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RADIOMARINE CORPORATION of AMERICA

A SERVICE OF RADIO CORPORATION OF AMERICA

VOLUME 10 NUMBER 4

Radio Age

• MANUFACTURING • COMMUNICATIONS
ROADCASTING • TELEVISION

ULY 1951

OVER

xperimentol RCA color tele-
ision receiver with 21-inch pic-
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color television system.

NOTICE

When requesting a change in mailing address please include the code letters and numbers which appear with the stencilled address on the envelope.

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RADIO CORPORATION OF AMERICA
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Dr. E. W. Engstrom, Vice President in Charge of Research, RCA Laboratories, holds a model of the 16-inch tri-color picture tube, with RCA's 21-inch tri-color tube in the foreground.

RCA COLOR TELEVISION FIELD TESTS BEGIN IN THE NEW YORK AREA

Compatible, All-Electronic Color Television System Wins Praise from Audience in RCA Exhibition Hall and From Public Viewing Same Color Programs in Black and White on Their Home Sets

FIELD tests for the RCA compatible, all-electronic color television system, showing the new 21-inch tricolor picture tube and other advances, were held in New York during the week of July 9 by the Radio Corporation of America.

The programs, consisting of a variety show presenting talent from the theatrical, music and fashion worlds, and an outdoor pickup by a mobile unit were enthusiastically praised by the press and representatives of the radio-television manufacturing industry. Guests witnessed the tests in the RCA Exhibition Hall in Radio City.

In addition, owners of 2,400,000 receivers in the metropolitan area responded favorably and in impressive volume to the request for comments on the reception of the programs in black-and-white. This feature of compatibility is one of the advantages of the RCA Color Television System.

From the Broadway stage, Nanette Fabray, star of "Make A Wish", made her debut before the color cameras in a series of fifteen-minute programs. Miss Fabray acted as mistress of ceremonies, introducing each act and performer.

Yma Sumac, the South American songstress whose voice races from octave to octave, was also featured on the colorcasts, originating from the National Broadcasting Company's studios in Radio City. Ray Malone, the whirlwind dancing star of "Broadway Open House" and other television shows, gave the color cameras a supreme test in the field of action.

Other performers in these realistic tests of compatible color were Bob Smith with "Howdy Doody", and George Burton and his birds. Ben Grauer, veteran NBC announcer, opened the color programs.

A group of Conover models presented an informal fashion show before the color cameras. They were draped in clothing of rich and varied hues to illustrate the fidelity and range of the RCA compatible system in color reproduction.

As a surprise feature of the programs, outdoor scenes and action in natural color were picked up and transmitted from Palisades Amusement Park, across the Hudson River from Manhattan. There, beside the world's largest salt water swimming pool, a mobile RCA color camera captured the performance of Buster Crabbe and his aquatic ballet in garb and movements that displayed various hues of the spectrum.

Purpose of the Tests

The field test pickup from Palisades Amusement Park was arranged for a number of purposes. Among these were:

1. To test remote operation of the RCA color television system.

2. To test pickups under outdoor lighting conditions.

3. To test the flexibility of the RCA color camera in covering scenes of varied action.

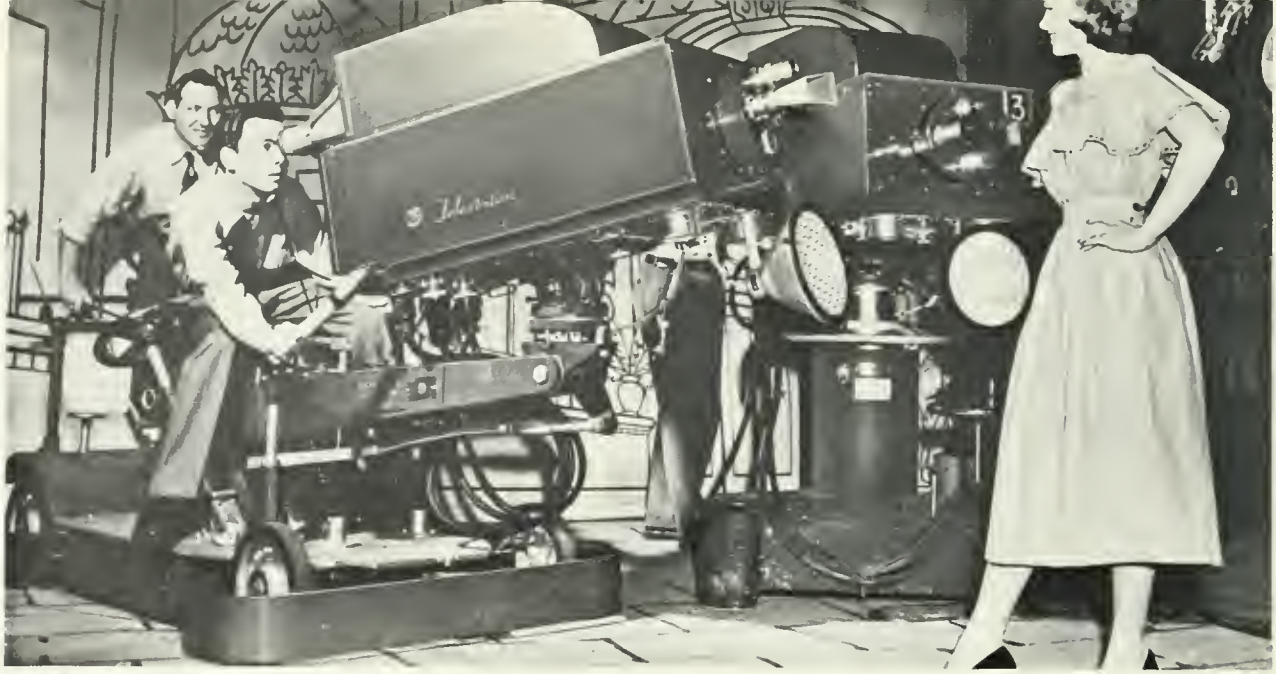
Scenes picked up at the Palisades pool were transmitted by microwave radio relay (6,962.5 megacycles) to a receiving antenna atop the RCA Building in Radio City, and thence by coaxial cable to NBC to be fed to its transmitter on the Empire State Building.

The outdoor pickup was announced as the forerunner of future transmissions that are to be made as the field tests of the RCA system are conducted in the New York area.

The colorcasts were held three times daily, starting at 10 a.m., 2:15 p.m., and 4 p.m. A regular schedule of field tests, open to the public, will be announced at a later date.

The tests were conducted under experimental license issued by the Federal Communications Commission. Previously, RCA conducted experimental color broadcasts in Washington. Its last series of tests began December 5, 1950, from the NBC studio in the nation's Capital.

Color equipment was installed in the NBC studios, and when the experimental tests were on the air, the



Color television cameras focus on close-up of model in NBC color studio in Radio City.

regular black-and-white television transmitter of station WNBT, atop the Empire State Building, operating under experimental call letters of KE2XJV, was used to telecast the color programs on Channel 4.

As an added attraction, the RCA Exhibition Hall devoted part of its window display to color television. Visitors were able to inspect the components of a color set, and the spectacular tri-color tube, which plays an important role in RCA's color system. The tri-color tube has been hailed as a "miracle of the electronic age".

Frank M. Folsom, President of RCA, in opening the tests, stressed the advantages of the type of system which RCA has developed. He declared:

"In addition to testing equipment, these field tests will prove to the manufacturer, broadcaster, advertiser, and the public that color can be introduced as a television service logically, economically, and soundly.

"We were never more certain than we are now that a compatible, all-electronic color television system is in the public interest. These field tests will prove how such a system will allow the public to continue to enjoy their favorite black-and-white programs and to see color programs in black-and-white without any change whatever in their present sets and without buying extra contraptions.

"Compatible color can be logically introduced into television broadcasting with advantage to everyone and loss to none. Proper introduction will assure a fertile base for a healthy growth of the entire television industry.

"During the coming months, the public will have an opportunity to see the RCA color system and judge its many advantages through our field tests. We also plan to send the color programs to other cities in network operation, linked with New York via radio-relay stations or the coaxial cable.

"These developments in color television, important as they are, should not be considered as displacing existing television service," said Mr. Folsom. "For years to come, black-and-white television will continue to be the backbone of the industry."

Dr. E. W. Engstrom, Vice President in Charge of Research of RCA Laboratories, reported that since the showing of the RCA color television in Washington last December, a number of improvements have been achieved. He declared:

"We have refined and put into pilot-plant production our tri-color kinescope, details of which were turned over to the radio-television industry three weeks ago. We have improved the circuitry of studio equipment and receivers. And we have also improved the operation of our system.

"The improvements have showed up well in our laboratory tests and also have performed well in our preliminary operation in New York. We propose to proceed with careful and extensive field tests on these and other improvements."

Dr. Engstrom said that during the course of the field tests, programs originating in New York, will be checked over network facilities, radio relay and coaxial cable. He disclosed that RCA proposes to make field-test signals and field-test experience available to RCA licensees and to members of the panels of the National Television System Committee.

"Schedules for some of this are already being set," Dr. Engstrom declared. "Later during the summer when our transmissions become more regular we will keep the appropriate NTSC panel advised as to the times and conditions of transmissions. We have already provided specifications on the signals we are currently using. It is our plan to participate in the work of the NTSC in arriving at industry standards. This, of course, is for the purpose of seeking approval for the establishment of a compatible color television system."

At the conclusion of the program, O. B. Hanson, Vice President and Chief Engineer of NBC, explained the broadcasting procedure employed in the tests. He pointed out that while the Washington test last year employed research apparatus, equipment in the present test was produced by RCA Victor Division.

"RCA Victor engineers, together with engineers of the NBC staff, installed the present apparatus and put it into action," explained Mr. Hanson. "The operating engineers and the program staff of NBC produced the broadcast. Thus, it shows that the RCA system is capable of being operated by a broadcasting organization with the usual engineering staff."

Owners of Standard TV Sets are Asked to Comment on Color Programs

IN AN advertisement in New York daily newspapers on July 8 and 9, and also by appeals broadcast during the 5-day colorcasts, RCA asked set owners in the New York metropolitan area to give their reaction to the field tests of color broadcasts when received in black-and-white on their present sets. Before the tests had ended more than 5,000 postcards and letters, expressing enthusiastic approval of the picture quality were received. Since then thousands of additional replies have been recorded.

Under the caption "You Can Help Test RCA Color Television . . . Now!" the ad explained that one of the principal features of the RCA system is its "compatibility." This means that when a color picture is broadcast, it can be received in black-and-white on all present sets without any change.

"At 10 o'clock each morning for five days beginning July 9, we will televise over Channel 4 in New York a variety program in full color," the ad explained.

"These programs will be viewed by members of the press and the radio-television industry on experimental RCA color receivers. . . . Later, RCA plans to place color sets where the performance of this all-electronic system can be seen by the public . . . so that you can give us your reactions.

"It will be helpful to us, in our efforts to bring good color television to the American public, if we can find out how these color broadcasts appear in black-and-white on existing television sets in the different sections of the metropolitan area."

The reason for this request, RCA explained in the advertisement, was that compatibility, by common agreement, was preferable with a color system. With an incompatible system—one that cannot receive color broadcasts in black-and-white on existing sets—nearly a billion dollars in additional cost would be saddled on present set owners so that a black-and-white picture could be restored to their sets during color broadcasts, according to the RCA ad.

"Then drop us a card," the ad continued, "giving your address, the age of your set, the size of its screen and type of antenna, which day you saw the program and telling us how these pictures compare with the black-and-white pictures you normally receive from NBC's regular black-and-white television programs."

Nanette Fabray and Rene Paul, stars of the Broadway stage, in one of the scenes which were a part of the field-test programs of RCA's color television system.

Yma Sumac, South American songstress with a multi-octave voice, was one of the features of the color television programs broadcast from station KE2XJV.

Public Responds with Comments on RCA Color Television System

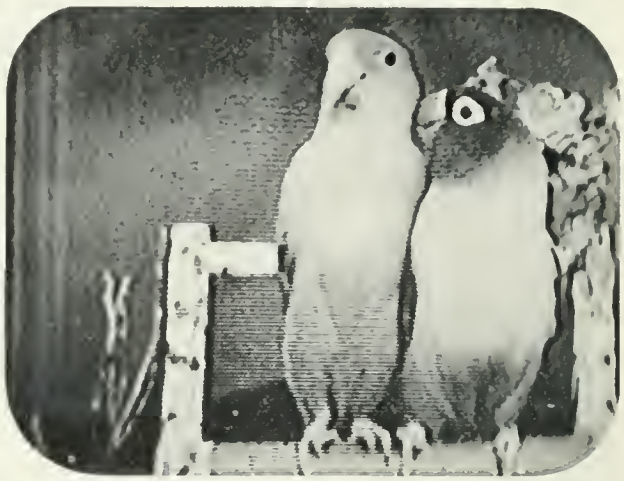
SPONTANEOUS reaction from television viewers taxed telephone switchboards of the Radio Corporation of America and the National Broadcasting Company in Radio City and the RCA Service Company at 1-14 East Twenty-fourth Street, following the morning telecasts of RCA's compatible, all-electronic color television in the New York metropolitan area.

The enthusiastic response came from hundreds of viewers of black-and-white television sets who wanted RCA to know that the color transmission had been received exceptionally well in black-and-white without any change whatever in their sets. They reported that all they did was tune in on Channel 4, which carried the test colorcast from NBC's experimental station KE2XJV.

Most of the calls were in response to an invitation extended by RCA to all viewers in this area to assist in the current color tests by reporting how the transmissions compared with their regular black-and-white reception, thus testing the compatibility feature of the RCA color system.

Typical of the responses were those from:

Mrs. Edward Schneitzer, 93-06 209th Street, Queens Village, N. Y.: "The reception of the RCA color program was wonderful on my set. It was the finest picture I have received, and I would be happy to have it like this for the rest of my life. The best part was that I saw the picture without having to buy any gadgets for my set."



Photograph taken from black-and-white picture tube of two of the "artists" who appeared on the variety program broadcast during field tests of the RCA compatible color television system.

O. B. Hanson, NBC Vice President and Chief Engineer, studies some of the thousands of letters and cards received from television set owners after viewing the field-test programs on their black-and-white receivers.

Cabell Halsey, 400 East 57th Street, New York, N. Y.: "Reception was perfect. I never saw better black-and-white pictures. I live in a 19-story apartment and my set has no outdoor antenna. In my opinion, on the basis of my reception of these RCA color tests, this is the color system we should have. I paid $675 for our set and we didn't feel very good about having it obsoleted by incompatible color."

Lucius Nobbe, 17 Wellington Road, Garden City, L. I.: "The picture we received was excellent. I propose to get together with my neighbors and have a petition signed urging the Federal Communications Commission to give RCA's compatible color television system a chance. The Commission should realize that the public wants good reception without investing additional money. It's a pity when something good like this is ignored."

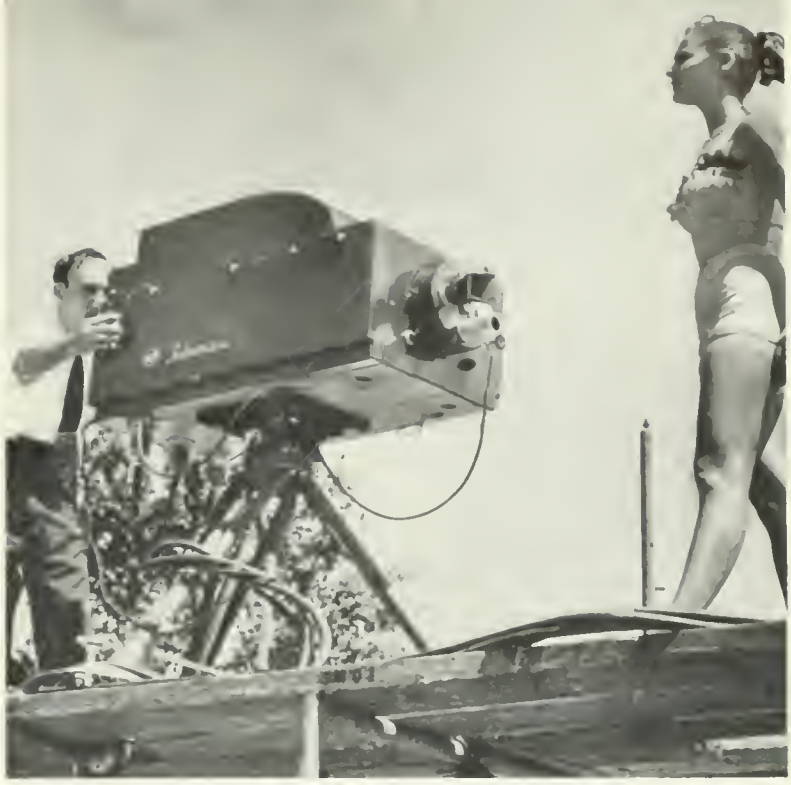
Mrs. Howard Charles, 1115 Fifth Avenue, New York, N. Y.: "The reception was beautiful. It seemed better than we usually receive."

Miss Anna M. Cotter, 5 Stuyvesant Oval, New York, N. Y.: "The black-and-white reception of the color broadcast was far superior to our ordinary reception. The program was very entertaining and RCA is to be congratulated on making this possible."

Mrs. J. J. Donnelly, 5 Maple Avenue, Floral Park, N. Y.: "I want RCA to know that I am very happy over the reception of the color test on my receiver. The pictures appeared to be exceptionally sharp, and I am

RCA all-electronic compatible color system proved its versatility by an outdoor pickup of the acquatic ballet and comedy acts from Palisades Park, N.J.

"Howdy Doody", one of the favarite performers on children's television programs, had a part in the field tests of RCA's color television system.



thankful that I could see the broadcast without buying anything to change my set. RCA has my blessings."

M. Klumas, 766 Myrtle Street, Elizabeth, N. J.: "Pictures received during your tests were much clearer than the regular black-and-white transmissions. I want to congratulate RCA on the great achievement."

G. Carmelitano, 1103 Washington Street, Hoboken, N. J.: "Reception of the RCA color tests was very good on my black-and-white set."

Mrs. Gladys Brehm, 600 Irving Place, Long Branch, N. J., sent the following wire: "Color TV in black and white coming in perfectly over my set."

Here are more comments from set owners in many different localities:

Bronxville, N. Y.: "Excellent! If I hadn't read about it in the papers, I wouldn't have known the difference between your color broadcast and the others. Very clear. I will never go through the adapter, converter, etc., expense. Keep up the good work because I am sure millions are with you."

Brooklyn, N. Y.: "I watched your color test and found it most wonderful. The black-and-white pictures were clear and beautiful. Good luck."

North Arlington, N. J.: "I received the pictures in black and white and they were clear, bright and perfect. There is no doubt that the RCA color system is in the best interest of the public."

New Brunswick, N. J.: "First, may I congratulate you on your first successful color test which I received in black and white. I hope you will be deluged with thank-you cards and letters, for certainly you are proving beyond a doubt that we can have a 'compatible' system."

Flushing, L. I., N. Y.: "We were amazed at the brighter and clearer pictures in black and white. As a matter of fact, they are better than any time since we've had our set. Thank you for the wonderful job you are doing to make this a better place to live."

Clifton, N. J.: "We received your color program just as clear as if it was a regular black-and-white broadcast."

Mount Vernon, N. Y.: "Your test program came in perfectly on my black-and-white set. I think you're doing a fine thing in trying to give present television owners a fair deal. More power to you!"

Long Branch, N. J.: "I found that the RCA color television test improved very much the black-and-white picture, and that to me is more important than color. I alerted my neighbors and friends to look in and send word to you which I hope they will. I wish you great success, and I am standing by you along, I believe, with millions of others."

Norwalk, Conn.: "The reception of your color television tests is perfect and clear-cut — and we are supposedly in a fringe area. The programs have been as good, if not better, than any black-and-white received. We hope your 'compatible' method will lead the way."

Garden City, L. I., N. Y.: "Have watched your tele-

vision tests and would say it was so near to being equal to our reception of the normal broadcasts that it would be almost impossible to distinguish between them. Like a great majority of set owners, we look forward to the completion of your tests and the acceptance of your system."

Mamaroneck, N. Y.: "Pictures came through beautifully. Keep up the good work."

Union City, N. J.: "I watched your test program and it was perfection in black and white. Our entire family is grateful to RCA."

Brooklyn, N. Y.: "I had the pleasure of watching your experimental color telecasting, and I must say it was quite gratifying. Your system has my vote in your favor, as I know that I will not have to get a new set or resort to an expensive adapter to receive programs telecast in color."

Executives of the radio and television industry expressed enthusiasm and praise on the quality of the color TV tests.

Commenting on the color TV tests:

Dr. Allen B. DuMont, President, Allen B. DuMont Laboratories, Inc.: "It was a lot better color television picture than RCA showed us in Washington last December. The picture was good enough, in fact, to start commercial operations immediately."

William Balderston, President, Philco Corporation: "We feel that there has been a marked improvement in RCA's color TV system. We were particularly impressed with the color fidelity and the remote pickup. The production of the color picture in black and white was even better than the black-and-white pictures being received on existing sets."

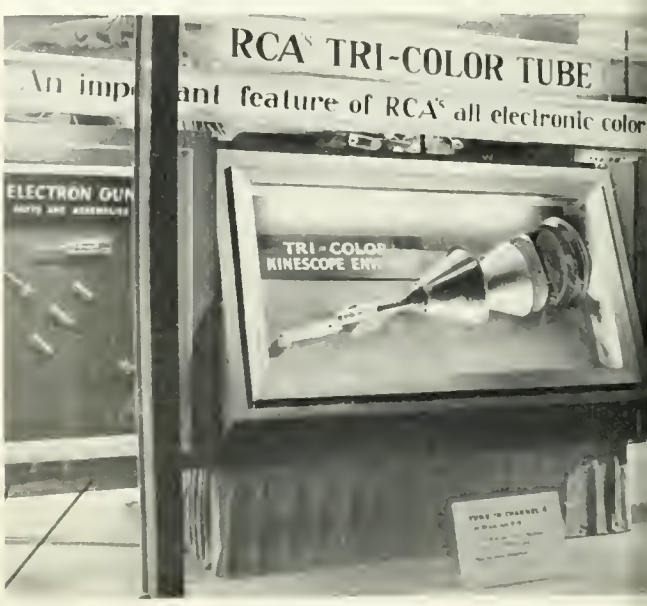
Dr. W. R. G. Baker, Vice President in Charge of Electronics, General Electric Company: "It was a most excellent picture. It was outstanding. I thought the color was really beautiful and the black and white was outstanding. All we've got to do now is to get compatible standards adopted."

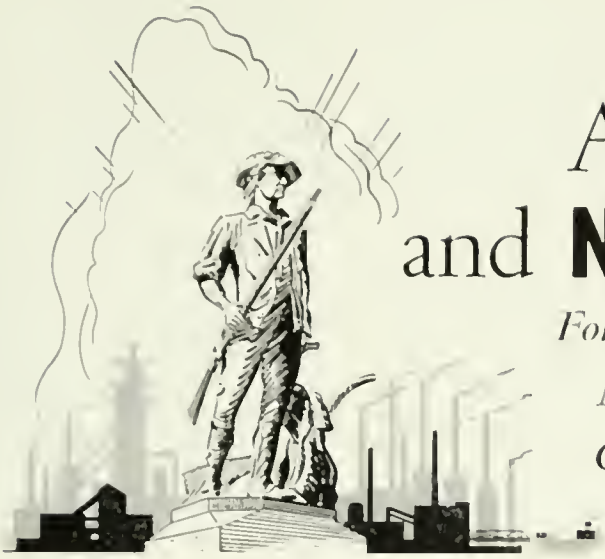
Jack Binns, President, Hazeltine Corporation: "This is a great step forward. The black-and-white reproduction on black-and-white sets is improved because of the transmission in color. The color is very good particularly in rapid motion and there is no color break-up at all. The compatible color system has got to win for it is in the public interest."

R. W. Durst, Executive Vice President, Hallicrafters, Inc.: "We thought it was particularly good, especially the high fidelity during rapid movement. Compatibility, however, is the thing that impresses us most and which we think is particularly desirable."

Left: One of the development-model RCA television receivers with 16-inch tri-color picture tubes used during the recent field tests of RCA's color television system.

Below: An RCA tri-color television picture tube is shown disassembled in one of the show windows of the RCA Exhibition Hall, Radio City, New York.





American Industry and **National Defense**

Folsom, in Address to Legal Students, Says Nation's Expanded Industrial Capacity Can Meet Military and Civilian Needs

American industry, with a 60 per cent greater productive capacity than in 1940, can meet the nation's defense needs and still produce enough for the civilian economy, Frank M. Folsom, president of the Radio Corporation of America, said in a recent address before the Student Legal Forum of the University of Virginia.

"The public interest demands that we continue, insofar as possible, production of those things that make life good," he declared.

At the same time, Mr. Folsom emphasized that the public interest must come before any private interest and that the job of defending America was industry's first responsibility. He did not contend that all shortages of civilian goods could be averted, but he said that American business, by working in close cooperation, could reduce shortages to a minimum.

Mr. Folsom indicated, however, that the dual goal of ample defense and civilian production could only be reached if America's great industries were left free to do the job. He warned that attacks on big business, either from government or private sources, would play into Communist hands.

"I'm not pretending that big business can do the job alone," Mr. Folsom added. "Big business has never been able to do any job alone. And this particular job calls for a high degree of teamwork among all businessmen."

But big business, he said, had a particularly vital role because "the job we are faced with is a big job, and it calls for men and companies that are used to doing things in a big way.

"So always keep this thought in mind: if you want planes, and tanks, and guns, you have to have production lines. And production lines mean big business.

"Regardless of your attitude on big business," Mr. Folsom continued, "you can't hide one fact: Communism wants to see big business destroyed. Communists are delighted by attacks on our great corporate enterprises."

The RCA official also warned that America, while building a mighty military machine as a safeguard against totalitarian aggression, must guard against the adoption of totalitarian methods.

It would be all too easy, he explained, to use the defense job as an excuse to "stop all civilian production, take away all individual liberties, and draft everybody for military production or service in our armed forces." But, he said, it would certainly be ironical if, in our efforts to defend ourselves we adopted the very system that the enemies of our way of life would like to force us to adopt.

Called for Intensified Research

Surveying the nation's facilities, Mr. Folsom called for intensified research activity by American industry.

"Scientific research has given this country leadership in practically every phase of industrial activity. . . . We have learned to cultivate science as we do our crops. And we have rich harvests as a result," he said.

Mr. Folsom pointed out that through constant research, his own company, for example, has been able to effect tremendous savings in such critical materials as copper and aluminum in the production of television sets.

Mr. Folsom warned that companies could not expect to reap harvests immediately from long-range research projects, however. "Our own company, for instance, invested 50 million dollars in the development of television before we ever got a dollar back."

The RCA official said that "the period ahead is going to call for many sacrifices but if we approach this task, not with the thought, 'what can I get out of this defense effort,' but rather 'what can I contribute to it', I am confident we can be strong and free."

More than 200 radio-television manufacturers attended RCA's two-day technical symposium at The Waldorf-Asto

RCA Reveals Details of Tri-Color Picture Tube and Color Television Circuits

E. C. Anderson, Vice President in Charge of Commercial Department, RCA Laboratories, presided.

Dr. E. W. Engstrom, Vice President in Charge of Research, RCA Laboratories, summarized the talks.

Dr. D. W. Epstein, of RCA L tories research stoff, discusse "Optics af Color Televisi

W. P. Maginnis, RCA Victar Tube Deportment, outlined "Deflectian Components of the Tri-Color Tube".

H. R. Seelen, RCA Victor Tube Department, Lancaster, Pa., discussed the "Three-Gun Tri-Color Tube".

Stuart W. Seeley, Manoger Industry Service Laboratory, lyzed "Receiver Circuitry

RCA Color TV Symposium

A 21-inch tri-color television picture tube, proving that there are no external limiting factors to picture size in the RCA compatible all-electronic color television system, was shown at a technical symposium conducted by the Radio Corporation of America at The Waldorf-Astoria Hotel on June 19 and 20. Representatives of more than 200 radio-television manufacturers attended the meetings.

Immediately available free of cost for the manufacturers' use in their laboratory work on color tubes and receivers, RCA announced, are samples of the 16-inch basic developmental model of the tri-color tube and kits of associated circuit components and parts. During the two-day symposium, RCA supplied technical information to assist manufacturers in their production of tri-color tubes and associated circuits for color receivers.

"One of the advantages of RCA color is the fact that there are no external limiting factors to the size of the kinescope (picture tube)," E. C. Anderson, Vice President in Charge of the Commercial Department, RCA Laboratories, informed the group. "As evidence of this, we are now to show you for the first time our larger, 21-inch tri-color tube. This kinescope should prove beyond doubt that the RCA system allows the public a choice of color-picture sizes in the same ranges that are available in black-and-white tubes."

Public Wants Compatible System

In opening the symposium, Mr. Anderson said:

"I find it hard to tell you, just how strongly we at RCA believe in an all-electronic, fully compatible color television system.

"We feel that a compatible system is what the public, the broadcaster and the advertiser are entitled to in order to avoid economic waste and the outmoding of the 12½ million sets now in use, plus perhaps millions more.

"The development of the RCA tri-color kinescope is an outstanding example of accomplishments of modern science and engineering. Its advance to reality in this short period of time is truly one of the engineering miracles of this electronic age."

In a statement to the manufacturers, all of whom are licensed to use RCA inventions, it was pointed out that developmental samples of the RCA three-gun tri-color kinescope and associated circuit components are available in limited quantities. To each licensed manufacturer, RCA announced it would provide free of cost one tri-color kinescope, one kit of assorted circuit components, and one unit assortment of tri-color tube parts. In the near future, it was said, RCA expects to handle orders for additional sample quantities.

Information Given to Manufacturers

In addition, the manufacturers were supplied a list of the various operations and the equipment RCA uses in making the tube. This equipment, it was pointed out, is developmental and is reproduced only to order.

Although the differences in producing tri-color tubes require additional engineering and manufacturing techniques, the RCA engineers said, they are of such a nature that if adequate manufacturing care and diligence are pursued, production of the tri-color kinescope will impose no more serious problems than those which were experienced in the early days of black-and-white kinescope production.

Topics covered during the symposium included technical features of the tri-color tube and new tube developments, operating characteristics of the tube and its associated components, circuits involved in supplying color signals to the tube, and manufacturing processes, equipment, and machinery, and test equipment.

Technical presentations were made by Dr. D. W. Epstein, H. R. Seelen, S. W. Seeley, and W. P. Maginnis, all of whom are RCA engineers. Dr. E. W. Engstrom, Vice President in Charge of Research, RCA Laboratories, gave factual summaries of the information.

The tri-color television picture tube, recognized by engineers as vital to the complete development of a practical, simplified, all-electronic color television receiver, was demonstrated by RCA for the first time on March 29, 1950. It was hailed at that time as a "miracle of science" and proof of the superiority of electronics over the outmoded and limited mechanical rotating devices as a means of producing color television pictures. In the tri-color tube, television pictures are produced electronically in full color on the face of the tube just as they are in black-and-white television.

On March 30, 1950, RCA informed the industry that as soon as the tri-color tube had been perfected to a point that specific usable information was available, it would be given to RCA licensees. The symposiums, it was pointed out, were in keeping with that statement.

RCA Business Increase

Gain in Volume of Business from $128,000,000 to $586,000,000 in Last Decade is Reported at 32nd Meeting of Stockholders

Net earnings of the Radio Corporation of America for the first quarter of this year amounted to $11,901,542, representing the best first quarter that RCA has ever had, Brig. General David Sarnoff, Chairman of the Board, announced at the 32nd annual meeting of RCA stockholders held in a studio of the National Broadcasting Company in Radio City, New York, on May 1.

General Sarnoff said that volume of RCA business has increased to more than four and one-half times what it was ten years ago—from a level of $128,000,000 in 1940 to $586,000,000 in 1950. He reported that during the past ten years, dividends paid to RCA stockholders amounted to $80,184,000, a sum which he declared to be larger than that paid in this period by any other company in the world principally engaged in the radio business.

He credited television, which RCA pioneered, planned and engineered, as the spearhead in establishing the new sales records.

First Quarter Results

The net earnings of $11,901,542 for the first quarter of 1951 represented an increase of $665,311, or 6% over the same period a year ago.

After providing for preferred dividends, earnings per common share for the first quarter of 1951 amounted to 80 cents, compared with 75 cents per share for the first quarter of 1950.

Consolidated gross income of RCA for the first quarter of 1951 amounted to $185,590,755, or an increase of 46%, as compared with that of 1950.

A dividend of 50 cents per share on the common stock of RCA was declared by the Board of Directors on April 5, 1951, payable on May 28, 1951, to holders of record of such stock at the close of business on April 20, 1951.

"It is the intention of the Board of Directors to place the common stock on a semi-annual dividend basis and to declare such dividends payable in May and November of each year, provided the future earnings of the Corporation justify such action, and we hope that they will," said General Sarnoff.

In 1950, RCA paid $58,205,000 in taxes to Federal, State, and local Governments. These payments, which included $7,162,000 in Federal excess profits taxes, and $3,870,000 in social security taxes, were the highest on record, and amounted to nearly three times the total for the preceding year. These taxes are equal to $4.19 on each share of the outstanding common stock.

In addition, excise taxes paid by the Corporation in 1950 amounted to $13,948,000, bringing the total taxes for the year to $72,153,000.

A total of $15,842,000 has been estimated and provided for Federal taxes on income in the first quarter of 1951. Approximately 2 million dollars of this total are for excess profits taxes. No excess profits taxes were in existence during the first and second quarters of last year.

Working Capital

General Sarnoff reported that approximately 46% of RCA's net profits, earned during the past ten years, had been paid to stockholders, $31,685,000 going to preferred stockholders and $48,499,000 to holders of common stock. The balance of the profits earned during the last decade has been reinvested in the business, he asserted, adding:

"Ten years ago, the net working capital of the Corporation was $26,695,000. Now it is $130,902,000. The net figure on our balance sheet for plant and equipment, ten years ago, was $28,943,000. Now it is $87,392,000. Stockholders' equity in the Corporation, ten years ago, was $71,717,000. Now it is $172,790,000. Stated percentagewise, these figures show the following increases over the ten-year period: Net working capital 390%. Plant and equipment 202%. Stockholders' equity 141%."

On behalf of the Board of Directors, General Sarnoff congratulated RCA's more than 50,000 employees on their "creative efforts and craftsmanship in achieving the splendid results which our reports reveal." He pointed out that in addition to its own employees, it is estimated that the Corporation helps provide employment to an additional 50,000 workers in other companies which last year supplied materials and services amounting to nearly $300,000,000. RCA Victor's sup-

1/2 Times in Ten Years

pliers, he disclosed, now number approximately 5,000, located in 42 different states. Further, it helps "little business" to prosper and to serve as vital suppliers in peace and in war.

Government Orders

General Sarnoff announced that since June, 1950, RCA has received an increasing volume of Government orders for the design, development and manufacture of radio-electronic equipment for the Armed Forces.

"Government orders recently reached a volume that required conversion of some of our commercial production facilities to the manufacture of equipment for national defense," he said. "A variety of military projects that had been progressing through developmental stages began to reach the production stage. An example is the new compact, light-weight, walkie-talkie developed by RCA for the U. S. Army Signal Corps.

"Since many of the Government orders involve long-range activity and extensive development work, it is anticipated that for the next two or three years substantial portions of our facilities will be devoted to the production of electronic apparatus for all branches of the Armed Forces. We shall pursue our tasks and meet our responsibilities in this national emergency as we have done in the past."

RCA's efforts toward making America strong, he continued, place new demands upon the Laboratories.

"As an illustration of our activities in scientific research, RCA Laboratories, in 1950, completed the development and construction of the largest and most accurate electronic analogue computer ever built to evaluate the performance of guided missiles, airplanes, ships and submarines," he reported. "This new computer is expected to save the Government many millions of dollars in the design of advance types of weapons and solve many problems in the air protection of American cities. The instrument, developed under contract with the Office of Naval Research for use by the Navy Bureau of Aeronautics, eliminates trial-and-error tests in which costly materials are expended.

"That is only one of our developments. Time and security regulations will not permit me to cover other developments on the broad front of our military research activities. I can report, however, that we have made important strides in the development of new electron tubes, radar, guided missiles and other projects essential to national defense."

General Sarnoff stated that RCA, in response to the Government's needs, has succeeded since the first of this year in saving hundreds of thousands of pounds of strategic materials through technical developments, without diminishing the quality of merchandise. In February, he said, RCA made available to radio, television and tube manufacturers throughout the country the means and the results of its conservation efforts.

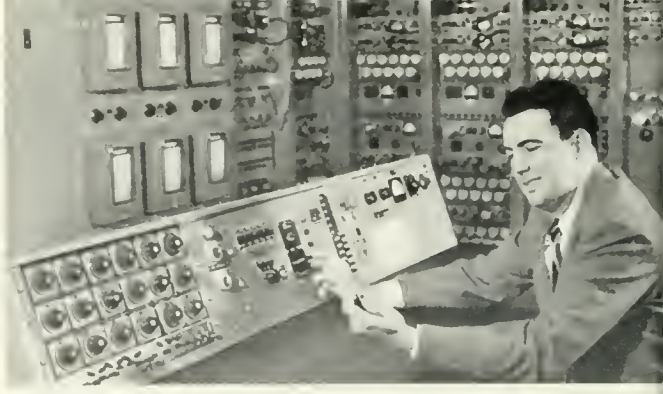
Status of Television

Commenting on the fact that current sales of television receivers are below levels established earlier in the year, General Sarnoff declared that among factors contributing to the decline were Regulation W, which places a limitation on consumer credit, and the "freeze" which temporarily prevents erection of additional television stations.

"The growth of television continued in 1950 at a

Brig. General David Sarnoff, Chairman of the Baard, addressing 32nd annual meeting of RCA stackholders.

Some of the RCA Victor television receivers which have been meeting the demand for sets having 16-inch picture tubes or larger.



An RCA Laboratories physicist operates the control console of the 4000-tube analogue computer, designed to evoluate the performance of guided missiles.

phenomenal rate, with more than 7,000,000 receivers being produced by the industry as a whole," he said. "The trend in public preference for larger size television pictures is indicated by the fact that 93% of the RCA Victor television sets produced in the first quarter of 1951 employed 16-inch tubes or larger. . . .

"While television has been advancing, radio set sales have continued to increase. Last year, 14,500,000 radio receivers were sold by the industry as a whole, compared with 11,000,000 in the previous year."

Already television has justified "our great faith in its power for entertainment, news and education," he affirmed, continuing:

"It is a great spiritual and social force among our people. Politically, it has tremendous potentialities for creating an informed public opinion on the vital questions of the day.

"In the advance of television, no other organizations have contributed as much in pioneering, engineering development and programming as RCA and NBC. The scientists and engineers in RCA Laboratories, through their patient research and inventive genius, continually open new gateways to progress. The engineers of the RCA Victor Division design the finest transmitting equipment, receiving sets and electron tubes, and the engineers of the National Broadcasting Company develop the techniques for broadcasting and telecasting programs to the home."

Developments In UHF

General Sarnoff reported that RCA had expended more than $2,500,000 in exploring the ultra-high frequencies, known as UHF, for television broadcasting.

"Our engineers, taking the initiative in pioneering the upper frequencies, have determined that a major expansion is practical and possible at ultra-high frequencies (UHF)," he stated. "By adding a simple and inexpensive converter, owners of present television sets can enjoy high quality reception from UHF as well as the very high frequencies (VHF).

"Practical experience and engineering facts needed to design the best transmitting and receiving equipment in this new field were obtained through large-scale field tests conducted by RCA. In December, 1949, we installed at Bridgeport, Conn., the first UHF television transmitter that operated on a regular schedule. From this transmitter, not only RCA but other manufacturers as well were able to conduct receiving tests in the field.

Recorded Music

Faith and confidence of RCA when it introduced its 45-rpm Victrola-phonograph and small unbreakable records two years ago have been well founded, General Sarnoff reported, asserting that largely as a result of the new "45" system, the phonograph business has been revitalized and sales continue to increase.

"Today, the popular 45-speed vinyl plastic disks are being offered under 55 competitive labels, including all major record manufacturers," he reported. "In 1950, more than a third of phonograph record sales by RCA Victor were 45-rpm.

"The RCA Victor long-play 33⅓-rpm records, which were introduced a little more than a year ago, also have won widespread acceptance for their technical and artistic quality. Sales of these long-play records have shown a marked increase."

Broadcasting and Telecasting

General Sarnoff said that the National Broadcasting Company is aggressively developing the art of television programming as a new service supplementing the vast coverage of radio broadcasting.

"To keep pace with television's growth, NBC in 1950 began the greatest expansion program in its history," he continued. "NBC begins its second quarter of a century as the No. 1 network in America. The NBC radio network now totals 181 stations, 6 of which are owned and operated by the Company. The television network comprises 63 stations, 5 of which are owned and operated by the company.

"Generally, we are likely to think of television only as a means of broadcasting programs," he continued. "But there are numerous opportunities for its application in other fields. Schools, colleges, hospitals, department stores, manufacturing plants and business offices can use television to great advantage. Further developments in industrial television will enlarge the scope and opportunities for the entire industry."

RCA Policies and Objectives

In conclusion, General Sarnoff outlined the policies that govern the operations of the Radio Corporation of America — from research through manufacturing, sales, servicing, broadcasting and world-wide communications.

"All of us are naturally interested in the prospects for the future," he said. "But, in the present state of international tensions and uncertainties, it is impractical to predict results for the remainder of the year. The existing national emergency and the rules and regulations which govern allotments of critical materials, as well as the controls of consumer prices and financial credits, are factors now confronting all business.

"You may be certain, however, that the Board of Directors and the management of RCA are alert to these problems and uncertainties. Our organization and our planning are such as to enable us to adjust our operations to conditions as they arise.

"The results reported to you for last year and the first quarter of this year, perhaps provide the best proof that our policies have been sound. This is confirmed not only by the satisfactory financial results and by the solid position RCA occupies in the industry, but also by the good will of satisfied customers, the good relations the Corporation has with its employees and its stockholders, and by the high standing it has with the public.

"Pioneering and diversification comprise our lifeblood. We are interested in yesterday and today for the experience and new knowledge gained. But our minds are focused on Tomorrow, and progress is our watchword."

Financial Results for First Half of 1951

Sales of products and services of the Radio Corporation of America and subsidiaries attained an all-time record volume of $302,333,000 during the first six months of 1951, exceeding the previous peak set last year by 21 per cent, Frank M. Folsom, President of RCA, announced. Corresponding sales in the first six months of 1950 amounted to $248,784,000.

Earnings before Federal income taxes were $32,311,000, compared with $35,102,000 in the first half of 1950, a decrease of $2,791,000, or approximately 8 per cent.

Reflecting an increase of 17 per cent in the provision required for Federal taxes on income, RCA net earnings of $15,703,000 for the first six months of 1951 were 25 per cent below the $20,962,000 net for the corresponding period in 1950.

After payment of Preferred dividends, net earnings applicable to the Common stock for the first six months of 1951 were $1.02 per share, compared with $1.40 per share in the first half of 1950.

s scientists discuss technical fea-
s of an early model of the RCA
ject-view tri-color picture tube.

Living cells can be observed through this combination of industrial television and a light microscope.

Television has tremendous potentialities far creating an informed public opinion.

TV comes to a Pennsylvania Town

Pottsville, Pennsylvania, a mountain-ringed mining and manufacturing town, 75 miles northwest of Philadelphia, has been rescued from the group of American communities which, because of their geographical locations, are deprived of dependable television program service.

This overnight "miracle" was brought about by the skill of RCA engineers who recently completed installation of a Community Antenaplex system, one of the first in the country. Today, for the first time since the beginning of commercial television, Pottsville's 25,000 residents are able to tap the flow of television signals which heretofore have passed them by, high in the sky. Families in the town now obtain pictures from Philadelphia stations which compare favorably with those enjoyed by set owners living much closer to the transmitters. Before RCA engineers stepped in, reception in Pottsville was rated extremely poor even with an elaborate rooftop antenna that sometimes cost more than the TV receiver itself.

This master antenna assembly, erected on Pottsville's Sharp Mountain, extends TV coverage up to 130 miles.

Utility poles support the coaxial cable strung from the antenna site to the town's residential areas.

←Main amplifier of Antenaplex system, located at the base of the antenna mast.

One section of Pottsville, whose homes are getting television programs through an RCA Community Antenaplex system.

Providing TV signal pickup and distribution service sufficient for the entire community, the new system consists of a master antenna assembly, mounted on a tall mast on Sharp Mountain, the highest nearby elevation; a network of coaxial cable, strung over utility poles from the antenna site throughout the areas to be served; amplifiers, mounted on poles at fixed intervals to maintain the strength of signals; and lead-off lines, terminating in wall or baseboard outlets in the homes. On the antenna mast are separate antenna elements tuned for each channel on which programs are available. The new system makes roof-top antennas unnecessary. The network will be operated by Trans-Video Corporation.

The program service is supplied for a fixed installation fee, plus a monthly service charge. Pottsville residents using the system pay a $135 initial fee, and $3.75 monthly. Already more than 275 families are connected to the community antenna.

By using tall master-antenna towers which would be impractical for use by individuals because of size, weight, and cost, and by mounting these towers on geographical vantage points, RCA engineers pointed out that it is possible to extend the radius of TV station coverage from an average of 45 miles to as much as 130 miles in some cases.

The community system, which is manufactured by the RCA Engineering Products Department, is an expanded version of the RCA "Antenaplex" system now in use in leading hotels, apartment houses, hospitals, and other multiple-unit buildings throughout TV areas.

The Pottsville layout was installed by technicians from the company's branch office at Reading, Pa., under supervision of the RCA Service Company home office.

Trans-Video Corp. was organized by a group of Pottsville business men, headed by M. F. Malarkey, Jr.

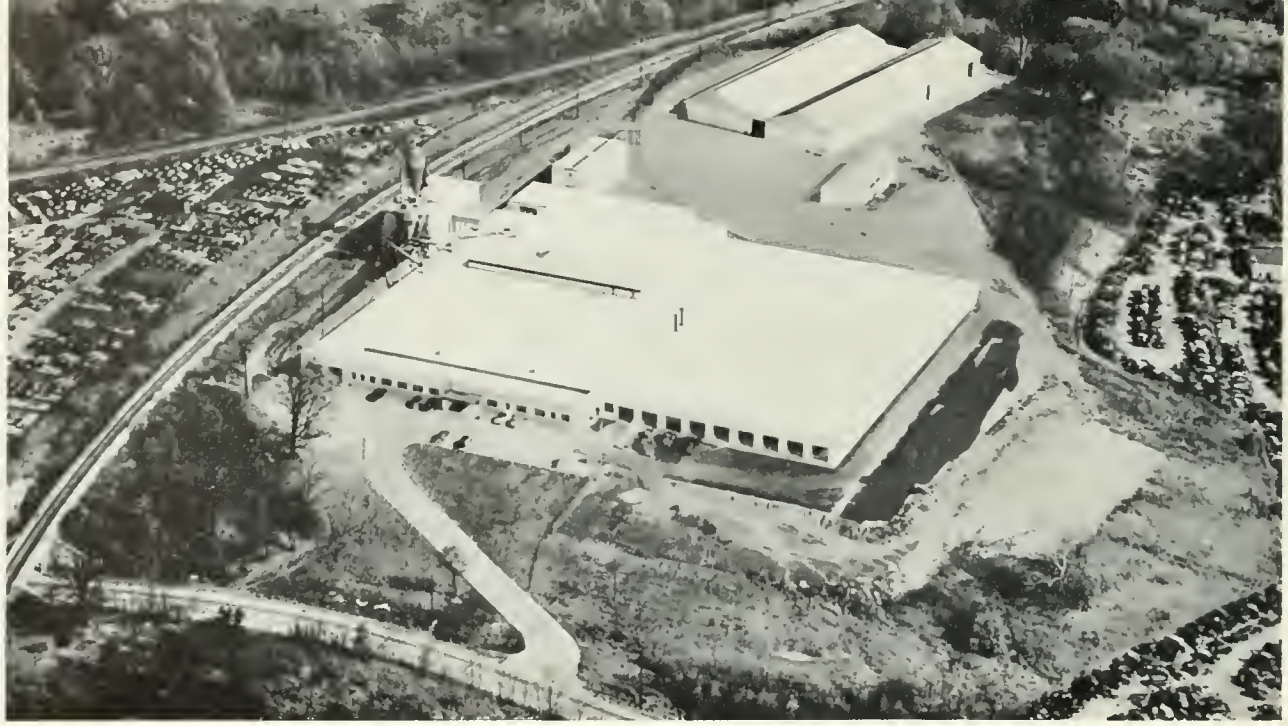
Toscanini to Begin Fourteenth Season As Conductor of NBC Symphony

Arturo Toscanini, Guido Cantelli, Fritz Reiner and Charles Munch will conduct the NBC Symphony Orchestra during the 1951-52 Winter season, Samuel Chotzinoff, NBC general music director, has announced. The fifteenth season of the NBC Symphony Orchestra will open on Saturday, Nov. 3 at Carnegie Hall, with Toscanini directing.

This will mark Toscanini's fourteenth season as NBC Symphony director. Last year Toscanini was unable to direct all of his scheduled concerts because of a knee injury. In the forthcoming season he will conduct 12 concerts in three series of four each.

Guido Cantelli will return to the NBC podium for his fourth consecutive season. He will direct the orchestra in eight concerts.

Fritz Reiner and Charles Munch each will direct one concert, the latter making his first appearance with the orchestra. Reiner has been a frequent guest conductor of the NBC Symphony Orchestra. Munch's appearance with the NBC Symphony Orchestra was arranged in cooperation with the trustees of the Boston Symphony Orchestra, of which he is regular director.



The new Cincinnati plant provides more than 135,000 square feet of floor space for the manufacture of miniature and sub-miniature electron tubes.

New RCA Tube Plant Dedicated in Cincinnati

RCA's new electron tube manufacturing plant in Cincinnati was formally opened on June 11. Local officials, together with executives of the Radio Corporation of America, the RCA Victor Division, and the National Broadcasting Company, participated in the dedication of the large plant to the memory of the late John G. Wilson, former Executive Vice President in Charge of the RCA Victor Division. Frank M. Folsom, President of RCA, made the dedication address.

The new plant, formerly occupied by the Rich Ladder and Manufacturing Company, has been completely modernized and converted for the exclusive manufacture of miniature and sub-miniature electron tubes. This expansion was necessary to meet the increasing demands of the national defense program and of the radio, television, and communications industries.

The Cincinnati plant occupies approximately 17 acres and has more than 135,000 square feet of floor space. It is RCA's third plant for the manufacture of receiving tubes. Others are located in Harrison, N. J., and Indianapolis, Indiana. It was pointed out that the new plant is strategically located to serve large numbers of manufacturers of electronic equipment. Harold A. DeMooy is plant manager.

The RCA contingent to the dedication included, in addition to Mr. Folsom: W. A. Buck, Vice President and General Manager of the RCA Victor Division; Joseph H. McConnell, President of the National Broadcasting Company; L. W. Teegarden, Vice President in Charge of RCA Technical Products; J. B. Elliott, Vice President in Charge of RCA Victor Consumer Products; Charles M. Odorizzi, Operating Vice President of the RCA Victor Division; Richard T. Orth, Vice President

Frank M. Folsom, President of RCA, unveils a plaque which formally dedicated the new plant to the memory of the late John G. Wilson, former Executive Vice President in Charge of the RCA Victor Division.

Mr. Folsom watches the operation of an automatic machine that seals the glass envelopes of miniature tubes in the Cincinnati plant.

in Charge of the RCA Tube Department; V. deP. Goubeau, Vice President and Director of Materials, RCA Victor Division; Orrin E. Dunlap, Jr., Vice President in Charge of Advertising and Publicity, Radio Corporation of America; Edward D. Madden, Vice President of the National Broadcasting Company in Charge of Television Operations and Sales, and Jack Herbert, Vice President of NBC in Charge of Radio Network Sales.

W. R. Kellogg, City Manager; Albert D. Cash, Mayor of Cincinnati, and R. Edward Tepe, Mayor of Norwood, as well as other prominent local civic and industrial figures, also participated.

New Plant to Make Tubes For Defense and Industry

Excerpts from address by Frank M. Folsom, RCA President, at dedication of new Cincinnati plant.

"All of us at RCA are mighty proud of this new plant. In its 136,000 square feet of floor space, many hundreds of men and women will build quality products. From this plant will come tubes for countless industrial and scientific uses, for radio and television, and most important of all, for our Government's armed forces in their defense of the free world. Our pride in a fine product, backed by the pride in skilled craftsmanship traditional to the people of Cincinnati, will be reflected in the tubes made here. We know they will be worthy of the RCA and RCA Victor trademarks.

"This plant is going to make a great contribution to the operations of the Radio Corporation of America. We are sure it is destined to fill an important position in the National Defense Program and in a vigorous and expanding electronics industry, and we hope it will make a real contribution to the life of your community.

"We think of the RCA family as including not only our employees, but also all the other people who enable us to produce the quality products that bear our trademark and put them in the hands of consumers. I speak of RCA Victor's 4,700 suppliers, including many with whom we do business here in Cincinnati. I speak of our very fine distributor and dealer organizations. We are proud of our various distributors here, who include Ohio Appliances, Herrlinger Distributing Company, Steinberg's, United Radio, Gustav-Hirsch, Midwest Theatre Supply Co., and Cavalier Pictures, Inc. I also include NBC's great midwest affiliate, WLW, and other radio stations which have favored us with their equipment business.

"We hope you will find us to be the kind of people and the kind of company that you will be proud to have in your home and in your city. In short, we want the people of Cincinnati to like us and to be glad we are here. All we ask is that you judge us by our performance."

RCA Awards Three Scholarships

Three high school seniors from New York and New Jersey have been awarded scholarships, valued at $1,500 each, for advanced radio technology courses at RCA Institutes, Inc., one of the oldest radio technical training schools in America. The winners, announced by General George L. Van Deusen, President, were: William Delaney, Bergenfield, N. J.; R. A. Wallner, Waldwick, N. J., and S. A. Rosenkranz, Elmont, N. Y.

The students were chosen on the basis of competitive examinations taken by 37 contestants representing public and private high schools in the metropolitan New York area. Final selection was made by a committee consisting of Professor Walter A. Curry of Columbia University, Professor Charles E. Skinner of New York University and General Van Deusen.

Scholarship winners will be eligible to enroll for free instruction in the two-year advanced technology course at the New York resident school of RCA Institutes, 350 West Fourth Street. The course, accredited by the Engineers Council for Professional Development, prepares students for entrance into the various branches of electrical communications.

Tilted Antenna Increases Range of UHF Signals

The tilted antenna (arrow), erected on tower of RCA-NBC's experimental television station KC2XAK, was designed for a study of the transmission and reception characteristics of ultra-high-frequency signals.

Television signals in the program service area of an ultra-high-frequency station can be doubled in strength by a slight tilting of the transmitting antenna, Dr. C. B. Jolliffe, Executive Vice President in Charge of RCA Laboratories Division, has revealed. The tests were conducted at Bridgeport, Conn., using the facilities of RCA-NBC's experimental station KC2XAK which has been in regular operation since 1949.

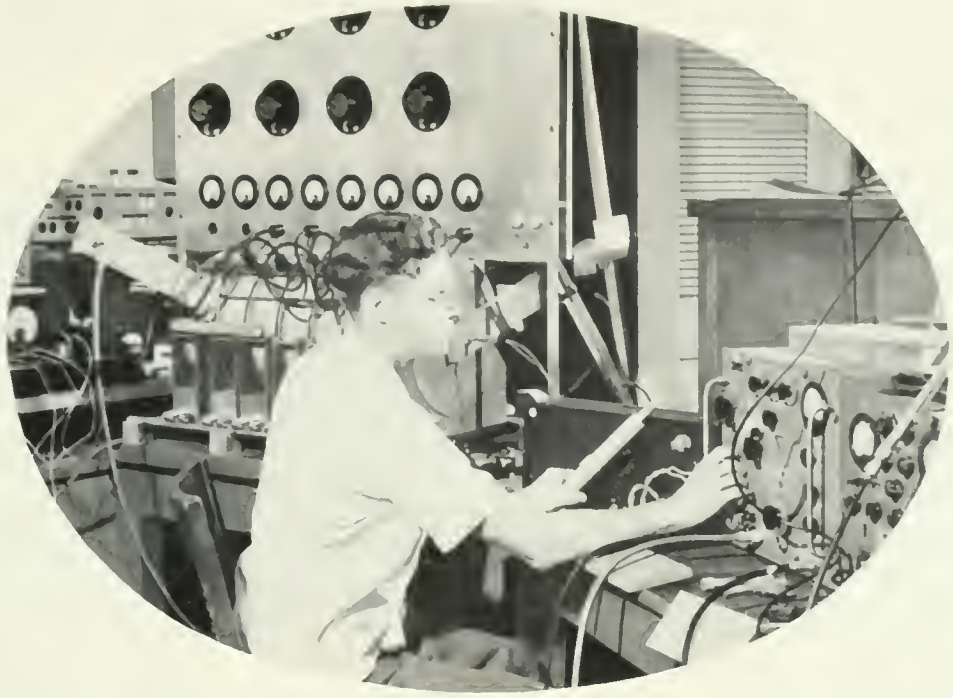
The antenna built for the tests was erected on one side of the Bridgeport transmitting tower. By means of a motor-driven arrangement, the antenna was rocked back and forth in an arc of approximately 12 degrees to permit engineers to record the resulting variations in signal strength. Field tests were made at several locations in the primary service area of KC2XAK and also at Princeton, N. J., 90 miles away. Results in every instance showed that the received signal was at its maximum when the antenna was tilted approximately 2.5 degrees up or down.

This gain in signal strength, achieved without increasing the power of the transmitter, Dr. Jolliffe pointed out, would be particularly valuable in the present state of development of the UHF art. Unlike the very-high-frequency stations now providing program service to the public, UHF stations are limited in their power by the types of electron tubes available for transmitters. By making use of the additional signal strength which the tilted antenna delivers, the effect on the quality of the television picture would correspond to that which would be produced if the power of the transmitter were to be multiplied several times. Furthermore, he added, this gain would bring about a noticeable improvement in picture quality on UHF television receivers installed in the outer, or "fringe", areas of program service.

Because of the occasional propagation of waves well beyond the normal coverage of a station, Dr. Jolliffe said, RCA will conduct further tests to determine whether the gain in signal strength produced by the tilted antenna is likely to increase interference with distant stations operating on the same or adjacent channels.

RCA Laboratories, Dr. Jolliffe stated, also plans to conduct research on tilted antennas in the VHF field. If corresponding gains are obtained on these channels now used by commercial television stations, their program service areas would be similarly extended. The pictures then obtainable at points 35 to 50 miles from transmitters would compare more favorably in quality with those now being enjoyed at locations much closer to the stations.

Jess Epstein and D. W. Peterson, of the research staff of RCA Laboratories, designed the tilted antenna and supervised field tests of the transmitted signals.



Human Factors in Industrial Research

Creativeness, scientific training and good character rate as the most important prerequisites for industrial research workers, according to Dr. E. W. Engstrom, Vice President in Charge of Research of RCA Laboratories. Speaking before representatives of industrial and government laboratories attending the Second Annual Conference on Industrial Research at Columbia University on June 11, Dr. Engstrom revealed that, while the evidence is by no means conclusive, there are indications and experiences to show that the most revolutionary creative thoughts have come to few research workers during their first decade of work. For the average research worker, he said, it seems that his best original and creative work comes before the close of the second decade of activity in the laboratory.

"Members of research staffs are not equally creative," Dr. Engstrom told the group. "In fact, a staff of all highly creative members would be unmanageable. An effective staff is one where all members respond to originality, where all members have some degree of originality and where a portion are highly creative."

Turning to the subject of scientific training, Dr. Engstrom stressed that training is not a substitute for creative ability. He declared that if the research worker's creation is to mature into useful form, however, creative ability must be backed by fundamental knowledge and specific skills. A research worker does not graduate from the educational scene until he retires from the research scene, he added.

"Perhaps research administrators themselves have not adequately evaluated the importance of character," Dr. Engstrom suggested. "Integrity of purpose in research is vital. Nature is a cruel and exacting taskmaster when it comes to technical or scientific accuracy and honesty." He went on to say that "reliability in prosecuting a work program is rarer than one might think and is richly rewarded."

Dr. Engstrom mentioned other qualifications which a research scientist should possess, including perseverance when the going becomes difficult and determination to overcome obstacles along the way. Commenting on the need for scientific inquisitiveness, he said that progress seems to be made in an atmosphere of discontent with the current order of things, accompanied by a drive toward improvement and enhancement.

"Research," Dr. Engstrom stated, "thrives on freshness of viewpoint and differences of approach to the solution of problems."

NBC CELEBRATE

NBC's six-month celebration of its 25th anniversary was launched on June 1. Between then and November 15, the date on which the first NBC network went into operation in 1926, the anniversary will be brought to the attention of radio and television set owners by special broadcasts, presentations and public events. Throughout the six months, emphasis is to be placed on the slogan, "It's the Silver Jubilee on NBC!" Two anniversary songs written for the occasion by Meredith Willson and Harry Sosnik, respective music directors of "The Big Show" and "The Jack Carter Show", will be used as musical themes.

The network will honor its 25-year affiliated stations with plaques. Original employees of the network still on their jobs will be inducted as charter members of the NBC 25-Year Club at the Company's annual outing on August 18.

Performers in this early radio adoptation of "Rip Van Winkle" worked hard to create their own sound effects.

NBC's first radio program was put on the air November 15, 1926, from this main control room in the A. T. & T. Building, New York City. O. B. Hanson, then NBC Chief Engineer, now Vice President ond Chief Engineer, stands in the rear.

Affiliated stations are planning local celebrations tying-in with the NBC Silver Jubilee, and the British Broadcasting Company and Canadian Broadcasting Corporation will salute NBC with special broadcasts.

The original NBC network — America's first — was launched over a 25-station hook-up (21 charter affiliates and four specially-added outlets) with a special four-and-a-half hour broadcast from the old Waldorf-Astoria Hotel, New York. NBC stations from the Atlantic seaboard to Kansas City carried the array of talent that included Will Rogers, Weber and Fields, Mary Garden, Dr. Walter Damrosch and the New York Philharmonic, the dance bands of Ben Bernie, Vincent Lopez and George Olsen, and many other choice offerings. Some of the stars were picked-up "by remote control" — a newly-coined phrase of the day — from other cities.

Today, the NBC radio network totals 180 stations and the NBC-TV network has 63 outlets.

William F. Brooks, NBC Vice President in Charge of Public Relations, is Chairman of the NBC 25th Anniversary Committee named to plan and administrate the anniversary campaign. Members include Jacob A. Evans, NBC Manager of Radio Advertising and Promotion; James Nelson, Manager of TV Advertising and Promotion; Victor Schiff, of Carl Byoir and Associates; Ezra McIntosh, of the J. Walter Thompson Company, and Sydney H. Eiges, NBC Vice President in Charge of Press.

ILVER JUBILEE

in the early Thirties, live audiences ned the antics of Ed Wynn, the "Texaco Chief", in NBC's Times Square Studio.

Dual antennas for stations WJZ-WJY were erected on the roof of Aeolian Hall in New York City.

ginal transmitter for station WJZ was l in a small room in a Newark, New Jersey, factory.

Joseph H. McConnell, President, National Broadcasting Company.

NBC's first mobile broadcast unit, which went into operation in 1929, wos considered one of the engineering marvels of the oge.

first back-pock trons- was used in 1931 to r a golf tournament.

Early-madel portable field equipment, including horn-type loudspeaker.

NBC newsmen tuned to world events at this short-wove listening post.

Short-wave transmitters, such as this, were used to broadcast news from remote points.

TV Servicemen must be **Technicians, Diplomats, Peace-Makers, Benefactors**

Records Belie Old Idea that a Serviceman Must be Only an Authority on Meters and Tubes.

"A CUSTOMER"

"A Customer is the most important person ever in this office — in person, on the telephone, or by mail. A Customer is not dependent on us — we are dependent on him. A Customer is not an interruption of our work — he is the purpose of it. We are not doing him a favor by serving him — he is doing us a favor by giving us the opportunity to do so. A Customer is not an outsider in our business — he is part of it. A Customer is not someone to argue or match wits with. Nobody ever won an argument with a Customer."

— Paul T. Babson
from *Sales Management*

An RCA serviceman rapped smartly on the door of the Smith home in Forest Hills. It was the first call of the week and he felt unusually chipper. "Oh, I'm so glad you're here", cried Mrs. S., "you can watch the children while I go to the store!" Before the amazed technician could protest, mother had disappeared, leaving him with three screaming little "darlings" aged 4 years, 2 years, and 8 months. The week was off to a bad start, but RCA's TV "surgeon" heroically inspected the chassis, located the trouble and corrected it, while his temporary wards hid his tools, rode on his back and tried to hide in the empty cabinet. Mother finally returned one hour later and released the baby-sitter for his next assignment.

Hundreds of similar situations confront the easy-going technicians in RCA Service Company branches all over the country. They regard such breaks in routine as "all in a day's work" — 24 hours in which the customer is always right.

The RCA experts, skilled at curing TV's mechanical ailments, must be equally adept as public relations men. When a Norwalk, Conn., woman phoned the service branch, demanding: "Where do I send the bill? While backing my car out of our drive into the street, I smashed into one of your trucks and put a gouge in my fender!", the manager calmly advised: "Just be brave, madam, and tell your husband."

One customer, detecting strange burning odors in his receiver, gazed in astonishment as RCA's "exterminators" removed several electrocuted mice from his highly-polished cabinet. "They must have come inside the set from the factory; *we* don't have mice!" was the reply.

One service manager succeeded in reuniting a Rockaway, N. Y., couple whom television had estranged. The day after their set was installed it needed adjustment, at which point Mr. X upbraided his spouse for spending all that money for nothing. Blows were exchanged, neighbors called in police, and wife went home to mother as the first step in divorce proceedings. With the best of intentions, the RCA manager talked to both parties and arranged to have a new receiver delivered two days later. The manager was duly cha-

grined when Mr. X stormed into his office with these words: "I've been trying to get rid of that old battle-axe for 10 years, and now when I have a perfect excuse you have to go and ruin it!"

Although medieval armor is not in vogue these days, many a bruised TV mechanic would welcome its protection. Such was the case of the eager young technician who, having erected a difficult rooftop antenna, stepped back to admire his work. When he landed on the hard ground, the mistress of the house asked if he

had knocked any slate from the roof. "Lady, I came down too fast to count them!" was his bewildered reply.

A similar incident occurred on Long Island during the blizzard of 1947. While mounting an antenna, the serviceman slipped off the icy rooftop, landed in a snowdrift and, somewhat disheveled, rang the doorbell. After reviving the astonished housewife, who fainted at the sight of him, the technician completed the installation.

If a homeowner wants to know how solidly his house is constructed, serviceman Clark can tell him. He tests all ceilings and beams these days, before starting work. While rigging an antenna in the unfinished attic of a Bronx dwelling, Clark lost his footing, slipped between two beams, crashed through the ceiling, and landed on a card table surrounded by a ladies bridge club.

The Service Company's unusual case histories are not without their share of international flavor. A penniless oriental prince, posing as a bona fide UN delegate, stormed into headquarters demanding immediate and very special TV service. Investigation revealed that he lived over a cheap 52nd Street nightclub, but through some scheme received his mail and phone calls at Lake Success.

Two RCA technicians have the distinction of being invited into a Russian inner sanctum. The dubious duo set out for the Russian Embassy, housed on the Morgan Estate at Glen Cove, Long Island. They were "welcomed" at the gate by heavily-armed uniformed guards who escorted them to the mansion. Inside two other guards, this time with mere revolvers, scrutinized the entire procedure. When the technicians ran the TV feed line down from the attic, their Soviet "helpers" tried to stop them on the grounds that this would make the pictures come in upside down. After completing the installation, our heroes were upbraided because the receiver "would not tune in Russia, where television was invented".

In direct contrast was the temporary TV installation made for the President of a South American republic during his New York visit. In an effort to cement Latin-American relations RCA's technician tried to give immediate service, but was asked to come back at 5 p.m., as the President was taking his siesta. When he returned at the appointed hour, the serviceman had to wait in the hotel lobby until the dignitary, properly garbed in his dinner clothes, could receive him.

A simple address on the day's schedule often turns out to be a virtual obstacle course for the dauntless serviceman. One call — a confectionery store in Garfield, N. J. — was in reality a "horse parlor." The RCA technician rang the bell and knocked loudly, but received no answer. A bystander gave him a second ad-

dress which proved to be a Social Club. Here he was referred to a third address where he finally found a man with a key to the confectionery store in which the TV set was located.

Whether they have to climb a steep slope to a hillbilly's shack, or row out to a house built on stilts, service crews generally accomplish their missions. Unless, as happened in Paterson, N. J., the technicians try to install a TV receiver in a Turkish Bath on "Ladies Day".

(Continued on page 32)

Radio Message Circles Globe to Open Atomic Display

A radio message sent around the world returned to its originating point in New York, via Tangier, Manila and San Francisco, and activated a uranium pile which, in turn, exploded a magnesium charge that officially opened the Armed Forces Week Exhibition at the Seventh Regiment Armory on May 14. The message, addressed to the Armed Forces, was tapped out by Brig. General David Sarnoff, Chairman of the Board, Radio Corporation of America.

General Sarnoff's message, which traveled over the RCA Communications' worldwide system, said:

"May this globe-encircling radio message, opening the Armed Forces Week 'Atoms for Peace' Exhibition at the 7th Regiment Armory in New York, spread the seed of hope around the world that the electron and the atom will be harnessed for peace, security and freedom for all mankind."

The sample of uranium employed in the startling demonstration was supplied by Dr. John R. Dunning, Dean of the School of Engineering, Columbia University. By prearrangement, Dr. Dunning's fission device, containing U-235 uranium atoms, was connected at the Armory terminal point to the RCA circuit. The final impulse from the radio message caused the uranium to activate. Flashes from the splitting atoms were visible on a 20-inch oscilloscope.

The Exhibition featured weapons and special devices of the Army, Navy and Air Force, as well as products and services of RCA, which sponsored the Oak Ridge exhibit as an education service.

The atomic energy display comprised a series of vivid portrayals showing how the atom works and its use in medicine, agriculture and industry. Through animated devices and panoramic illustrations, visitors were able to follow the advancement of atomic energy through the years and beyond to an outlook of what the future holds for the atom.

Among the exhibits with special popular appeal were the working model of a Van de Graff Electrostatic Generator, and the Dime Irradiator. In demonstrating the Generator, a subject standing on an insulated platform laid one hand on the terminal of a high-voltage

Brig. Generol David Sornoff topped out the "round-the-world" messoge which set off a radiooctive charge, thereby officially opening the Armed Forces Week Exhibition in New York City.

device. The electrostatic charge, passing into the subject's body, caused his hair literally to "stand on end". An attendant explained that the electric repulsion corresponded to the force which propels subatomic particles used for bombarding atoms in nuclear experiments.

The Dime Irradiator, in the form of a miniature atomic pile, illustrated the production of radio isotopes. When dimes were inserted and bombarded by neutrons from a sample of polonium-beryllium, the silver pieces became sufficiently radioactive to activate a Geiger-Muller counter.

The RCA displays included a new lightweight walkie-talkie produced for the Armed Forces, the latest model electron microscope, an electronic counter which can measure time-periods in millionths of a second, and two-way radiotelephone units which have been widely accepted by police and fire departments and industrial companies for installation on their fleets of trucks.

WNBT begins Transmissions from New Television Antenna

After 11 months of work atop the Empire State Building, during which progress was often delayed by weather conditions which made it impossible for even iron-nerved riggers to fabricate the steelwork, NBC's new permanent antenna for station WNBT went into regular operation on June 11. NBC was the first to transmit telecasts from the 215-foot mast which crowns the building tower a quarter of a mile above the street.

Four other television stations — WJZ-TV, WABD, WPIX and WCBS-TV — which are to share the spire with WNBT, are expected to start transmissions from their respective antennas during coming months.

"The start of operations," said O. B. Hanson, NBC Vice President and Chief Engineer," marks the beginning of a new era in television transmission. Rising high above New York City, the antenna is an example of the fine cooperation rendered the project by the broadcasting companies in their effort to provide better service to the viewing public."

The super-turnstile RCA antenna of WNBT, from its position on top of the tower structure 1,465 feet above street level, is expected to assure high-quality program service for New York City and the metropolitan area. Engineers contend that television reception will now be improved in the fringe areas thereby making programs available to a larger audience.

Development of the electronic phases of the Empire State television antennas was conducted by the Radio Corporation of America, under the guidance of a committee consisting of Hanson and Dr. Frank G. Kear, of the consulting engineering firm of Kear and Kennedy, Washington, D.C., the latter representing Empire State, Inc., owners of the building.

The actual installation of the tower and antennas is considered a remarkable technical achievement without precedent in electronic communications. It was accomplished under difficult working conditions and presented many unforeseen problems. Weather was the biggest enemy of the project. Strong winds, storms, rain, cold and ice delayed activity sometimes for weeks at a time. The steel workers who climbed the precarious tower to install and adjust the antennas could work only under the most favorable weather conditions. Frequently, only one or two hours of work was possible in a full day. Ironically, there were numerous days when the weather on the ground was fair, the sun shining and the temperature mild, while high on the tower the wind blew in near-gale force.

Station WNBT recently began regular transmissions from the new 215-foot television mast atop the Empire State Building.

The Empire State Building is the site from which NBC engineers pioneered the development of video transmission. It is recognized as the cradle of modern television.

The new super-turnstile is the sixth antenna to be placed in operation by NBC in the 20 years it has been transmitting from the Empire State. The single antenna will serve a three-fold purpose. It will transmit the TV picture, the TV sound and the station's FM programs by a device known as triplexing.

Who watches Television . . ! how much . . ! when . . !

Today's average television program produces a payoff of 36,000 extra customers in the New York metropolitan area alone for each brand it advertises, and delivers 15.6 extra customers per month for each dollar invested in television advertising — less than seven cents per extra customer.

This and other startling and significant facts concerning the unparalleled sales effectiveness of television are revealed in "Television Today, Its Impact on People and Products", prepared from a new survey conducted for NBC.

Under the overall supervision of Edward D. Madden, NBC Vice President in Charge of Television Operations and Sales, field work for the survey was undertaken by the Psychological Workshop of Hofstra College, under the direction of Dr. Matthew N. Chappell. The sample design for the study was developed by Willard Simmons, outstanding authority in the field. Development of the entire study and the analysis of its findings were handled by a special NBC research staff headed by Dr. Thomas E. Coffin.

Of prime importance in the findings of the new survey were results which show that:

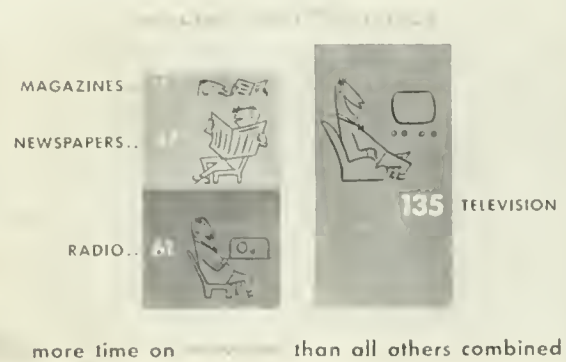
1. Adult owners of television sets spend 2¼ hours a day watching television. They devote more time, every day, to television than to radio, newspapers and magazines combined.
2. Time spent by all family heads, whether or not they are owners of television sets, shows radio winning 1½ hours a day from the average family head. Television, with 73 minutes a day as an average among set-owners and non-owners together, wins more time than newspapers and magazines combined. Newspapers command a little more than three-quarters of an hour a day, while magazines garner only 13 minutes a day.
3. A comparison of similar types of products advertised during the day and in the evening reveals that daytime TV delivers 18.7 extra customers per dollar; evening, 18.6. The similarity of the results is eloquent in itself.
4. Multiple-brand shows (where several brands are advertised on one program), the survey reveals, produce better than the average number of extra customers per dollar for each brand, whether they are high-budget or low-budget shows. This includes multiple-brand shows sponsored by a single advertiser, such as the "Colgate Comedy Hour", and participation programs like the "Kate Smith Show" and "Your Show of Shows". The two last-mentioned programs deliver, respectively, 38.8 and 36.8 extra customers per dollar. Each of these programs, which represent new sales concepts pioneered by NBC, is delivering twice as many customers per dollar as the average television show.

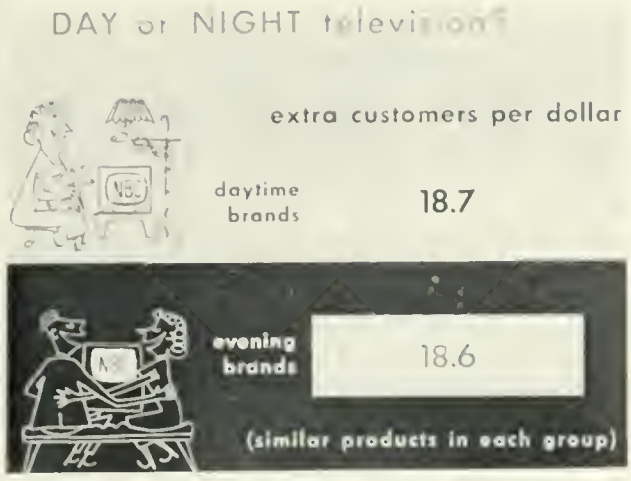
Based on 5,067 completed interviews with male and female heads of households in the 16 counties of the New York metropolitan area (51% set saturation) in a two-month period ending Jan. 23, 1951, the survey findings cover four main areas of inquiry:

1. The television audience as a market.
2. Television sales effectiveness for both package goods and durables.
3. The payoff in terms of extra customers per TV advertising dollar.
4. The relative effectiveness of various television techniques.

The questionnaire utilized in the survey covered the viewing of 111 television programs on the air at the

TIME SPENT ON MAJOR MEDIA BY TV OWNERS





time; a total of 102 hours of programming a week, covering all networks and representing approximately 75% of all network programs available to viewers. There were 187 different brands of packaged goods and durables advertised on these programs.

In establishing the TV audience as a market with its own particular characteristics, the study found that there are more people in television homes than in non-television homes, 62 more per 100 families. Television families have a higher income than non-television families, an average of $644 more a year, or $50 a month per family. This difference, when projected to the entire market, grows to a billion and a half dollars more annual income for New York television families. As concrete evidence of the purchasing power of the television audience, the survey points out that 73.2% of all new cars sold in the New York area in the past six months were bought by television families.

In the light of today's higher television costs, increased set ownership and the heightened competitive situation, the current survey points up the fact that the 1949 NBC-Hofstra report showed that television delivered a payoff of 11.6 extra customers per dollar invested in television advertising for the 15 brands studied. Today's comparable figure for these brands is 11.8. Speaking conservatively TV today is delivering as many new customers for the advertiser's dollar as it did two years ago. The report poses the question: In how many other fields does the dollar buy as much today as it did two years ago?

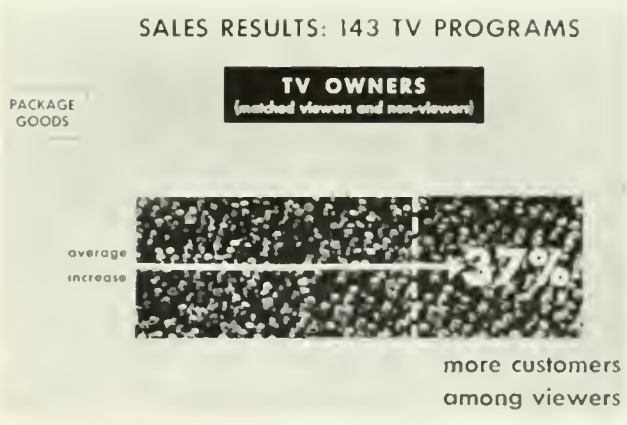
In considering the relative effectiveness of television techniques, the survey's primary consideration was to point out to the users of the medium how to use TV most effectively. It notes that the findings are not rules, but guides, based on results obtained by advertisers already using television.

Findings indicate that there is a definite cumulative effect in television advertising. Some of the brands checked had been on TV for less than 13 weeks. For these neophytes, TV created 9.9 extra customers per month for each dollar invested. There is a steady increase of extra customers that parallels the length of time of TV advertising. Brands using the medium over 15 months had built up to a level of 20.0 extra customers — a cost of only five cents a customer.

The most efficient commercials, the survey shows, are those which are well-liked. Sales messages which irritate the viewer bring only half as many extra customers to the product for the TV dollar. Findings indicate that 61.5% of viewers like the average commercial with dislike evidenced by only 6.4%.

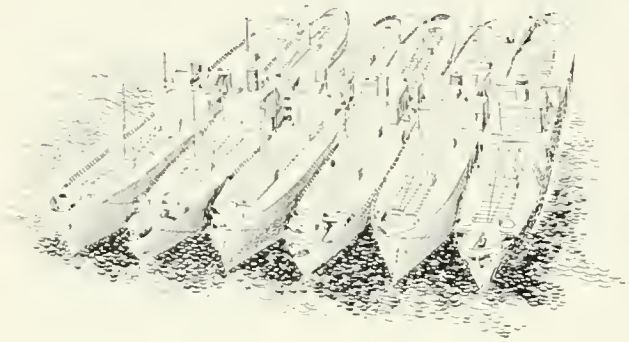
High-budget shows, those with weekly program costs above $17,000 per production hour, deliver about one-quarter more extra customers per dollar than the average program, the survey shows. High-rated shows, those with a rating of 20 or more in the New York area, produce approximately 50% more extra customers per dollar than the average.

The New York market, the study points out, had 51% TV set saturation at the beginning of 1951. By October of this year, 25 of the top markets in the United States will have at least 51% set saturation. At that time there will be some 14,000,000 television homes in the country.



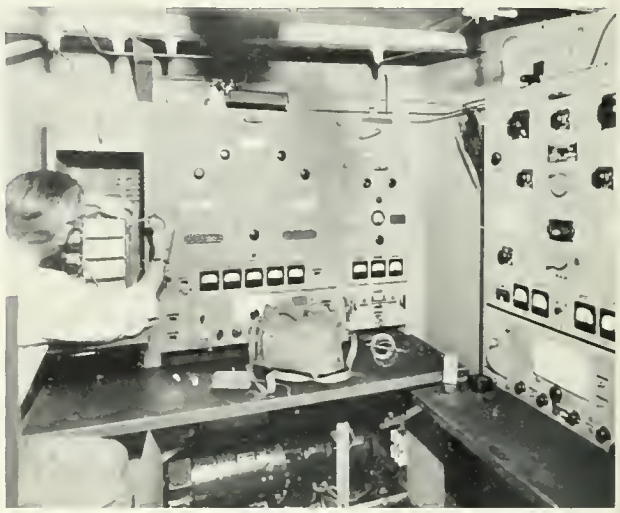
In conclusion, the survey notes that NBC is first in coverage of the television audience with an average of 42 stations per program, first in programs with seven of the 10 top-rated shows, first in audience with 2,294,000 homes reached per sponsored program, and first among advertisers with 49¼ total weekly sponsored hours.

Radio Technicians go to work on the "Mothball Fleet"



By Forrest H. Flanders

Chief Service Technician
Radiomarine Corp. of America
Baltimore, Maryland



A Radiomorine technician makes a thorough inspectian of equipment in the ship's radio room.

Fleets of war-famous "Liberty" ships which, for nearly six years, have been swinging idly at anchor in American backwaters, are now being reactivated in bustling repair shipyards all over the country. Among the crews of skilled workmen who refit, overhaul and refurbish these cargo vessels are crack technicians of the Radiomarine Corporation of America. It is their job to bring to life the radio pulsations which serve as eyes, ears, and voice for every type of seagoing craft.

Mass-produced during World War II to be the sturdy workhorses of the Merchant Marine, the unlovely Liberties fell into disregard at the war's end. Some were converted hurriedly into makeshift transports to speed our soldiers home, others were examined by friendly foreign interests and purchased to replenish their decimated merchant fleets. A few that were entirely worn out had to be scrapped for valuable steel they contained.

Not considered worthy of the elaborate and costly lay-up procedure accorded our Navy vessels, the Liberties were given a minimum of treatment before going out of service. Fittings and spare parts were inventoried and stored in cargo spaces below the decks. To serve as armor against the inevitable onslaught of rust in years to come, each vessel was made weathertight with a special red preparation, oily in texture, which was sprayed on all machinery and steel fittings, as well as on the outside surfaces of hull and cabins.

Once the Liberty ships had been laid up in sheltered waterways, it was doubtful that they would ever be used again. Maritime planners considered the vessels "too slow" to be of future use. But before larger and faster ships had passed the blueprint stage, a new global menace became a reality. Again it was necessary to transport cargoes to friendly nations and supplies to American soldiers abroad. It is for this purpose that Liberty ships are to be sent back to sea.

As rapidly as possible, the Liberties are being towed to repair yards and eased into drydock where scores of workmen stand ready to begin their special tasks. Inspectors look over that portion of the hull normally below waterline, while other workmen wrap the hull with a web of staging from which a crew, armed with chemicals and brushes, can wash away the protective oil coating. Inside the vessel, government officials check inventoried equipment stored on board, and white-coveralled engineers, deep in the engine room, shout orders in booming voices necessitated by the din of machinery.

Less publicized but equally important, nevertheless, is the part played by Radiomarine technicians. No intricate staging need be erected for the overhauling of the ship's complicated radio and electronic equipment. Shortly after the arrival of each vessel in drydock, one or two Radiomarine inspectors laden with tool boxes and test equipment, pick their way across the cluttered decks to the radio room.

Despite all lay-up precautions, much must be done

to rehabilitate the radio equipment for the corrosive salt air has had many hours in which to penetrate man's protective efforts. The hugh gray steel unit containing Radiomarine transmitters, receivers and automatic distress alarm was coated with the oily rust preventative, even though, the copper-clad steel which Radiomarine uses in its equipment is no easy victim to rust.

With the outside of the unit shining clean, the real work is yet to begin. Switches must be lubricated and sensitive relays burnished to a jewel brightness. When power is available from the engine room, the units are put into actual operation for the test. Little trouble is experienced as the equipment is rugged and designed for all climatic conditions. The rare failure of a component is quickly localized and the faulty part replaced by the technicians.

Heavy storage batteries, used to supply power to portions of the radio equipment in event of failure of the ship's main generators, must be replaced. Years of lay-up with no attention extracts a penalty that lead-acid batteries cannot survive.

A variety of antennas, each having a specific function, must be erected between the masts. Usually new wire and insulators must be provided to replace the old which have a way of becoming broken or lost during the long lay-up period.

The radio direction-finder, usually located in the chart room near the wheelhouse, requires its share of attention. Its panel is scrubbed and scoured and components cleaned and tested until the technician is confident that performance will be unfailing when called upon.

After a short stay in dry-dock, this sturdy Liberty ship once again will look like new.

Broadcast receivers, together with a network of loudspeakers, placed on board by the government during the war to entertain officers and crew, are checked and repaired if necessary. These receivers were furnished to replace personal broadcast sets which menaced the ship's safety. Inexpensive radios often act as miniature transmitters and emit a squeal that could be picked up miles away by sensitive equipment of enemy submarines. The Government-furnished sets did not have this drawback. Personal radios are no longer prohibited but habit dies hard and the ship's entertainment receiver is a convenience that has grown to a necessity and must therefore be accorded technical attention.

During this brief shipyard visit some Liberty vessels are being equipped with the latest type of Radiomarine radar. This involves close cooperation with other shipyard craftsmen who are called upon to erect a sturdy mast to support the revolving radar scanner. Vast progress has been made in the design of radar since the Liberty was first built and Radiomarine, always acutely aware of marine requirements, has engineered one of the finest and most sensitive units.

With gleaming new antenna wire strung between the masts and renovated equipment in place below, the Liberty is ready for her final inspection by Federal authorities. This inspection determines her fitness for the awards of certificates attesting that she meets all legal requirements and constitutes a seaworthy addition to our merchant fleet.

Radiomarine still has a task to perform. The accuracy of the direction finder must be checked at the nearest lighthouse having a radio beacon. This takes place usually only a few miles from the port of departure. Upon arrival in this vicinity, the vessel's speed is slackened and the pilot orders that the ship be steered to travel in a huge circle. Radio bearings are taken at frequent intervals while simultaneous sight observations are recorded by one of the deck officers. Comparison between the radio and sight bearings discloses the amount of error introduced into the direction finder by adjacent steel masts, guy wires and other structures. These errors always prevail but, with the knowledge of their value, the Radiomarine direction finder can be compensated to eliminate the mental calculation otherwise necessary to obtain an accurate bearing.

Adjustments completed, the technician, after a handshake with the captain, climbs down a rope ladder into the launch below. A parting salute from the horn of the launch as it heads for shore is answered by the deep whistle-blast of the larger vessel as she picks up speed. There is an exhilarating tone to that whistle, bestowed by a realization that another Liberty has been reborn and is ready to serve her country again.

TV Servicemen

(Continued from page 25)

On occasion the impossible rears its defiant head to stump the most experienced serviceman. Witness the time one tried to locate the source of heavy interference on a Bronx set located in a good reception area. The enterprising RCA man finally gained entrance to an unfinished attic which had been closed off for over 10 years. Here he found lighted an old, chattering carbon bulb, apparently installed by the workers who had run the original electric line up to the attic. Once this obstacle was removed, receprion was perfect.

Another baffled family had to choose between video and heat, until a technician solved the mystery. When the new TV set was tuned in, the oil burner quietly ended operations. RCA's sleuth discovered that a receiver should never be located under a thermostat — especially in winter weather.

The famous case of Brooklyn's "Bessie" is familiar to RCA V.I.P.'s and servicemen alike. She has called them all. Bessie purchased an expensive projection-type receiver, and then complained bitterly and frequently that the picture got fuzzy every night at 9 o'clock. After countless check-ups, which revealed no trouble, the branch manager went to her home each night for a week to see this phenomenon for himself. It turned out that Bessie was not exactly a teetotaler, and, as might be expected, the picture to her eyes sometimes got fuzzy. Since it isn't wise to tell a customer that she may be seeing things, the manager made motions of adjusting several knobs behind the set, whereby the complainant was temporarily happy.

One distinguished serviceman can testify to the fact that appearances are indeed deceiving. His was the task of installing a receiver in the Brooklyn State Hospital. He had no problem gaining entrance to the institution, but leaving was another story. Guards detained him for nearly an hour, confident that he was one of their mental patients, masquerading as a television engineer.

A few months later the same man was "locked up" again, this time by a conniving housewife who refused to let him leave until he had put in all the screens in her six-room house.

When the telephone rings in a Service Company branch office, the staff members are prepared for anything. One woman demanded that they put a shade on the screen of her set so the TV performers couldn't spy on her; another requested them to "pull up the shade in front of the orchestra" on her receiver, which was actually showing a test pattern with canned music. A retired schoolteacher was convinced that television was making her radioactive, while an expectant mother asked if metal-cone tubes really gave off a harmful ray. Dozens of calls have come in requesting servicemen to install films in the TV instruments.

Back in 1947, when receiver sales were skyrocketing faster than the Service Company could expand its staff, things were really hectic. Installation orders had reached a three-week backlog and people offered all kinds of gifts in return for immediate installations. Service trucks returned cases of whiskey, suits, jewelry, pens, and numerous gadgets which hopeful customers sent in with cards attached. Hundreds of written requests were received from doctors who claimed they wouldn't be responsible for their patients if the latter had to look any longer at unopened cartons containing their long-awaited television sets.

In those trying days, the serviceman was king. One particular technician named Sweeney was assigned to the Park Avenue trade because of his engaging personality. Monday through Friday, Sweeney never bought a meal. He had breakfast with the maid, lunch with the woman of the house or her daughter, and dinner with the whole family. Judges, bankers, and vice presidents called for him by name when they wanted service.

At the peak of the early demand for TV sets, eager owners were willing to make almost any sacrifice for a clearer glimpse of Uncle Miltie or a championship fight. Some even insisted on having full-size antennas erected indoors in any spot where reception was best. One family had such an antenna in the bathtub, another, under the bed, and several had masts mounted on the bedposts. A swank Forest Hills apartment owner agreed to put his antenna on the dining room table. The family dined between dipoles.

Which only goes to prove that the customer may not always be right — but he wants what he wants where he wants it. Any serviceman will agree to that!