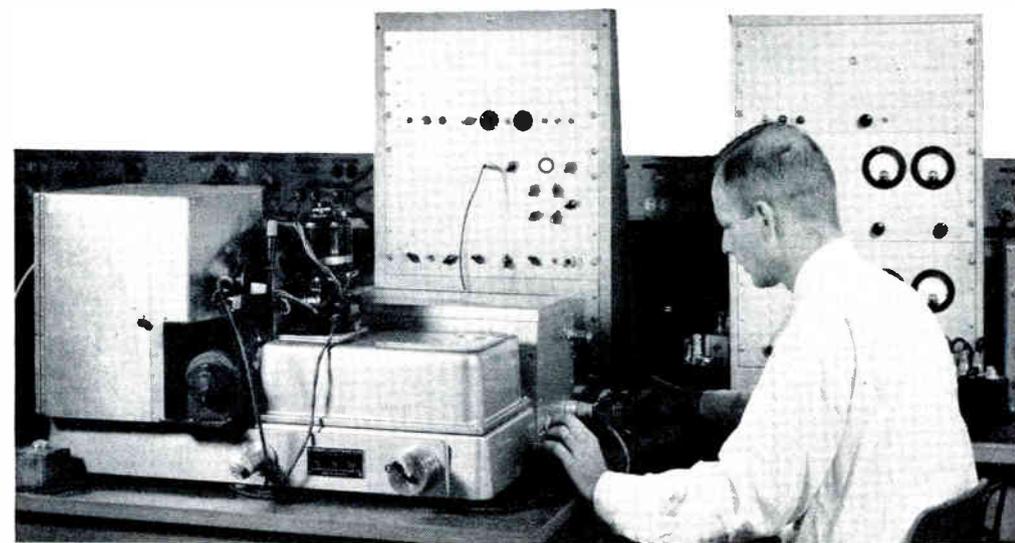
Many types of vacuum tubes have been created for myriad uses in radio and industry. The new supersensitive pick-up tube, or "eye", for the television camera – the image orthicon – permits the televising of scenes even when illumination is provided only by a single candle.

Explorations in radio have pointed the way to useful developments applicable to other fields. For example, early work in the realm of microwaves led to development of various radar devices including the RCA altimeters which were widely used in aircraft during the war. Many types of special tubes also were developed for wartime radar applications. Research is progressing toward the adaptation of some of these tubes to peacetime uses such as television in the ultra-high-frequency ranges.

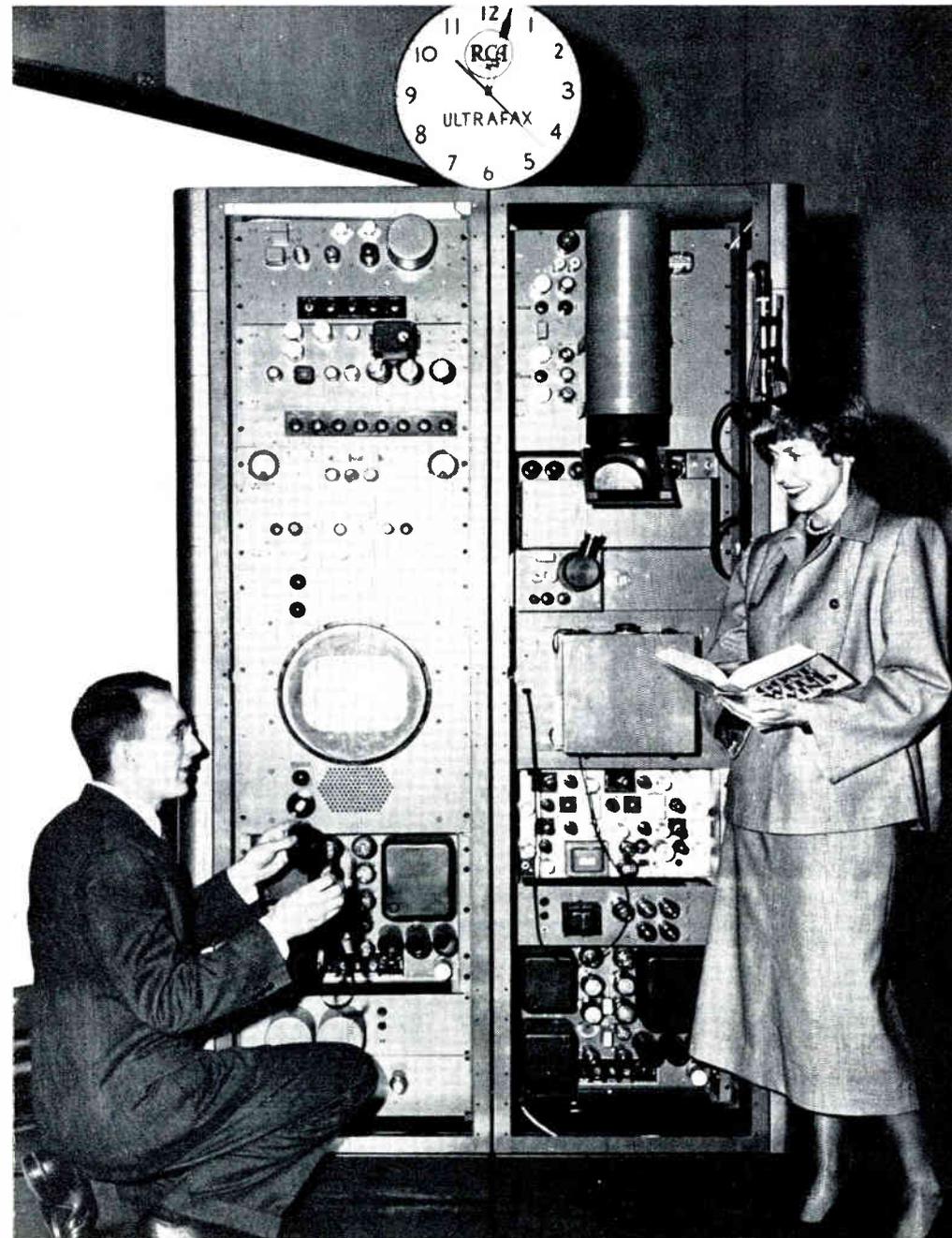
Research in the field of amplifier tubes has resulted in the successful combination of the highly efficient electron multiplier with the conventional cathode and grid tube structures to provide a new type of tube which will probably grow rapidly in use in the near future. A wartime development – the storage tube – shows great promise of peacetime use in this and other applications.

Efforts in television research to find a way of eliminating reflections from glass, led to RCA's chemical process for making low-reflection glass and the Magicote process that greatly increases

*Sensitive testing devices are used to control the quality of materials going into RCA electron tubes.*



*Receiving terminal of the RCA Ultrafax system of radio-television communication which is capable of handling written and printed documents at the rate of a million words a minute.*



the efficiency of lenses. Extensive investigations in the field of radiothermics—the application of heat generated by high-frequency radio waves—have led to numerous new developments such as the electronic sewing machine.

In the field of antenna research, a new antenna for home television receivers has been developed which will receive from either of two directions, controllable at the receiver location. This antenna efficiently covers the complete range of 12 television channels. Research in slot-type transmitting antennas has shown that this type of antenna can be used to advantage at the television frequencies as well as at the ultra-high frequencies.

An FM circuit, called a “ratio detector”, has been developed by RCA. It aids in counteracting interference and its use reveals superior merit over circuits previously used for FM reception, particularly in low-priced receivers.

A letter-recognition device has been developed by RCA which will call out the names of the letters in a line of printed material as a special scanning stylus is moved across each letter. The device was developed on a government contract covering this and other equipment of a similar nature.

Research in the field of electronic counters has resulted in making available a commercial counter capable of measuring time in units as small as one millionth of a second. A special electronic counter chronograph, capable of measuring time in units as small as one ten-millionth of a second, was developed for the government.

Combining the elements of television and facsimile with the latest techniques in radio relaying and high-speed photography, a new communication system known as Ultrafax has been developed which is capable of transmitting written or printed messages and documents and receiving them in recorded form at the rate of a million words a minute.

A new light-weight microphone developed by RCA has recently come into wide use in the sound motion picture studios of Hollywood where its mechanical and electrical characteristics make it superior to previous designs for mobile studio use.

# PIONEERING IN RADIO

## Some RCA "Firsts" in the Radio World

World-wide communication inaugurated by RCA in 1920 was greatly extended in 1921 with the opening of "Radio Central" at Rocky Point, Long Island, featuring the 200-kilowatt Alexanderson alternators.

Dempsey-Carpentier fight on July 2, 1921, broadcast by RCA from Boyle's Thirty Acres in Jersey City, as the first world's heavyweight championship bout on the air.

High-speed transmitters and automatic receivers installed on ocean liners in 1923 to handle increased radio traffic.

Short waves applied in 1924 to RCA transatlantic communication featuring vacuum tubes rated at 20 kilowatts.

First radiophoto transmitted by RCA across the Atlantic was of Charles Evans Hughes, sent on July 6, 1924, from New York to London where it was radioed back across the sea and recorded in New York.

First rebroadcast from London heard on February 14, 1925, through RCA stations WJZ, New York, and WRC, Washington.

Broadcasting transmitters of RCA participated in 24 station hook-up handling Coolidge inaugural in 1925, first event of its kind on the air.

Initial international broadcast program transmitted from Chelmsford, England, picked up at Belfast, Maine, and relayed by short wave to New York, for rebroadcast by RCA's station WJZ, March 1925.

Radio facsimile messages, maps and pictures sent by RCA radiophoto system on May 7, 1925, from New York to Honolulu.

Picturegram of a check sent from London to New York by RCA radiophoto on April 20, 1926, was honored and cashed in New York.

National Broadcasting Company organized as a service of RCA on September 9, 1926, to conduct nation-wide network broadcasting.

World series baseball games broadcast for the first time by WJZ in October 1926.

Play-by-play description of Rose Bowl football game in Pasadena, Cal., on January 1, 1927, broadcast by NBC over coast-to-coast hook-up, was America's first transcontinental network program.

Radio receiving sets and tubes designed for complete alternating current operation, introduced by RCA for home use in 1927.

Radiomarine Corporation of America—a service of RCA—was organized on December 31, 1927, to operate in the marine communication field.

RCA Communications, Inc., organized January 3, 1929, to conduct RCA's international radiotelegraph service.

New noiseless system of sound recording introduced to the motion picture industry by RCA in 1931.

Self-contained, portable ultra-high-frequency knapsack transmitter built by RCA in 1932 for use in broadcasts of outdoor events and for military scouts in the field.

RCA, at the Navy's request, began development work on sonar, an underwater sound system, in 1934, following considerable independent research by RCA scientists and engineers. Sonar was credited by the Navy with the destruction of nearly 1,000 enemy submarines in the Atlantic during World War II.

Electron multiplier tube, developed by RCA Laboratories, demonstrated in 1935, multiplies amplification hundreds of thousands of times within a single tube.

Automatic SOS alarm for use on vessels not having a radio operator on constant watch, introduced by RCA in 1935.



First ultra-high-frequency automatic relay circuit opened by RCA in 1936, between New York and Philadelphia, transmits simultaneously facsimile and multiple radiotelegraph messages.

First full-size symphony orchestra organized exclusively for broadcasting introduced by NBC under Arturo Toscanini, conductor, in 1937.

A radio altimeter embodying radar principles was developed by RCA in 1937 during research on collision prevention apparatus.

Dr. V. K. Zworykin of RCA Laboratories, in December 1939, at the annual meeting of the American Association for the Advancement of Science, announced that he was working on the development of an electron microscope; in April 1940 he announced the completion of the instrument which has attained magnifications of more than 100,000 diameters.

Utilizing the space-saving advantages of its miniature tubes, RCA introduced the pocket-sized "personal" radio receiver in 1940.

Radiophotos, the first ever received in New York from Moscow, picked up by RCA on July 8, 1941.

RCA Alert Receiver turned on and off by a special signal from broadcast transmitter, rings bell, lights electric lamp or blows siren to summon listeners, demonstrated on July 28, 1941, for possible use in civilian defense.

Ground broken on August 8, 1941, for new RCA Laboratories at Princeton, N. J., to be one of the foremost centers of radio and electronic research in the world; cornerstone laid on November 15, 1941.

RCA electron microscope at the University of Pennsylvania magnified the influenza virus 65,000 times, making possible the first photograph ever taken of the virus, as announced on November 22, 1941.

Advanced types of miniature tubes, not much larger than an acorn, were introduced by RCA beginning in 1942. These small tubes were developed to meet the demands of wartime military equipment but their use in peace-

time is expected to make possible smaller radio and television receivers and more effective hearing aids.

The electron micro-analyzer, growing out of research on the electron microscope, was a new scientific development at RCA Laboratories in 1943. This instrument makes possible the determination of the atomic composition of sub-microscopic particles of matter.

First direct radiophoto circuit between Australia and United States opened by RCA (March 20, 1942); between New York and Cairo (June 24, 1942); New York and Stockholm (February 22, 1943); New York and Berne (September 21, 1943); direct radiotelegraph circuits between New York and Dakar (March 10, 1943); between New York and Naples (February 1, 1944). For the New York-Italy circuit, RCA set up the first American owned-and-operated commercial station on the continent of Europe.

Radio-frequency equipment for the bulk dehydration of penicillin was developed and installed by RCA at the plant of E. R. Squibb and Sons at New Brunswick, N. J., on May 5, 1944.

Development of necessary tube and transmitter to provide, for the first time, five kilowatts of output power at 300 megacycles for a television transmitting or relay station was announced by RCA in October, 1944.

Special equipment to measure the muzzle velocity of projectiles was developed by RCA Laboratories in 1944.

RCA International Division was formed February 5, 1945, "to supervise foreign sales and other activities of the Company and its subsidiaries outside the United States."

Capable of operating over distances of 1,000 miles or more, new lifeboat radio equipment that automatically transmits SOS and radio direction finder signals was announced by Radiomarine Corporation of America, April 3, 1945.

After eleven years of research, RCA introduced a non-breakable high-fidelity phonograph record which was demonstrated to the press on August 30, 1945.



Two radio-relay systems, developed by RCA Laboratories in collaboration with the Camp Cole Ground Signal Agency, which provide as many as eight channels on a single carrier, were demonstrated October 1, 1945, by the U. S. Signal Corps.

A new FM radio circuit, called the Ratio Detector, invented by Stuart W. Seeley, manager of RCA Industry Service Laboratory, was revealed at a meeting of the Institute of Radio Engineers, October 3, 1945.

First link in an automatic microwave relay system, using equipment developed by RCA, was announced jointly by The Western Union Telegraph Company and RCA on October 22, 1945. With radio beams working in both directions between terminals, the system provides 270 multiplex circuits.

A new system of air navigation, proposed by RCA, based on wartime developments in radar and television and known as "Teloran", was described before a technical symposium in New York City on December 8, 1945.

Shoran, a precision radar system developed by RCA as an aid to blind bombing in war, was revealed on January 22, 1946, to have widespread peacetime applications as a "yardstick" for world-mapping of uncharted areas. So precise is Shoran that it can measure distances up to 250 miles with almost pinpoint accuracy.

Development of an improved projection kinescope or picture tube with a gain of about 50% in light efficiency, obtained by coating the back of the tube's luminous surface with a layer of metal 2- to 8-millionths of an inch thick, was revealed by RCA research engineers at a meeting of the Institute of Radio Engineers on January 24, 1946.

Army headquarters, on April 21, 1946, revealed use in the Pacific theatre of the sniperscope, an effective night-fighting device which uses an electronic infrared image tube developed by RCA Laboratories in 1930, during television research on the image orthicon. A corresponding combat-aid, the snooperscope, was used by the armed forces as an invisible spotlight for reconnaissance and for night signalling. Car drivers equipped with image-tube binoculars could speed along roads in total blackouts as if in daylight.

The "Pocket Ear", developed in 1946 by NBC, is a miniature radio receiver, small enough to carry in a coat pocket and conveying sound through a

replaceable ear plug. Used for communication between control rooms and studio stages, it provides a means of "talk-back" free from the trailing wires inherent in former systems.

The "Selectron", a new electron tube with a "memory", developed by RCA Laboratories for use in a calculating machine that will solve complex mathematical problems with lightning-like speed, was revealed to the I.R.E. on March 4, 1947.

A method of making river navigation charts using a mosaic of photographs of radar images taken from the scope of Radiomarine's 3.2-centimeter radar equipment was revealed by the U. S. Army Corps of Engineers, Ohio River Division, on June 4, 1947.

Development of a revolutionary system of high-speed communications capable of transmitting and receiving written or printed messages and documents at the rate of a million words a minute was disclosed by RCA-NBC on June 23, 1947 and demonstrated to the public for the first time, October 21, 1948 at the Library of Congress, Washington, D. C. Called "Ultrafax", the new system is a development of RCA Laboratories and the Eastman Kodak Company.

New methods of highly accurate microwave frequency control for transmitter circuits, based on the effects of radio on certain gases were described by W. D. Hershberger and L. E. Norton of RCA Laboratories, in March, 1948.

A new electron tube, which acts as a "transducer" in converting mechanical vibrations into electrical pulses that can be studied as audible or visual signals, announced by RCA, October 20, 1948. Weighing only 1/16th of an ounce, the new tube is so sensitive that it can measure the vibrations made by a fly landing on a board.

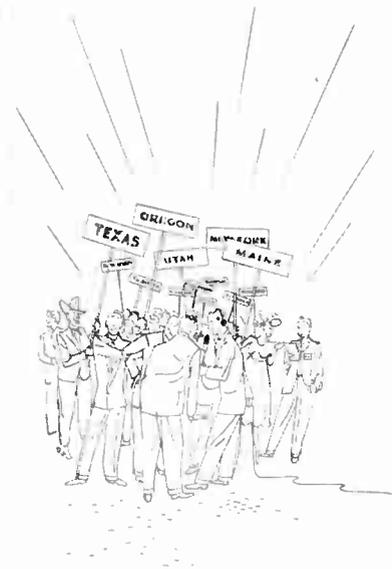
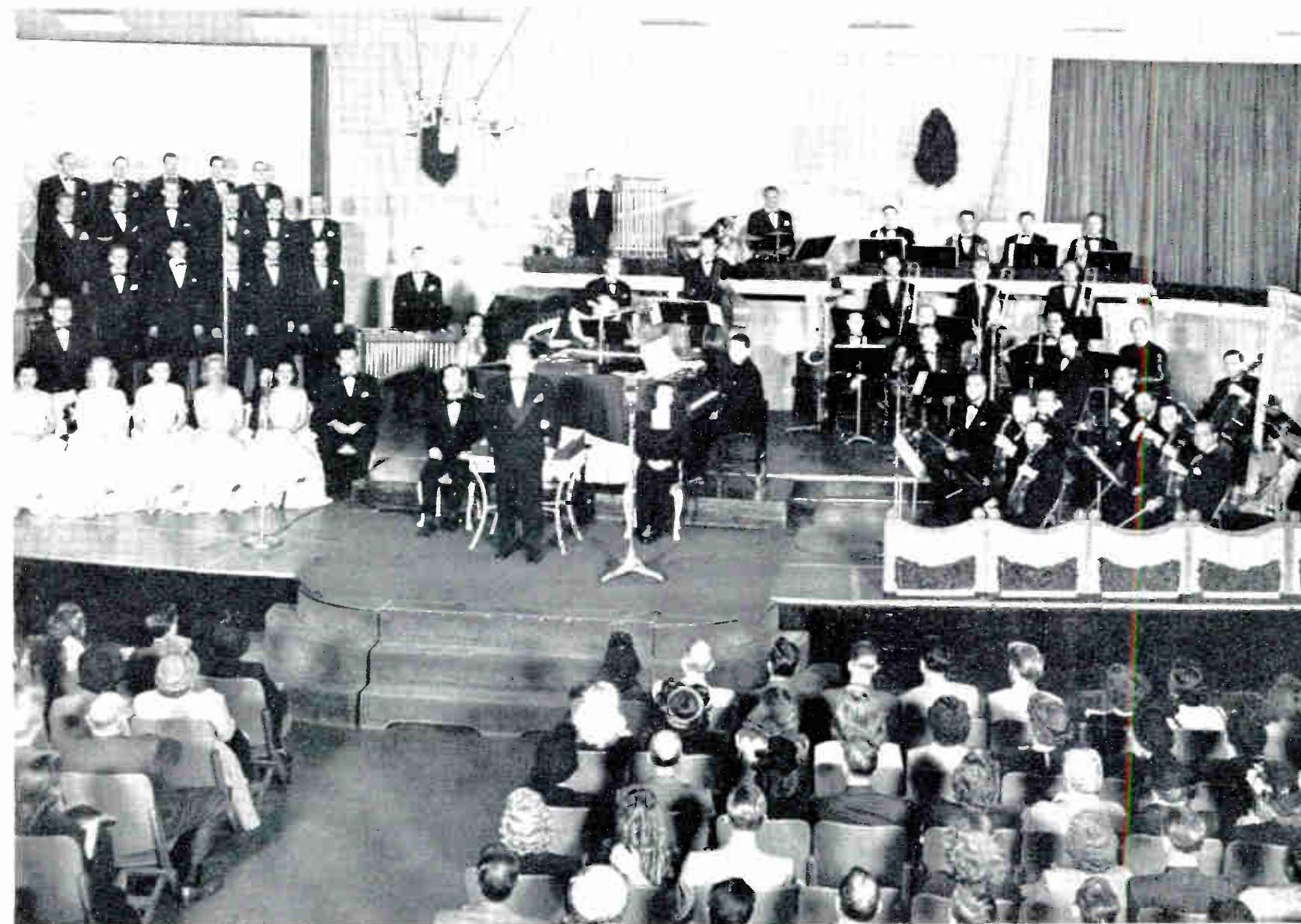
A new form of electronic reading aid, which scans individual letters and reproduces their sounds through a loudspeaker, was developed by RCA Laboratories and demonstrated to the New York Electrical Society, October 26, 1948.

An entirely new system for the reproduction of recorded music in the home, based on a vinylite record 6 7/8 inches in diameter and a fast-changing record player operating at 45 r.p.m., was announced January 11, 1949, by RCA Victor Division. The combination of record and record-player provides completely distortion-free music of unprecedented brilliance and clarity of tone.



An audience enjoys a musical program  
in NBC's studio 8H, in Radio City.

# BROADCASTING





*NILES TRAMMELL,  
President,  
National Broadcasting  
Company*

## BROADCASTING

### **How did the idea of broadcasting to the public originate?**

David Sarnoff was the first man to propose that programs be broadcast over the air for public consumption. In 1916, when he was Assistant Traffic Manager of the Marconi Wireless Telegraph Company of America, Mr. Sarnoff suggested the manufacture of "radio music boxes" so that purchasers could enjoy "concerts, lectures, music, recitals, etc." His memorandum to E. J. Nally, Vice President and General Manager of the Company, said: "I have in mind a plan of development which would make radio a household utility in the same sense as a piano or a phonograph. The idea is to bring music into the house by wireless. . . . For example, a radio telephone transmitter having a range of say 25 to 50 miles can be installed at a fixed point where instrumental or vocal music or both are produced. . . . The receiver can be designed in the form of a simple 'radio music box' and arranged for several different wave lengths, which should be changeable with the throwing of a single switch or pressing of a single button. . . . The same principle can be extended to numerous other fields — as for example — receiving lectures at home which can be made perfectly audible; also events of national importance can be simultaneously announced and received. This proposition would be especially interesting to farmers and others living in outlying districts removed from cities. By the purchase of a 'radio music box' they could enjoy

concerts, lectures, music, recitals, etc., which may be going on in the nearest city within their radius. . . . Should this plan materialize, it would seem reasonable to expect sales of 1,000,000 'radio music boxes' within a period of three years."

Demonstration of the practical value of the Sarnoff plan was delayed by World War I. However, on November 2, 1920, when the Westinghouse station, KDKA, Pittsburgh, broadcast the Harding-Cox election returns, the "radio music box" became a reality.

### **When did RCA enter the broadcasting field?**

The first broadcast program presented by RCA was the Dempsey-Carpentier heavyweight championship boxing match in Jersey City on July 2, 1921. Major J. Andrew White telephoned a blow-by-blow description from the stadium to a station in Hoboken which RCA had installed especially for this occasion. White's words were typed as they came over the phone and were read over the air by J. O. Smith to an estimated 200,000 listeners. Commenting on this event a few weeks later, the RCA magazine "World-wide Wireless" stated: "In the future, it is proposed to employ the radiophone to report all events of national and international importance, such as elections and big sporting events. Indeed, we are living in the age of miracles and the day is not far off when almost every home will be equipped with its own wireless telephone receiver."



RCA's first regularly operated broadcasting station, WDY in Roselle Park, N. J., was licensed September 19, 1921 and went on the air December 14 of that year to provide programs to the New York metropolitan area. Use of this station was discontinued in February, 1922, when RCA entered into an arrangement with Westinghouse Electric & Manufacturing Company for the operation of Station WJZ at Newark. RCA acquired full ownership of this station in the spring of 1923, and up-to-date studios were installed in Aeolian Hall, New York. The Company also constructed Station WRC in Washington, D. C., which went on the air August 1, 1923.

### **When was the National Broadcasting Company formed?**

The National Broadcasting Company was established by RCA in the fall of 1926. It was NBC's announced purpose "to provide the best programs available" to the five million American homes then equipped with radio receivers. NBC's inaugural network program, on November 15, 1926, was broadcast by 24 stations in 21 cities extending from the eastern seaboard as far west as Kansas City. Initially, NBC owned one station, WEAJ (now WNBC), New York, which it had purchased from the American Telephone & Telegraph Company. It also operated the two RCA stations, WJZ and WRC, acquiring ownership of these stations from the parent company in 1931.

### **Did NBC have a coast-to-coast network when it started?**

No; there was no coast-to-coast network until January 1, 1927, when the first transcontinental network was arranged by NBC to broadcast a football game in the Rose Bowl at Pasadena, California.

### **How many stations are affiliated with the NBC network?**

The NBC network now comprises more than 170 stations. Six of these are owned by the Company: WNBC, New York; WRC, Washington; WTAM, Cleveland; WMAQ, Chicago; KOA, Denver; KNBC (formerly KPO), San Francisco. Of the Company's affiliated stations, 160 are in the United States, two in Canada, one in Honolulu and one in Manila.

### **How is the NBC network interconnected?**

The network consists of over 16,000 miles of leased telephone circuits especially engineered for the transmission of broadcast programs. These circuits are available for NBC use for 24 hours a day and they are used for periods varying from 16 to 18 hours a day in different parts of the country. In addition to these circuits, temporary facilities are purchased on a per-occasion basis, primarily for program transmission for pick-ups outside NBC studios.

### **Where are NBC studios located?**

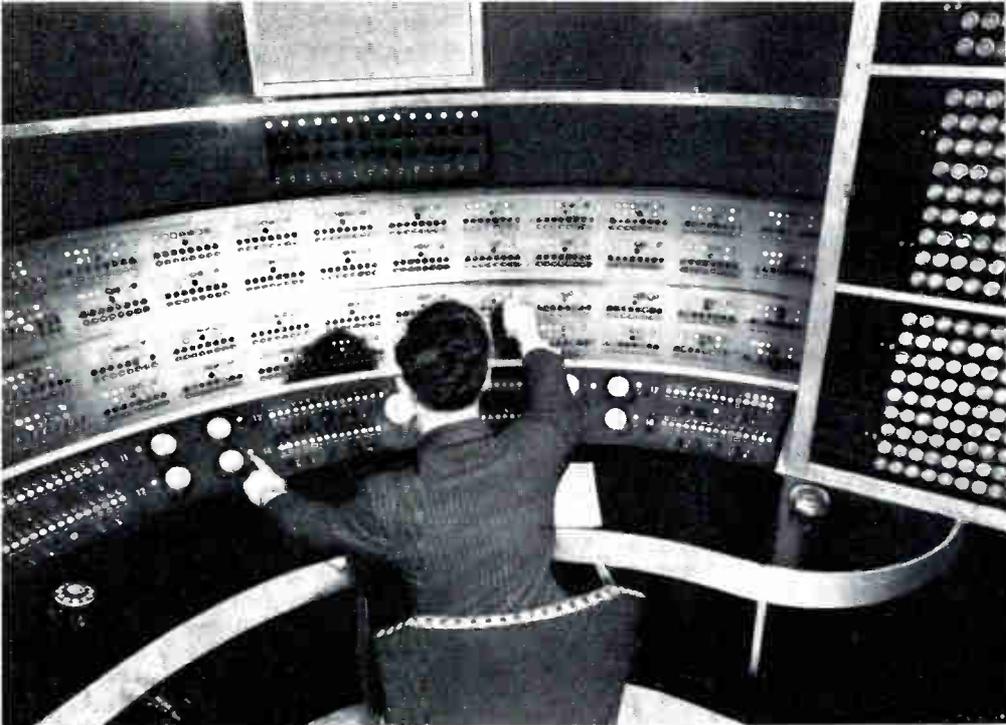
The National Broadcasting Company's main offices and studios are located in the RCA Building, Radio City, New York. NBC also has offices and studios in Washington, Cleveland, Chicago, Denver, Hollywood, and San Francisco.

### **What is the seating capacity of NBC studios in Radio City?**

The seating capacity of all NBC studios in Radio City exceeds 3,000. The largest broadcasting studio in the world, 8H, alone seats more than 1,100 persons.

*A television cameraman prepares to pick up a scene aboard the U.S.S. Leyte during a spectacular telecast from the carrier while on maneuvers.*





*The master control board in Radio City with its myriad switches and flashing lamps is the nerve center of the NBC network.*



*When television programs take place outside the studio, signals are sent back to the main transmitter by microwaves beamed from these parabolic antennas.*

**How may tickets be obtained for admission to broadcast programs?**

By writing at least two weeks in advance to the Guest Relations Division of NBC. Cards of admission, if available, will be supplied.

**What proportion of NBC programs is sponsored by advertisers?**

Approximately half of the total program hours of the NBC network are commercially sponsored. The remaining half are filled with non-commercial programs, that is, programs for which NBC and its affiliated stations supply time, facilities and frequently program content, without remuneration.

**How many sponsored programs are on the NBC network?**

Approximately 110 sponsored programs in 260 program periods are heard each week on the NBC network. In addition, during certain hours every day, each of the six stations owned by NBC broadcasts local programs sponsored by advertisers in its own community.

*Compact portable stations, whose waves can travel only a short distance, are frequently used for interviews during conventions and other assemblies.*





*News from all parts of the world flows into the NBC newsroom for the use of its corps of commentators.*

### **How should an idea for a radio script or program be presented for consideration?**

NBC welcomes new ideas for radio programs as well as constructive criticism intended to improve programs already on the air. All program ideas must be submitted in writing to the Program Department and must be accompanied by a signed release form which is readily obtainable from the Program Department. They will not be accepted orally. Ideas for programs, as well as specific scripts, are given prompt consideration by the Script Division.

### **Does the NBC network conduct auditions to find new talent?**

NBC has an extensive system of auditions set up for the express purpose of getting a proper appraisal on talent. The audition system is open to anyone who applies. A specialist in drama and another in music first conduct interviews with applicants, then hear auditions of those with proper background and experience. Those who are approved in the preliminary audition are then heard by dramatic and musical producers, are placed on a list which is made available to advertising agencies and are given full consideration in casting NBC programs.

### **How does one arrange for an audition?**

Application should be made to the Production Division of the Program Department. This applies to actors, announcers, and vocalists. All instrumentalists are considered by the Music Division of the Program Department.

### **Where does NBC get its news?**

From NBC's accredited reporters on all world news fronts and from Associated Press, United Press and International News Service teletype machines which give 24-hour service to the NBC News Room. NBC maintains offices and news bureaus in principal American cities and in London, Paris, Moscow, Berlin, Rome, Berne, Manila, Honolulu, Tokyo, Stockholm, Rio de Janeiro, Buenos Aires, Ankara, Panama, and other foreign capitals.

### **How many NBC programs originate overseas?**

Annually nearly 3000 pickups and programs are originated in foreign lands and broadcast over the NBC network. Throughout the year, the NBC staff of news analysts, commentators, and reporters regularly broadcast up-to-the-minute, first-hand reports from strategic locations all over the globe.

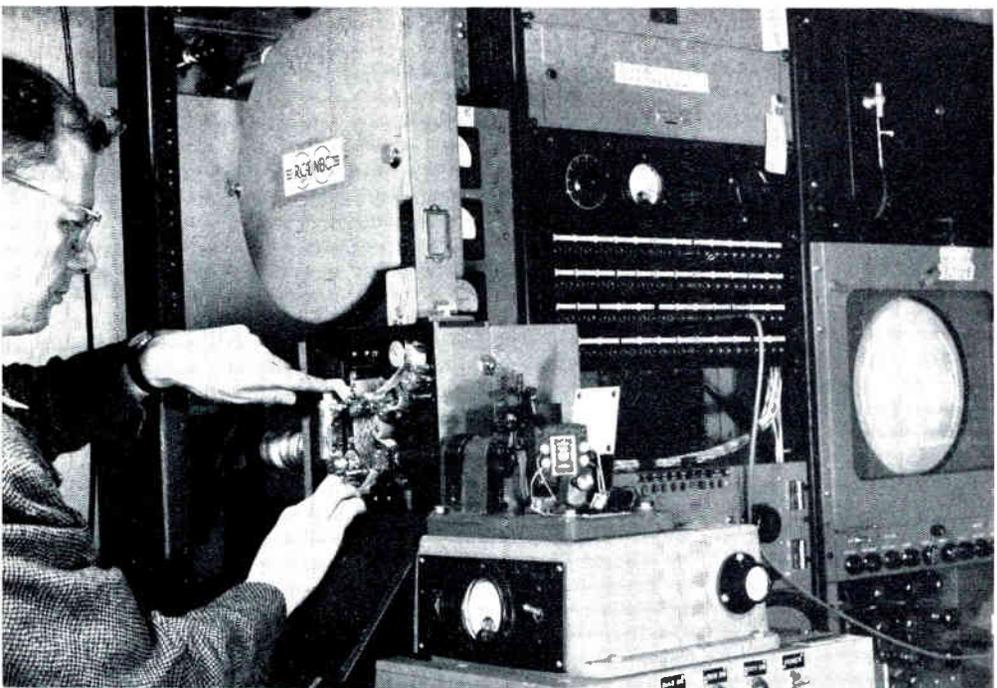
*Puppets Kukla and Ollie pose on their midget stage with Fran Allison, only "live" member of the popular television program, "Kukla, Fran, and Ollie," sponsored by RCA Victor Division.*





*Television and "still" cameras crowd the newsreel platform at the 1948 political convention in Philadelphia.*

*Television programs are photographed from the face of a cathode-ray picture tube by this kinescope recording equipment developed at NBC.*



**When was the first overseas program broadcast in the United States?**

On March 12, 1925, RCA's station WJZ, New York, broadcast the chimes of Big Ben atop Parliament House in London. The signals were picked up by the RCA station at Belfast, Maine, from a British broadcast on the 1600-meter wavelength originating in Chelmsford, England, and were relayed by short wave to New York.

**Is the National Broadcasting Company active in frequency modulation (FM) broadcasting?**

Yes; NBC owns and operates FM stations in New York, Washington, Cleveland, Chicago, Denver, and San Francisco, where all programs are broadcast simultaneously over both standard (AM) and FM facilities. Approximately 90 affiliated stations operate FM stations.

**Does NBC make recorded programs available to stations for broadcasting purposes?**

Yes; the activities of the NBC Radio-Recording Division fall into three principal categories: (1) NBC Thesaurus, a musical program service composed of 4,000 or more selections of every type of music, leased to more than 370 radio stations on a contract basis; (2) NBC Syndicated Programs: dramatic, variety, musical and other types of continuous programs designed for local and regional advertisers; (3) NBC Custom-built Programs, written, produced, recorded, manufactured and distributed for advertisers who want their own recorded program. Division offices and facilities in New York, Washington, Chicago, Hollywood and San Francisco enable NBC to give nationwide recording service to radio stations, advertising agencies and advertisers. NBC recorded programs are heard on more than 900 radio stations throughout the United States, Canada and in foreign countries. Large numbers of NBC custom-built programs are being used by the U. S. Armed Forces Radio Service, the Veterans Administration, recruiting branches of the Army, Navy and Marine Corps, and the American Red Cross.



# TELEVISION

Image orthicon cameras focus on different parts of a television stage setting in an NBC studio.

# TELEVISION

## ***Does NBC operate television as a service to the public?***

Yes: since 1939 NBC's leadership has brought the public into an era of new entertainment, information, news and education.

Early in 1948, NBC revealed to the public the greatest means of mass communication in the world — network television. At that time, NBC's Television Network consisted of four stations. In the early part of 1949, NBC's total was 34 stations — 16 joined in the East and Midwest networks to bring programs simultaneously to viewers from New York to St. Louis. Eighteen more stations aired NBC network programs by means of kinescope recordings.

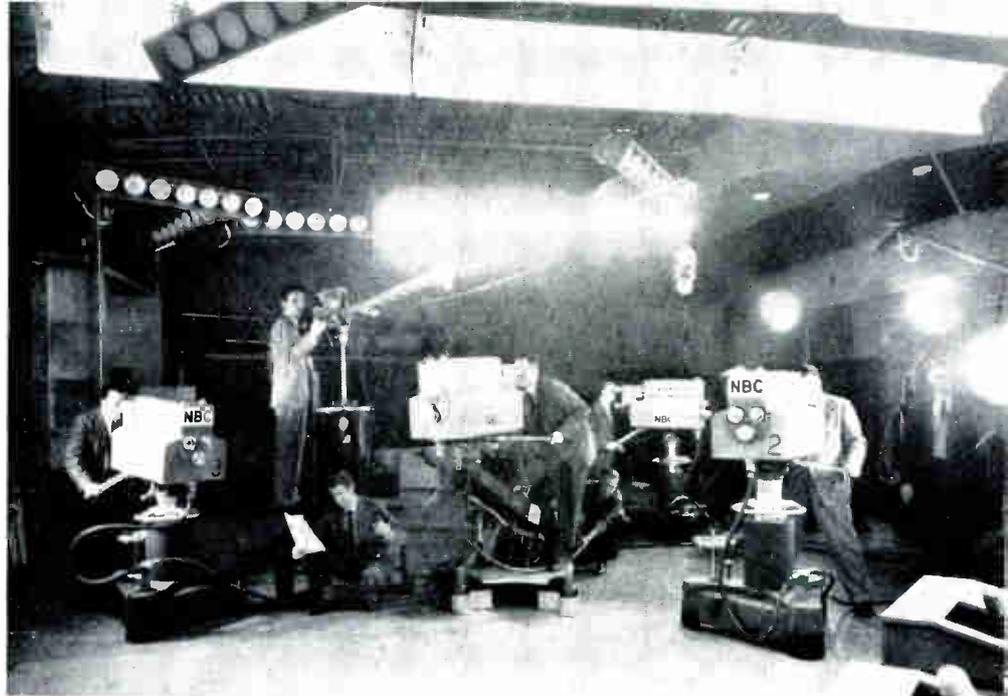
At the beginning of 1948, there were only 170,000 television receiving sets in the country. One year later, there were approximately a million sets in operation; by the end of this year it is expected that the number will increase to 3,000,000.

It is estimated that at least 10,000,000 viewers watched the inauguration of President Truman — more than all who saw the 31 presidents from Washington to Roosevelt take the oath of office.

## ***What types of programs are telecast by NBC?***

Those who have had television in their homes for the past year will remember the thrills of such special program highlights as the national political conventions, the presidential election and inaugural telecasts by NBC in cooperation with the U. S. Navy from the carrier *Leyte*, and Maestro Toscanini conducting the NBC Symphony.

Throughout each week, NBC television offers infinite variety from Milton Berle, Dunninger, Paul Winchell and Bob Smith, to drama hits on "Kraft Television Theater", "Chevrolet on



*A battery of image orthicon cameras, as they would be seen by a performer on an NBC television stage.*

*Television pictures, 15 by 20 inches, are provided by RCA Victor large-screen projection models.*





*José Ferrer, noted stage star, appears on NBC television in an effective video version of "Cyrano de Bergerac".*

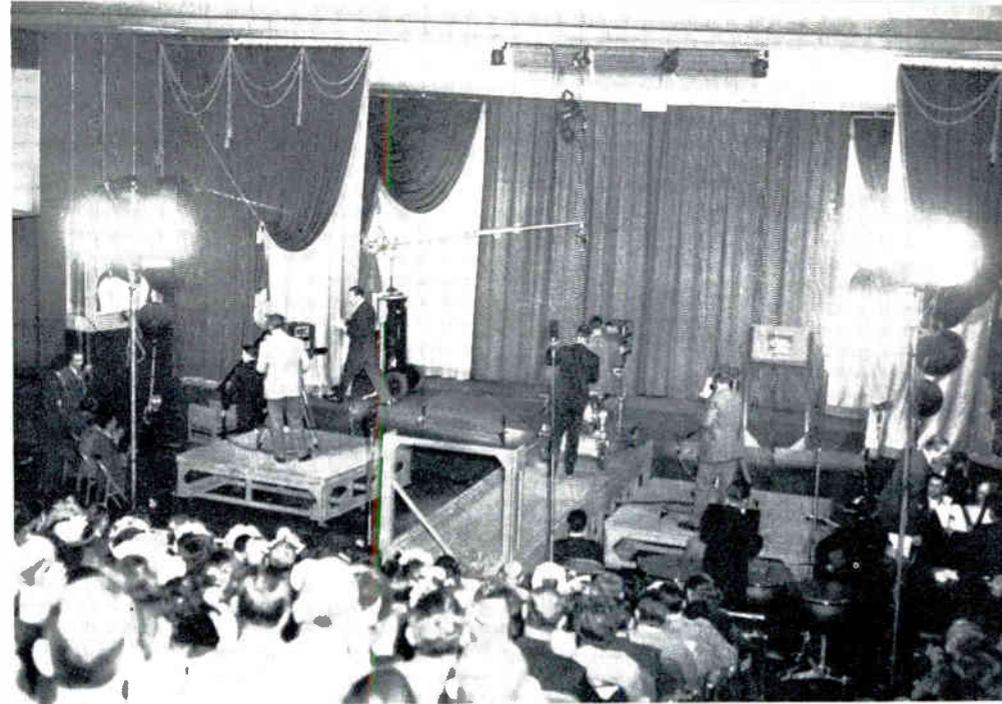
Broadway", "Colgate Theater", and "Philco Television Theater" . . . to musical stars such as Kyle MacDonnell and Lanny Ross . . . to the arts and sciences as represented by "Author Meets the Critics", "The Nature of Things" and "Americana" . . . to juvenile favorites like "Howdy Doody" and "Kukla, Fran and Ollie" . . . to sports and "The Camel News Caravan".

### **What does TV mean to industry?**

The fantastic growth of TV has lifted radio and television to a two-and-a-half billion-dollar-a-year industry today – one which may be one of the nation's top enterprises by 1953.

It means, also, that NBC has led in the economic advances of the new medium, as shown by the use of its facilities by nearly four times as many advertisers as the next network.

Advertisers are aware of the experience of Texaco, whose NBC television program series is drawing an almost unbelievable sponsor identification and the highest rating ever received in



*A studio audience watches a television variety show through a maze of image orthicon cameras, brilliant lights and microphones.*

*Cameramen, program directors and stagehands work simultaneously on several scenes in NBC's television studio 8G.*



either radio or television. Advertisers also know that Hooper surveys in New York show NBC with the largest average evening audiences. In the same way that advertising has built the wide range of radio's broadcasting schedule, it will make possible an increasing wealth of fine programs on television.

Television holds high promise to be the most effective of all advertising media. It will afford unlimited opportunities to the commercial sponsor to present sales, service and public relations messages in a manner informative, interesting, and entertaining.

### **What television stations does NBC own and operate?**

NBC owns and operates five television stations: WNBT, New York; WNBW, Washington, D.C.; WNBQ, Chicago; WNBK, Cleveland, and KNBH, Hollywood.

W2XBS, predecessor of WNBT and the first NBC station to go on the air, inaugurated a regular program service to the public on April 30, 1939. Station WNBT began commercial operation on July 1, 1941; WNBW went on the air in June, 1947; WNBQ and WNBK began transmissions the latter part of 1948, and KNBH went into regular operation early in 1949.

*Scenes from television productions of Shakespeare's "Henry V" with Sam Wanamaker, and "Catherine the Great" with Gertrude Lawrence.*



# RCA-NBC 'FIRSTS' IN TELEVISION

## 1923

Dr. V. K. Zworykin, now Vice President and Technical Consultant of RCA Laboratories, applied for patent on the iconoscope, television's electronic "eye". (December 29)

## 1929

Dr. V. K. Zworykin demonstrated an all-electronic television receiver using the kinescope, or picture tube, which he developed. (November 18)

## 1930

Television on 6- by 8-foot screen was shown by RCA at RKO-Proctor's 58th Street Theatre, New York. (January 16)

NBC began operating W2XBS, pioneer experimental television station in New York. (July 30)

## 1931

Empire State Building, world's loftiest skyscraper, was selected as site for RCA-NBC television transmitter.

## 1932

RCA initiated field tests with 120-line, all-electronic television. (May 25)

## 1936

Television outdoor pickups demonstrated by RCA at Camden, N. J., on 6-meter wave across distance of a mile (April 24)

## 1937

RCA announced development of electron projection "gim" making possible television pictures on 8- by 10-foot screen. (May 12)

Mobile television vans operated by RCA-NBC appeared on New York streets for first time. (December 12)

## 1938

Scenes from Broadway play, "Susan and God", starring Gertrude Lawrence, telecast from NBC studios in Radio City. (June 7)

## 1939

RCA and NBC introduced television as a service to the public at opening ceremonies of New York World's Fair, featuring President Roosevelt as first Chief Executive to be seen by television. (April 30)

Improved television "eye", the "Orthicon" was introduced by RCA. (June 7)  
Major league baseball was telecast for the first time by NBC, covering a

game between the Brooklyn Dodgers and Cincinnati Reds at Ebbets Field. (August 26)

First college football game — Fordham vs. Waynesburg — televised by NBC in New York. (September 30)

RCA receiver in plane over Washington picked up telecast from NBC station in New York, 200 miles away. (October 17)

Portable television equipment demonstrated to FCC by RCA, supplemented with motor truck mobile stations. (December 1)

## 1940

RCA demonstrated to the FCC, at Camden, N. J., a television receiver producing images in color by electronic and optical means employing no moving mechanism. (February 1)

New York televised from the air for the first time by a plane equipped with RCA portable television transmitter. (March 6)

Television pictures on 1½- by 6-foot screen demonstrated by RCA at annual stockholders meeting in Radio City. (May 7)

Television program broadcast from NBC station, New York, received on USS *President Roosevelt* while 250 miles at sea on return voyage from Bermuda. (May 14)

Coaxial cable used for first time in television program service by NBC in televising Republican National Convention at Philadelphia and transmitting scenes over New York station. (June 24)

Election returns on November 5, 1940, telecast for the first time as RCA-NBC showed teletypes of press associations reporting the news, as well as commentators at the microphone.

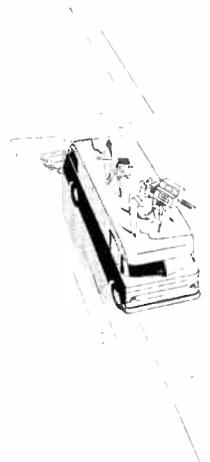
## 1941

Demonstrating television progress to the FCC, RCA exhibited the projection-type home television receiver featuring a screen 13½ by 18 inches. . . . Television pictures including a prize fight from Madison Square Garden and a baseball game at Ebbets Field, Brooklyn, were projected on a 15- by 20-foot screen in the New Yorker Theatre. . . . Scenes at Camp Upton, Long Island, were automatically relayed by radio to New York establishing a record as the first remote pick-ups handled by radio-relay stations. (January 24)

Color television pictures in motion were put on the air by NBC in the first telecast in color by mechanical means from a television studio. (February 20)

RCA-NBC made successful tests with first projection-type color television receiver using mechanical methods. (May 1)

NBC's television station WNBC became the first commercially licensed transmitter to go on the air. (July 1)





### 1942

First mass education by television was initiated by RCA-NBC in training thousands of air-raid wardens in the New York area. (January 23)

### 1943

NBC televised major sports and other events at Madison Square Garden for wounded servicemen in television-equipped hospitals in the New York area. (October 25)

### 1944

NBC announced plans for nationwide television network to be completed possibly by 1950. (March 1)

### 1945

RCA demonstrated projection-type television home receiver featuring screen approximately 18 by 24 inches. (March 15)

Supersensitive RCA image orthicon tube was introduced as solution to major problems in illumination of television programs and outdoor pickups. (October 25)

Greatly improved black-and-white television pictures and color television in three dimensions featuring live talent were demonstrated by RCA at Princeton, N. J. The color system was mechanical; the black-and-white, all electronic. (December 13)

### 1946

Airborne television as developed during the war by RCA and NBC in cooperation with U. S. Navy, U. S. Army Air Forces and the National Defense Research Council was demonstrated at U. S. Naval Air Station, Anacostia, D. C. (March 21)

First world's heavyweight championship fight to be seen on television featured Louis-Corn at Yankee Stadium, New York, televised by NBC and transmitted to Washington, D. C., via coaxial cable. (June 19)

Post-war television receivers introduced by RCA Victor. (September 17)

Color television pictures on 15- by 20-inch screen produced by all-electronic means were demonstrated publicly for the first time by Radio Corporation of America at RCA Laboratories, Princeton, N. J. A simple radio-frequency converter was announced that enables black-and-white receivers to reproduce in monochrome the programs of color television stations operating on high frequencies. This will make it possible to introduce all-electronic color without causing obsolescence of black-and-white television receivers. (October 30)

### 1947

Philadelphia audience saw color television pictures produced on 7½- by 10-foot theatre screen by RCA all-electronic system. (April 30)

First showing of American television in Europe conducted by RCA at Milan (June 6), and at the Vatican where Pope Pius XII was televised. (July 12)

Televised pictures of surgical operations were transmitted through the air for the first time by RCA Victor from operating room in New York hospital to television receivers viewed by members of the American College of Sur-

geons at the Waldorf-Astoria Hotel, presaging television as "medical lecture hall" of future. (Sept. 7 to Sept. 12)

Intensified NBC television activities included the following historic pick-ups: first telecast from Congress (Jan. 3); first pick-up from White House (Oct. 5); first televising of World Series (Sept. 30 to Oct. 6); arrangement with Theatre Guild to telecast dramatic adaptations, starting with St. John Ervine's "John Ferguson"; the Louis-Walcott championship prize-fight in Madison Square Garden, New York. (December 5)

### 1948

Trinity Church service telecast for the first time. It was the first program of its kind to be televised in New York from interior of a church during a religious service. (February 22)

NBC Symphony Orchestra with Maestro Arturo Toscanini conducting an all-Wagnerian broadcast concert, telecast for the first time. (March 20)

Beethoven's "Ninth Symphony" played by NBC Symphony Orchestra, Maestro Arturo Toscanini conducting, was telecast as well as broadcast; estimated TV audience, 370,000. (April 3)

Telecasts of Republican and Democratic National Conventions at Philadelphia enabled more people to eye-witness the events than the total of all who attended presidential nominating conventions in the past 100 years. (June and July)

Combat maneuvers of the carrier USS *Leyte*, 20 miles off Long Island, were televised by NBC and its east coast network, reaching an estimated audience of two million. (August 29)

RCA, in cooperation with NBC, instituted simultaneous tests of television program transmissions on 67 and 505 megacycles from station WNBW, Washington, D. C., as part of a continuing study of propagation characteristics of ultra-high-frequency waves. (September)

The first split-screen television image, in which two pictures from different originating points appeared side-by-side on the same kinescope picture tube, was displayed by NBC during Television Broadcasters Association Clinic in New York. (December 8)

First practical method of reducing co-channel interference of television stations by synchronizing their carrier waves was put into regular use between WNBT, New York, and WNBW, Washington, D. C. The control system was developed at RCA Laboratories. (December 16)

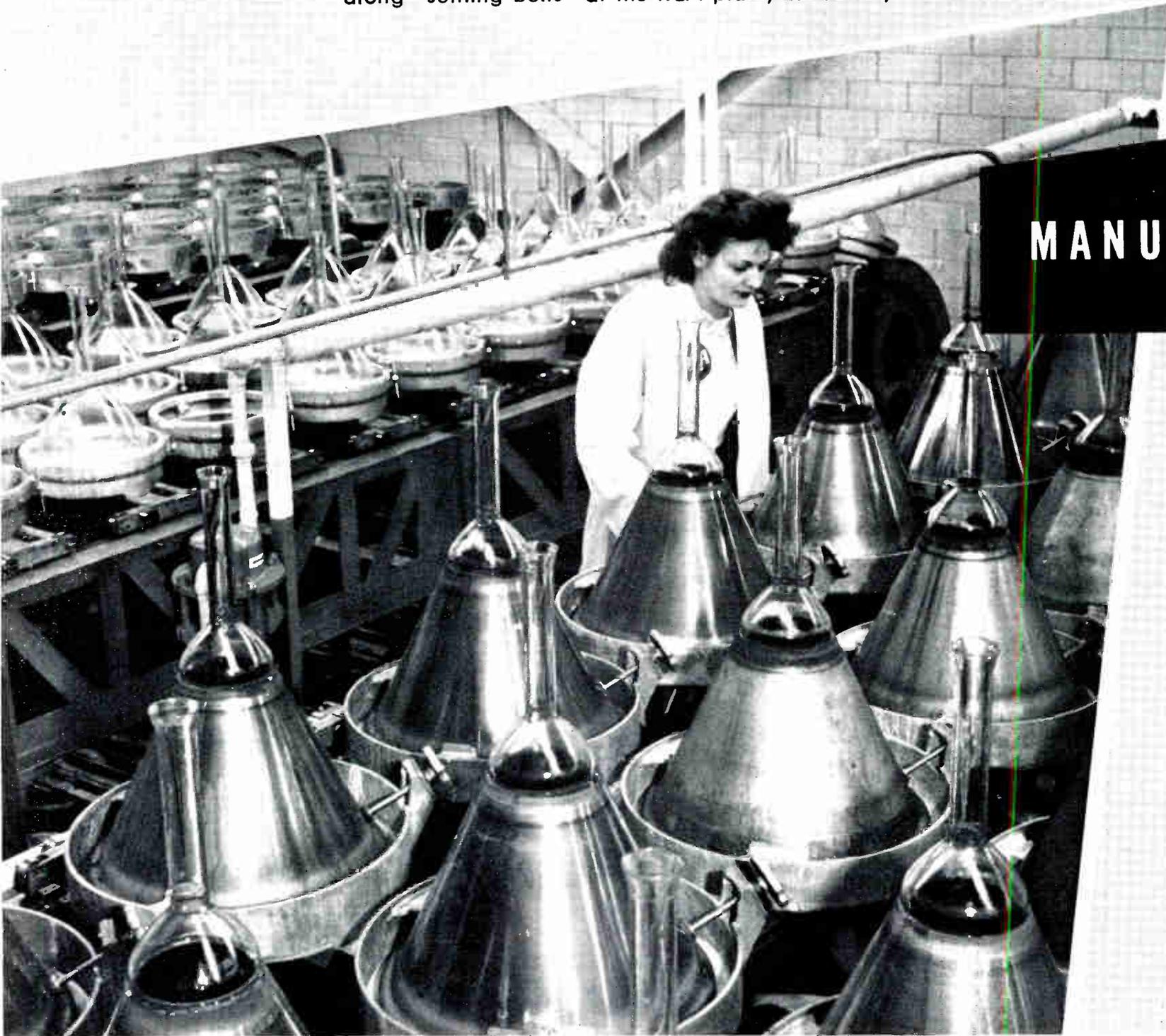
### 1949

A newly developed direct-view metal-cone television picture tube, 16 inches in diameter, was disclosed by RCA Victor Division. (January 3)

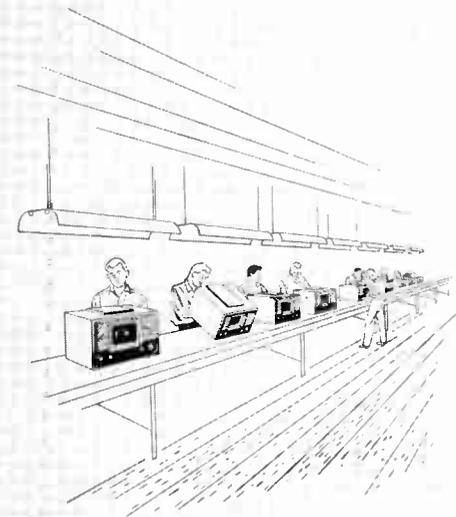
Scenes at inaugural of President Truman were transmitted from Washington, D. C., over the 15-station NBC television network extending from Boston to St. Louis and viewed by an audience estimated at 10,000,000. (January 20)



Rows of 16-inch metal-cone television picture tubes move along "settling belts" at the RCA plant, Lancaster, Pa.



# MANUFACTURING





*J. G. WILSON,  
Executive Vice President  
in Charge of  
RCA Victor Division*

## MANUFACTURING

### ***When was the manufacturing division of RCA organized?***

When Radio Corporation of America was formed in 1919, its primary activities were in the fields of international and marine radio communications. Shortly thereafter, radio broadcasting began and RCA initiated the sale of radio products manufactured by General Electric Company and Westinghouse Electric & Manufacturing Company. The rapid development of this new industry made it necessary for RCA so to organize its business in 1929 that it could combine manufacture and sales under a unified management.

To obtain manufacturing facilities, RCA acquired the Victor Talking Machine Company—a company which had been in operation since 1898. In the latter part of 1934, the various units engaged in the manufacture and sale of RCA products were unified as the RCA Manufacturing Company. On December 31, 1942, this company was merged into Radio Corporation of America as the RCA Victor Division.

### ***Where are RCA Victor manufacturing plants located?***

RCA Victor Division plants are located in Camden and Harrison, New Jersey; Indianapolis, Bloomington, Monticello, and Marion, Indiana; Canonsburg and Lancaster, Pennsylvania; Detroit, Michigan; Pulaski, Virginia; Hollywood, California; and New York City.

### ***How did the RCA Victor dog trademark originate?***

As one of the most famous trademarks in advertising history, the painting by Francis Barraud, entitled "His Master's Voice", is familiar to millions of people throughout the world wherever RCA Victor products are sold.

The dog in this picture was a real dog, a fox terrier named "Nipper", who belonged to the artist. The picture was painted by Barraud in England. The Victor Talking Machine Company acquired rights to the painting, and this trademark, which now identifies Victrola-phonographs, RCA Victor records, RCA Victor radios, television receivers, electron tubes, and other home products, has become one of the best known symbols of dependable quality in the world.

### ***What are the different types of television receivers manufactured by RCA Victor?***

RCA Victor manufactures television receivers to meet all home and commercial requirements. Home receivers are made in table and console models with both 10-inch and 16-inch direct-view screens. Consoles are made with screens almost as large as a newspaper page. RCA also makes television projectors which project life-size images on a screen, much the same as in the projection of motion pictures. For special needs, custom television installations are made to meet individual customer requirements.

### ***Where can I buy an RCA Victor instrument for my home?***

Over 30,000 dealers and distributors throughout the United States sell RCA Victor radios, Victrola-phonographs, records, electron tubes, and other RCA Victor products. Dealers handling RCA Victor television receivers are of necessity limited to television service areas, but the number of such dealers is constantly increasing to meet customer demands in the expanding continental area reached by television programs.



*RCA Victor's new system of playing recorded music features 6 $\frac{7}{8}$  inch non-breakable records and an automatic record player. The compact player has the fastest record-changing mechanism ever devised.*

**What major phonograph and record development was introduced by RCA Victor early this year?**

Early in 1949, RCA Victor gave the first public demonstrations of a completely new record-playing system for the home. As compared with the standard record, which revolves at 78 revolutions per minute, the new records are designed to operate at 45 revolutions per minute, a speed selected by engineers to meet technical requirements for producing 100% distortion-free music. The record, of unbreakable vinylite, is seven inches in diameter and uses only that portion of the playing surface which is distortion-free. The spindle hole is 1 $\frac{1}{2}$  inches in diameter to accommodate the large turntable spindle, so designed as to enclose the record-changing mechanism.

**How extensive is the catalog of RCA Victor records?**

The RCA Victor catalog of records represents a half-century of music in America, and comprises a cross-section of musical favorites established throughout the years. It includes all categories – from music of the masters to children's records, folk songs, jazz, popular music, dramatic readings, international novelties, and educational recordings. The list of RCA Victor recording artists is the most distinguished array of musical talent in the world.

**Are recording facilities and equipment available through RCA?**

RCA Victor maintains seven different recording studios throughout the United States: five are disc recording studios located in Chicago, Hollywood, and New York; two are film recording studios in Hollywood and New York. Professional disc and film recording equipments are manufactured for use in motion picture, recording and radio broadcasting studios.

*RCA's new 45-rpm records and record player, designed for the flawless reproduction of music were introduced 48 years after the famous Victor dog trademark featured the first disc records.*



### **What is RCA motion picture sound?**

The recording and reproduction of sound on film is another field in which RCA engineers have pioneered many fundamental improvements. A number of these technical advances have won the famous "Oscar" award of the Academy of Motion Picture Arts and Sciences. Throughout the world, theatres equipped with RCA sound equipment reproduce motion pictures that have been recorded with RCA sound by the world's leading studios.

### **Does RCA manufacture sound film motion picture projectors and equipment?**

Yes; RCA makes sound film motion picture projectors for both 35-mm and 16-mm film. Its 35-mm Brenkert projector is considered to be the finest projector available to the motion picture industry and is used by many of the motion picture theatres in the United States as well as in many foreign countries. Its 16-mm projector, introduced to meet the growing use of sound film in education, commerce, and industry, is a portable machine which provides professional-quality pictures and sound. An adaptation of this 16-mm machine was recently introduced by RCA for operation with television cameras to facilitate the televising of films. Other commercial theatre products made by RCA include sound system and Drive-in theatre equipment.

*RCA plant at Lancaster, Pa., is equipped with the most modern facilities for the manufacture of television picture tubes.*



*RCA Victor table model television receivers on the production line at the Camden plant.*

### **What progress is RCA making in the development of theatre-type television?**

RCA pioneered in the development of large-screen projection television and was the first to demonstrate equipment in this field, beginning in 1940. Since then, intensive laboratory research has made possible vast improvement in tubes, electronic circuits, and components. Four theatre demonstrations were staged in 1948, including the televising of the Louis-Walcott fight to a large audience in a Philadelphia theatre, 90 miles from the actual scene of the fight. The success of these demonstrations herald a great future for this branch of the television art.

### **What is the function of RCA Service Company?**

RCA Service Company, Inc., is an organization of technical specialists devoted to the correct installation, maintenance and servicing of RCA products and equipment. Upon request it supplies RCA dealers, distributors, and customers with technical information and advice. Its major function is to provide customers with a variety of contract service plans especially framed to fit their maintenance needs. The most widely known plan of this type is the RCA Victor "Television Owner Contract".

### **What is the RCA Victor Television Owner Contract?**

The RCA Victor "Television Owner Contract" makes available to RCA Victor television set owners an installation and maintenance service administered by RCA Service Company, Inc., to enable television set owners to obtain optimum performance from their instruments. Under its provisions, RCA Victor supplies the receiving antenna, installs the instrument, and services it for the ensuing year — all for a single nominal fee. These contracts are renewable at moderate rates.

### **What is an electron tube?**

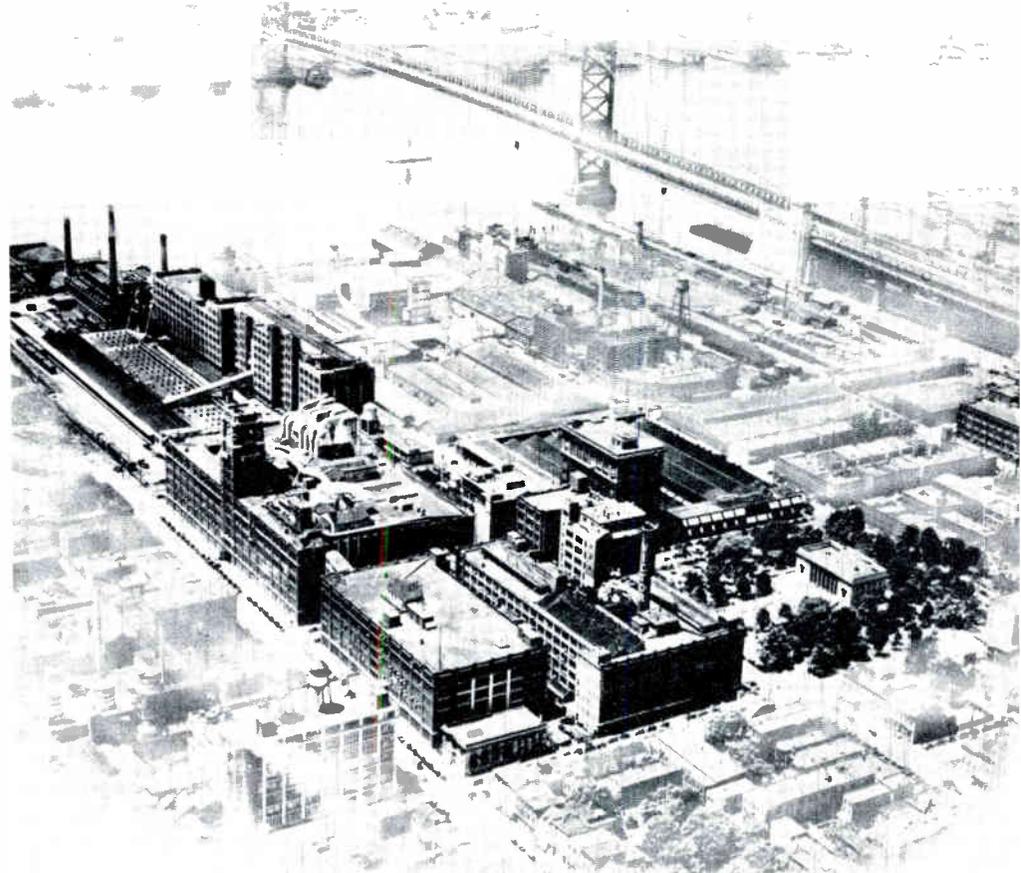
The electron tube was known as a radio tube until its uses expanded far beyond radio. It is a highly flexible device which liberates and controls the flow of electrons within a glass or metal envelope. It has given man infinitely greater control of electrical and mechanical devices and has opened vast new fields in the science of electronics. RCA tube developments have spearheaded many major advances in the field of radio and electronics. The heart of all radio and electronic apparatus is the electron tube, and RCA is the fountainhead of modern tube development.

### **Does RCA make a full line of television tubes?**

One of television's most vital production centers today is RCA's ultra-modern factory at Lancaster, Pa., where virtually all types of television tubes are produced for the industry. At Lancaster, unique precision methods produce kinescopes — television picture tubes — at a rate of more than one a minute. To a great extent these circumstances are responsible for the rapid progress in television manufacture today, since only mass methods can make kinescopes available to the industry at a cost low enough for moderately priced receivers. Lancaster also produces image orthicon camera tubes, power tubes, and special-purpose tubes vital to television and industry in general.

### **Does RCA supply equipment for broadcast stations?**

RCA provides a complete line of AM and FM broadcasting equipment. This equipment includes transmitters, transmitting



*RCA Victor plant, Camden, N. J., manufacturing center of radio and television receivers and transmitters, Victrola radio-phonographs, records and other electronic products.*

antennas, precision test equipment, microphones, monitoring units and other types of studio apparatus.

### **Does RCA make all types of television station equipment?**

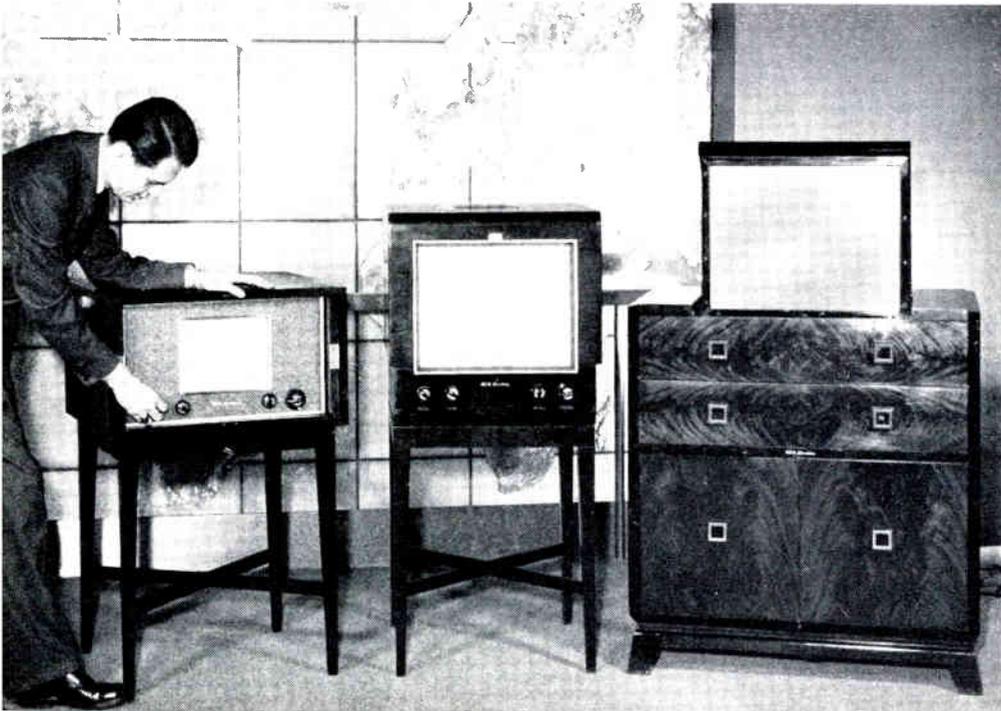
Backed by twenty years of television development work, RCA engineers have designed a full line of television station equipment. At the beginning of 1949, over fifty RCA transmitters had been delivered to supply all but a few of the TV stations on the air. RCA also leads in the production of portable-type television

cameras, field-type microwave relay equipment and television mobile units. For studio use, television control and monitoring units are produced, as well as the now famous image orthicon cameras which have virtually eliminated the need for intense studio illumination. Portable test instruments are also produced for the servicing of television equipment.

### ***Is the RCA electron microscope in commercial use?***

Yes: more than 300 RCA electron microscopes are now being used by leading manufacturers, government bureaus, hospitals, and college laboratories, and in important scientific research projects throughout the world. This giant eye of science extends man's seeing power far beyond the range of conventional microscopes. For instance, a single tuberculosis germ can be enlarged to the size of a saucer. Magnifications of more than 100,000 diameters have been achieved with this instrument, with greater magnifications obtained under special conditions.

*Standard RCA Victor television receivers — left to right: table model with a 10-inch glass tube; table model with a 16-inch meta!-cone tube, and a projection-type console.*



### ***What instruments has RCA developed for use in aviation?***

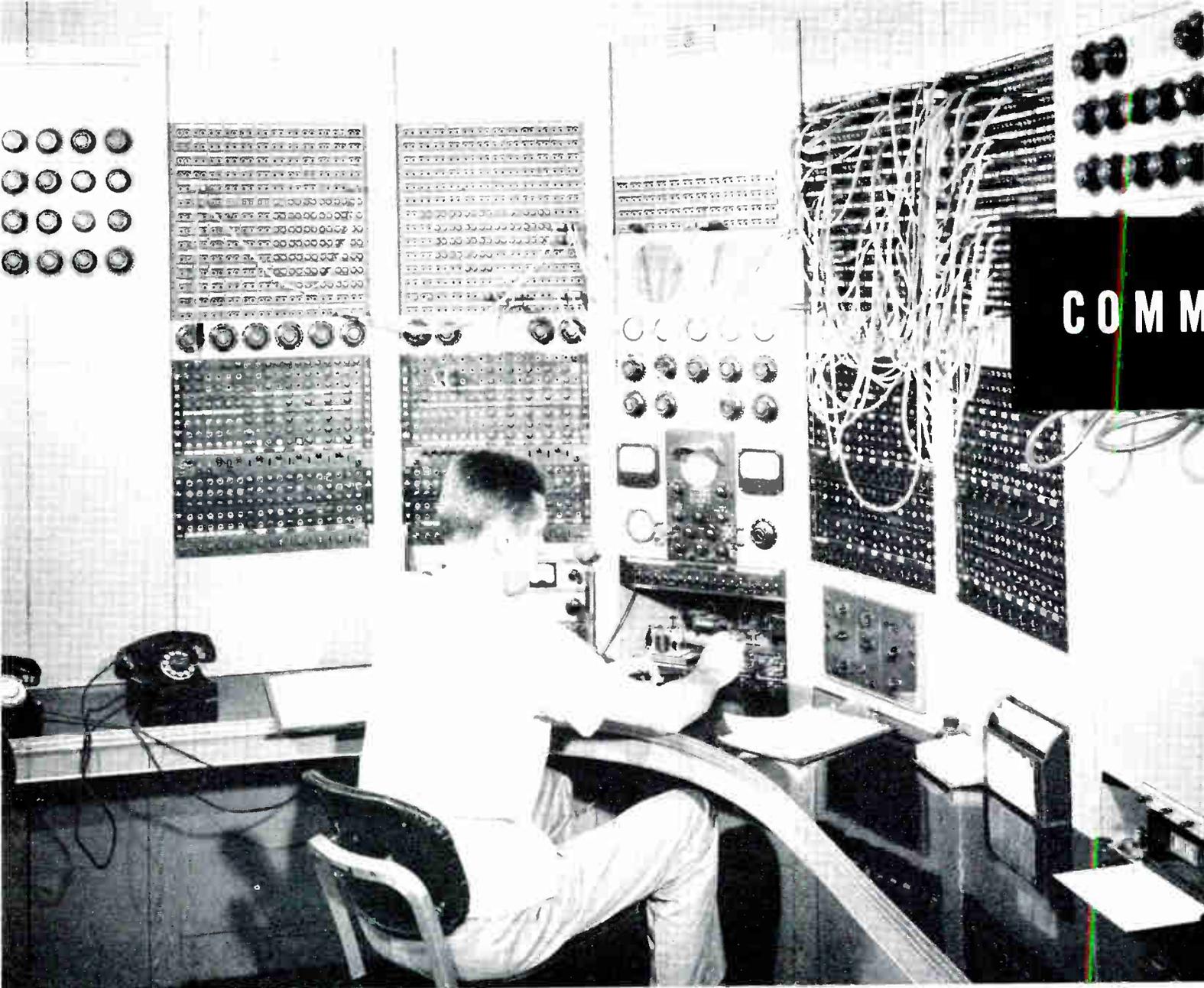
Utilizing radar principles, RCA has developed two forms of highly accurate altimeters, both of which are widely used by the Army, Navy and commercial airlines. These altimeters enable planes to fly safely through overcast at low altitudes or at high altitudes, making use of prevailing winds. RCA also manufactures large quantities of loran units. Radio signals from loran stations provide navigators with their position more accurately at much greater distances from land than any previously available method. RCA is now developing Teleran for the U. S. Air Force — a system combining radar and television which will provide the pilot with composite maps showing route, terrain, landmarks, and weather conditions.

### ***What is meant by "plant broadcasting equipment"?***

This term is applied to permanent sound system installations used in hospitals, industrial plants, schools, and other public buildings, making it possible to page individuals and to broadcast from a central studio to one or more sections of a building, or group of buildings. RCA has pioneered in developing the use of music in factories, only one of the many important functions of RCA plant broadcasting systems. To date, over 2000 RCA plant sound systems have been installed.

### ***What products does RCA Victor offer for schools and colleges?***

RCA Victor offers a wider range of audio-visual equipment for schools and colleges than any other manufacturer. This equipment already is extensively used with great success by educators and school administrators. It includes school sound systems, 16-mm sound film motion picture projectors, recording equipment, electron microscopes, electron tubes, scientific test and measuring equipment, FM and AM radio receivers, television receivers, life-size television projectors, phonographs, record libraries, and two-speed transcription players.



# COMMUNICATIONS



Master control at RCA Communications central office through which radiograms pass on their way to powerful transmitters on Long Island.



HARRY C. INGLES,  
President,  
RCA Communications, Inc.

## COMMUNICATIONS

### What is RCA Communications, Inc?

One of the first activities of Radio Corporation of America was the establishment of a worldwide radiotelegraph system to provide the United States with an adequate and independent international communications service. As American in concept as the Constitution and adaptable like it in meeting the needs of a fast-growing nation, this system has been expanded and improved continuously throughout the years since the founding of RCA in 1919. Its growth by 1929 warranted its organization as a separate company — RCA Communications, Inc. — wholly owned by Radio Corporation of America and engaged primarily in international radiotelegraph (Radiogram) communications as a service to the public.

*Tapes bearing messages from branch offices are checked at RCA Communications Central Radio Office before being relayed to transmitters for delivery overseas.*



### What is the extent of RCA's radiotelegraph service?

RCA Communications operates more than 75 direct radiotelegraph circuits terminating in the principal cities of the countries listed below:

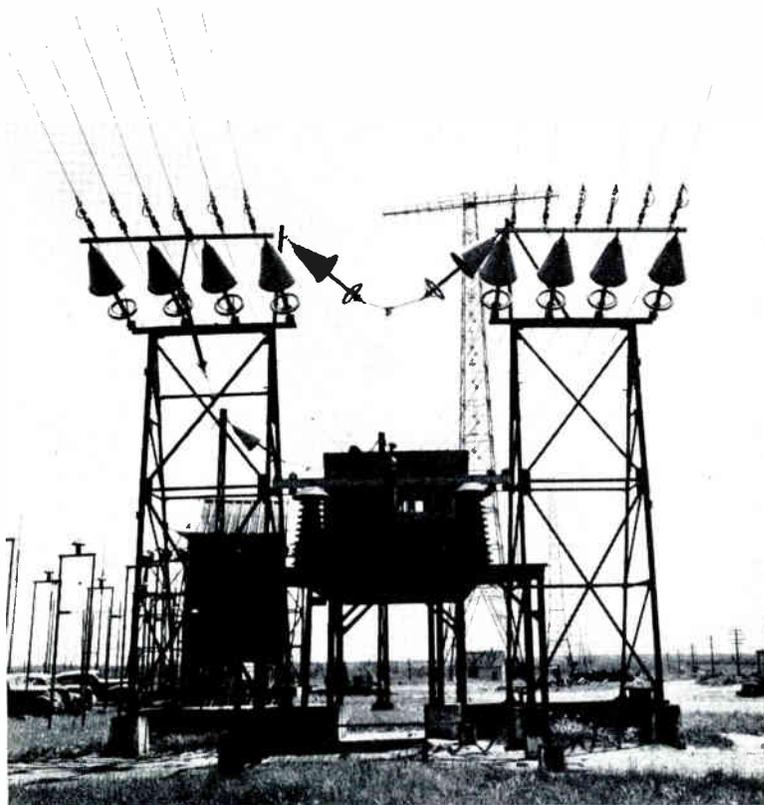
|                          |                     |
|--------------------------|---------------------|
| Argentina                | Iran                |
| Australia                | Italy               |
| Austria                  | Japan               |
| Belgian Congo            | Korea               |
| Belgium                  | Lebanon             |
| Bermuda                  | Liberia             |
| Brazil                   | Macao               |
| Bulgaria                 | Martinique          |
| Chile                    | Mexico              |
| China                    | New Caledonia       |
| Colombia                 | New Zealand         |
| Cuba                     | Norway              |
| Curacao                  | Okinawa             |
| Czechoslovakia           | Panama              |
| Dominican Republic       | Philippines         |
| Ecuador                  | Poland              |
| Egypt                    | Portugal            |
| Finland                  | Puerto Rico         |
| France                   | Rhodes, Island of   |
| French Equatorial Africa | Siam                |
| French Indo-China        | St. Pierre-Miquelon |
| French West Africa       | Spain               |
| Germany                  | Surinam             |
| Great Britain            | Sweden              |
| Greece                   | Switzerland         |
| Greenland                | Tahiti              |
| Guatemala                | Tangier             |
| Haiti                    | Turkey              |
| Hawaii                   | U. S. S. R.         |
| Holland                  | Union of So. Africa |
| Hongkong                 | Venezuela           |
| Iceland                  | Yugoslavia          |
| Indonesia                |                     |

RCA also provides service of superior quality to countries other than those listed here by carefully planning the routing of its worldwide traffic in a way that takes fullest advantage of the best available connecting facilities.

### **Where are RCA's main transmitting and receiving stations?**

RCA's main transmitters on the east coast are situated at Rocky Point, N. Y. The main receiving station is at Riverhead, sixteen miles away. Supplementary transmitting stations are at New Brunswick and Tuckerton, N. J. All are linked directly with New York and are operated by remote control from the Company's Central Radio Office at 66 Broad Street. Incoming signals received at Riverhead pass automatically to the Central Radio Office.

*Long rows of lofty towers mark the location of RCA's transoceanic transmitters at Rocky Point, Long Island.*



The main transpacific office of RCA is at 28 Geary St., San Francisco, and transmitting and receiving stations are situated respectively at Bolinas and Point Reyes, Calif. Similar RCA installations are in Honolulu, Manila, Ciudad Trujillo (Dominican Republic), Port-au-Prince (Haiti), San Juan (Puerto Rico), Havana (Cuba Transatlantic Radio Corporation), and Tangier. Stations in New York, San Francisco, Honolulu, Manila and Tangier comprise a trunk-line belt of RCA semi-automatic relay points for transmissions around the world.

### **How does one send a radiogram?**

For the convenience of persons desiring to send radiograms RCA maintains offices in New York, Washington, D. C., and San Francisco. In the absence of an RCA office, messages may be filed with Western Union, but the sender should mark on the message the free routing indicator "Via RCA" after the city of destination. Radiograms are accepted for transmission to all foreign countries reached by radiotelegraph circuits.

### **What technical advances have been made recently in the field of international radiotelegraphy?**

Applying new operating techniques and methods developed during and since World War II, RCA Communications, Inc., has pioneered the modernization of radio's international services. The answer to greater speed and efficiency in handling increased volumes of traffic is the mechanical processing of messages and world-girdling, automatic radio relays. The advanced system employs time and motion-saving tape relay operation. Its aim is to achieve maximum speed of service at low unit cost with minimum risk of errors. This is accomplished by eliminating letter-by-letter manual processing except at the point where a message is prepared for original transmission. Messages are handled through relay points in a tape relay network by a simple physical transfer of message tapes. The original processing can be done at any convenient location -- customer's office, branch office, or central office. At the ultimate destination

a page printer is substituted for tape reception and the message is received in printed form, ready for delivery.

The success of RCA's modernization program is demonstrated by the fact that today it is possible to deliver a radiogram originating in New York to correspondents in such far-off places as Stockholm, Paris, and Buenos Aires within five or ten minutes. Under the older Morse system the average elapsed time was much greater.

### **What other communication services are operated by RCA?**

RCA offers radiophoto service for handling pictorial and other information which cannot be sent in telegraphic form. Provided the type is at least typewriter size, any black-and-white material is suitable for radiophoto transmission.

Radiophoto circuits from New York or San Francisco are operated to the cities indicated in the following countries:

Argentina, Buenos Aires

Austria, Vienna

Australia, Melbourne

Bermuda, Hamilton

Ceylon, Colombo – Via London

China, Shanghai

Denmark, Copenhagen – Via Stockholm

Egypt, Cairo

France, Paris

Great Britain, London

Hawaiian Islands, Honolulu

India, Bombay – Via London

Italy, Rome

Korea, Seoul

New Zealand, Wellington

Philippine Islands, Manila

Portugal, Lisbon

Sweden, Stockholm

Switzerland, Berne

Union of South Africa, Capetown – Via London

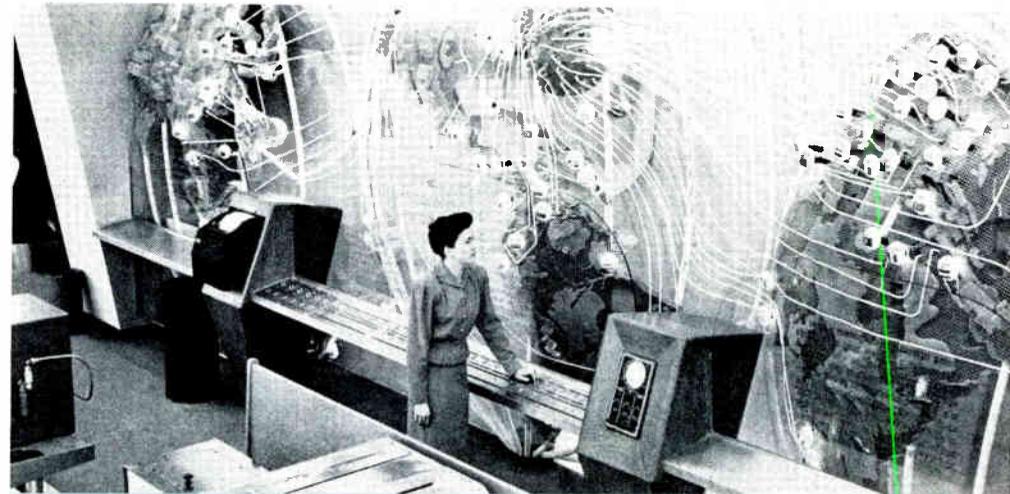
U. S. S. R., Moscow

RCA also maintains a Frequency Measuring Service which is performed at the Riverhead and Point Reyes receiving stations. Upon request, measurements are made to ascertain whether or not transmitters are broadcasting on allotted frequencies. The service is performed singly or at specified intervals, and is available to operators of all types of radio transmitters.

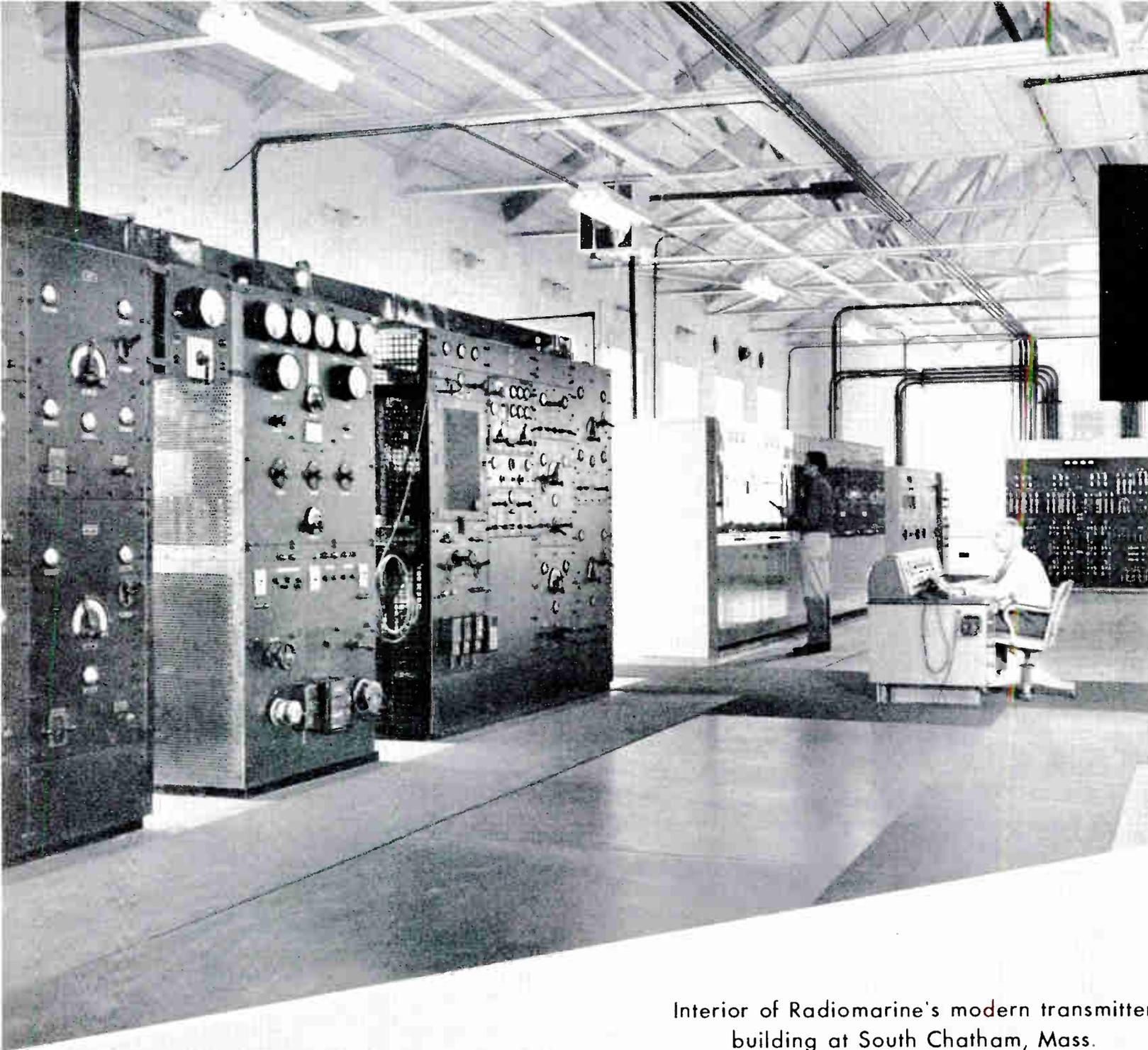
RCA Program Transmission Service offers facilities for the exchange of broadcast studio and press programs between the United States and foreign points. Through this service, programs originating in foreign studios are received by RCA and are distributed to American broadcasting networks for transmission to the American public. Similarly, American programs are transmitted overseas to foreign broadcasting agencies.

Facilitating a freer exchange of news between the United States and other countries, RCA has inaugurated a Volume Press Service by which large quantities of press dispatches may be sent at low word rates. Scheduled Press Transmission Service enables press associations and news centers to make use of RCA facilities on a time basis and reach a number of destinations simultaneously. Special transmissions of press to overseas points are also handled for the State Department. Daily news bulletins are relayed via Tangier to listening posts in Europe and the Near East for the State Department's Information Service. Similar to this service are special circuits originated for commercial users – such as Pan American World Airways – for the conduct of large volumes of overseas message traffic.

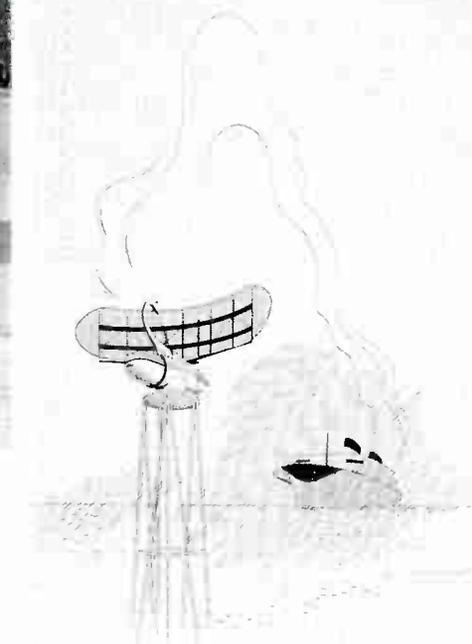
*RCA Exhibition Hall, Radio City, New York, is a "World's Fair" of radio, electronics and television, which has attracted two million visitors since it was opened two years ago.*



# MARINE RADIO



Interior of Radiomarine's modern transmitter building at South Chatham, Mass.





*T. P. WYNKOOP,  
President,  
Radiomarine Corporation  
of America*

## MARINE RADIO

### **What is the Radiomarine Corporation of America?**

Radiomarine, a service of RCA, offers the general public an efficient long-range radiotelegraph communication system which maintains contact with vessels in all parts of the world. It also is engaged in the development, production and servicing of marine radio communication equipment and electronic navigational devices. Many American and foreign flag merchant ships, as well as thousands of work boats and pleasure craft, are equipped with Radiomarine apparatus. It produces modern shipboard radar, loran receivers, radiotelegraph transmitters and receivers, automatic radio alarms, radio direction finders, life-boat radios, radiotelephones and specialized electronic equipment. Radiomarine engineers have contributed much to the development and design of high-quality marine radio and electronic apparatus.

### **When was Radiomarine Corporation of America organized?**

Marine radio communication has been a service of RCA since its founding in 1919. As this business expanded, the Radiomarine Corporation of America was formed on December 31, 1927, as a wholly-owned subsidiary of RCA, entirely devoted to marine radio activities.



*A ship's officer checks the location of other craft in the vicinity on the 12-inch scope of a Radiomarine 3.2-centimeter radar.*

### **Does Radiomarine operate branch offices outside of New York City?**

Radiomarine has 23 service depots and offices located in principal seaports of the United States. Many of these service stations have been established for more than 25 years. They render a competent maintenance, repair and inspection service on all types of radiotelegraph, radiotelephone and marine electronic apparatus, including radar and loran. These offices serve the Atlantic, Pacific, and Gulf areas as well as the Mississippi and Great Lakes. Service is also available in foreign ports.

Small-craft radiotelephone and radio direction finders are also sold and serviced through a chain of authorized Radiomarine dealers.

### **What is the extent of Radiomarine coastal station service?**

Radiomarine is engaged in commercial shore-to-ship, ship-to-shore and ship-to-ship radiotelegraph communication, maintaining 11 coastal stations and two affiliated stations on the Atlantic, Pacific and Gulf Coasts, the Mississippi River, and the Great Lakes. This service includes radiotelephone at Buffalo and St. Louis; the handling of radiograms via all stations; weather reports for the Government; press bulletins and transmission of free medical advice for the benefit of sick and injured personnel on vessels which do not carry a doctor. Radiomarine's Gifts-by-Radio service, available to passengers and ships' personnel, enables them to have flowers, candy, fruit or magazine subscriptions delivered to any address in the continental United States. The overall charge for the service is the value of the gift selected plus the usual rate for the gift service radiogram, which includes a personal message of greeting to accompany the delivered order. Passengers aboard aircraft are able to send RCA radiograms to persons ashore by means of a new global plane-to-shore communications system. Transmissions are received by Radiomarine coastal stations and relayed to their proper destinations.

### **Where may radiograms be filed for ships at sea?**

Radiograms to ships on every sea may be filed at any RCA Communications or Western Union office. They should be marked "Via RCA".

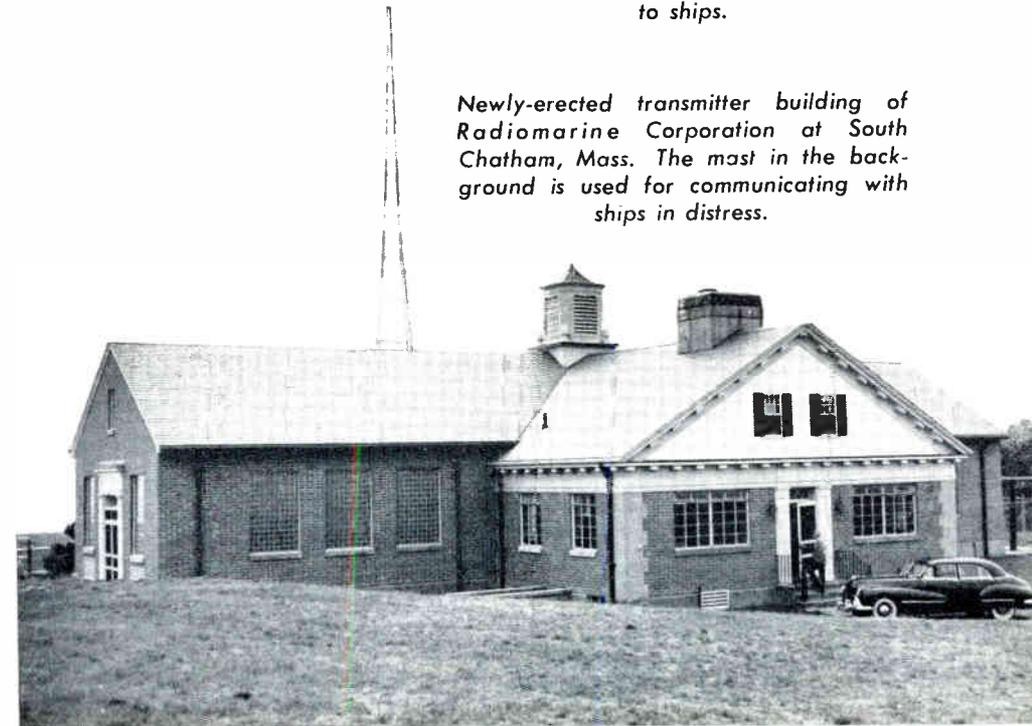
### **How much does it cost to send a radiogram to a ship?**

If the radiogram is to be sent to an American ship the usual charge via any of the coastal stations is 21 cents a word including address and signature; the rate to a foreign vessel is usually 26 cents a word. From inland states the charge is slightly higher.



*Part of the operating room in the Radiomarine coastal receiving station at Chatham, Mass. The revolving cabinet contains messages awaiting transmission to ships.*

*Newly-erected transmitter building of Radiomarine Corporation at South Chatham, Mass. The mast in the background is used for communicating with ships in distress.*





GEORGE L. VAN DEUSEN,  
President,  
RCA Institutes, Inc.

## TECHNICAL TRAINING

### **What is RCA Institutes, Inc.?**

RCA Institutes is a technical training school which offers comprehensive courses in radio and television. These courses include: Radio Servicing — prepares the day student in nine months for servicing radio, television, and FM receivers; Radio Operating — trains the day student in nine months for station operations in marine, mobile, and point-to-point communication services; Radio Broadcasting — instructs the day student for 18 months in the operation and maintenance of all types of radio receivers and transmitters, and provides station operating experience in television, broadcasting and other communications services; Advanced Technology — provides the day student in 24 months with a thorough general knowledge of the radio industry, with practical and complete training in specialized branches. Where essential, courses include laboratory experience and factory test work. Detailed information regarding courses and tuition is given in the school catalog.

Completely equipped laboratory and classroom facilities are maintained at 350 West 4th Street, New York City.

### **How is the school year at RCA Institutes divided?**

Classes are in session for 50 weeks each year, closing only for two weeks preceding Labor Day. New terms start approximately the first of March, June, September, and December.

### **Does RCA Institutes conduct evening classes?**

Yes: evening classes are conducted in all courses. Most evening courses are three times as long as the corresponding day courses, due to the smaller number of class hours per week. Home study courses are offered only to selected RCA employees.

### **What instruction does RCA Institutes offer in television?**

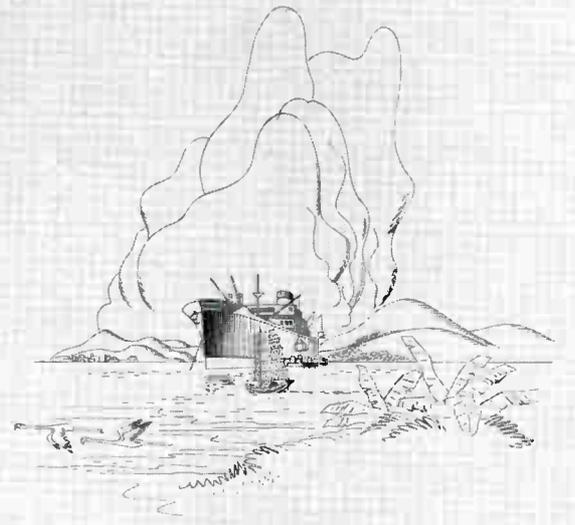
Instruction in television receiver maintenance, adjustment and operation is given in the Radio Servicing Course, and television transmitter maintenance and operation are included in the Radio Broadcasting Course. The design, maintenance and operation of a complete television system are covered in the Advanced Technology Course.

### **What are the qualifications for a student to enter RCA Institutes?**

Some high school education is necessary for all courses. Candidates for the Advanced Technology Course who lack sufficient high school work may qualify by taking the Institute's preparatory course which includes high school algebra, geometry and physics. The courses at RCA Institutes are open to men and women, 17 years of age and older, who have an interest in the technical phases of radio and electronics.

*Students study the fundamentals of radio receivers in one of the laboratories at RCA Institutes.*





**INTERNATIONAL**

Sao Paulo, Brazil, one of the many world capitals served by RCA International Division.



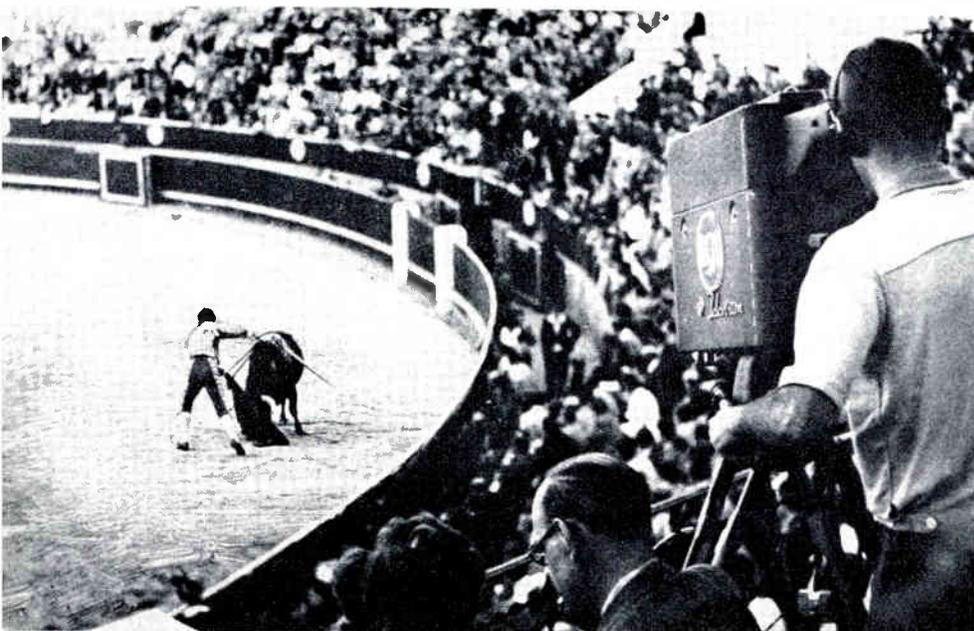
MEADE BRUNET,  
a Vice President of RCA, and  
Managing Director,  
RCA International Division

## FOREIGN TRADE

### **How does RCA conduct its international business?**

RCA's international business is conducted through RCA International Division. Operating through more than 130 major distributors, field representatives and associated companies, the Division sells RCA products in all markets of the world open to trade. Headquarters for RCA International Division are at 745 Fifth Avenue, New York.

*An RCA television camera picks up action at a bullfight in Madrid for transmission to a local theatre.*



### **What are RCA's associated companies in other countries?**

The associated companies for which RCA International Division provides management counsel are: RCA Victor Argentina, S. A., in Buenos Aires; RCA Photophone of Australia, Proprietary Ltd., in Sydney; RCA Victor Radio, S. A., in Rio de Janeiro, Brazil; RCA Victor Company, Ltd., in Montreal, Canada; Corporacion de Radio de Chile, S. A., in Santiago; RCA Victor Company of China, in Shanghai; RCA Photophone, Ltd., in London, England; Photophone Equipments, Ltd., in Bombay, India; RCA Victor Mexicana, S. A., in Mexico, D. F.

### **What products and services are handled by RCA's associated companies?**

Argentina, Canada and Chile manufacture phonograph records, wooden cabinets, radio receivers, some broadcast transmitters,

*RCA radios and other home instruments on display at a store in Davao, Philippine Islands.*



special communications apparatus for both transmitting and receiving, and sound apparatus. Plastic products are also made in the Argentine factory. At present the Montreal factory is manufacturing television receivers for Canadian cities that can receive American programs.

Mexico's new streamlined factory has been completed and is now producing phonograph records and radio receivers. The Mexican company distributes motion picture equipment, sound products and transmitting and communications products manufactured in the United States. A new factory is nearing completion in Brazil where phonograph records will be manufactured and receivers assembled. It is expected to go into operation about the middle of 1949. The Brazilian company is also the distributing organization for the apparatus and sound products manufactured outside of Brazil. Manufacturing has not commenced in China; in the meantime, the company there is acting as a distributor for all products made in the United States.

The Australian, Indian and English companies handle distribution of RCA motion picture and sound equipment and some other special products. They install and service equipment in theatres and supply technical service to the motion picture studios and to their film recording licensees.

### **Does RCA export products from this country?**

Yes; RCA sells abroad all products manufactured by RCA, wherever import licenses, permits and exchange restrictions allow. The products sold range from miniature tubes supplied to agents, distributors and manufacturers, to complete communications networks supplied to governments, and marine radio installations for commercial fleets. RCA International also handles export sales for a number of other companies whose products include industrial power equipment, aircraft navigation and airport control equipment, and such appliance lines as electric air circulators, washers, ironers, toasters, vacuum cleaners and heaters.



*Havana's leading radio station CMQ and the adjacent film theatre are equipped with RCA products.*

*Part of the fleet of 60 patrol cars equipped by RCA with two-way communications units for the Caracas, Venezuela, police department.*









**RADIO CORPORATION OF AMERICA**

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