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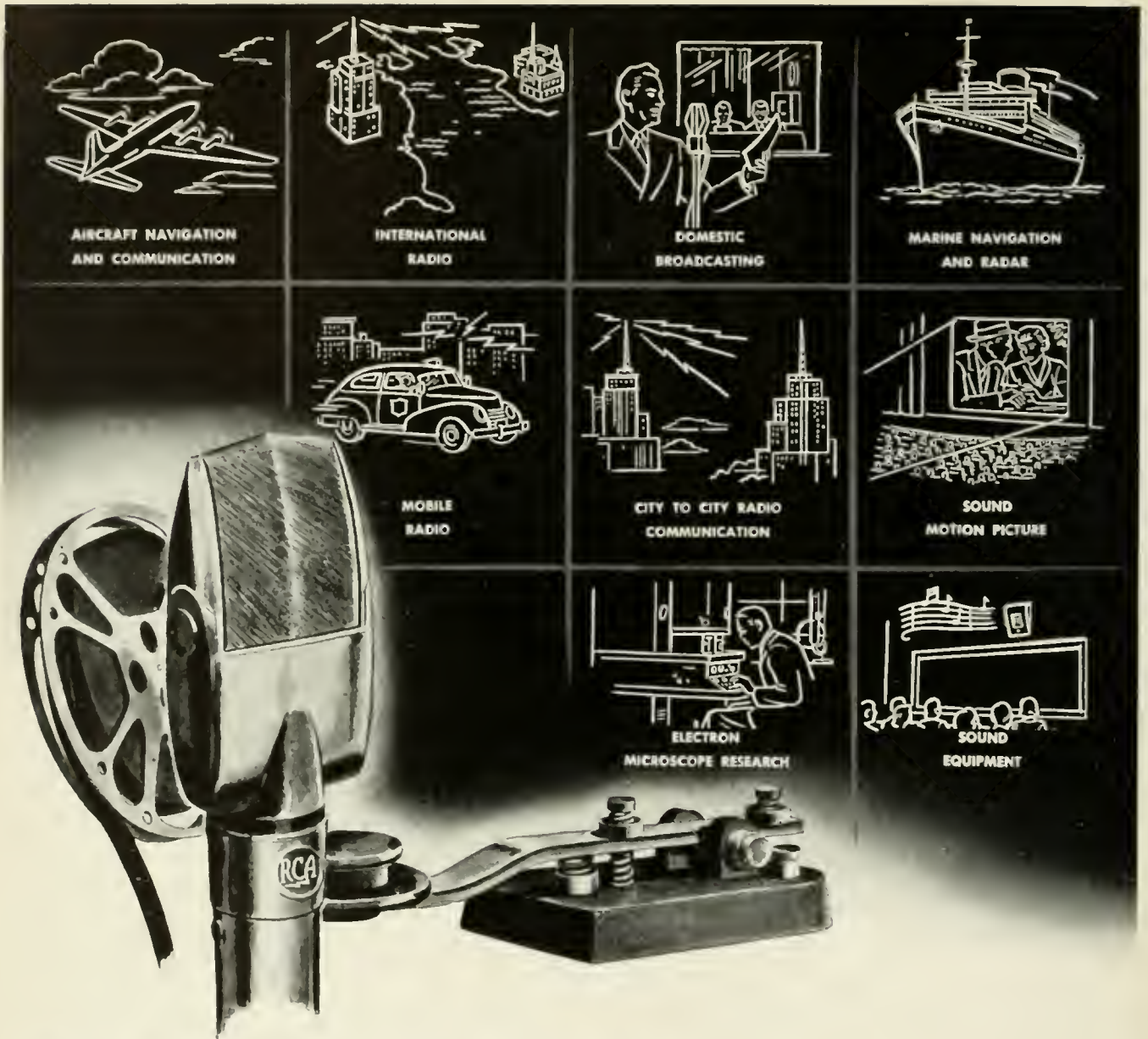


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COVER

Compactness, simplicity, and the lower cost of the new Table Model Electron Microscope are factors which are expected to appeal to many colleges, hospitals and industrial laboratories.

VOLUME 9 NUMBER 4

JULY 1950

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RADIO CORPORATION OF AMERICA

RCA Building, New York 20, N. Y.

DAVID SARNOFF, *Chairman of the Board*
LEWIS MACCONNACH, *Secretary*

FRANK M. FOLSOM, *President*
ERNEST B. GORIN, *Treasurer*

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John G. Wilson

John G. Wilson, Executive Vice President in Charge of the RCA Victor Division since 1948, died June 1, 1950 at his home in Wynnewood, Pa.

JOHAN G. WILSON, or "Joe" as he liked to be called, revealed throughout his life the real significance of friendship. When he passed from our midst in June there was a deep feeling of loss and sorrow by all who knew him. One of the great human experiences is to know a man of Joe Wilson's calibre, and I had that privilege for twenty years. During that time, we worked together and no one could have had a better teammate.

Joe was never one to seek the limelight; he liked to be in the background, and he gained great pleasure in watching others advance through his ability to help them. Personal glory had no appeal for him, for his own requirements were modest. His capacity for work was enormous. He put long hours on any job he undertook, and toiled unceasingly to reach the objectives which would add to the stature of the company and the success of everyone in it. As a leader he was a master organizer. Yet, in every move he made he never lost the human touch. In creative effort he was demanding; in achievement he was quick to give full credit to all who contributed to the results. Loyalty was an outstanding attribute of his character.

Joe Wilson had a great heart that pulsed with friendship for people in all walks of life. He had an uncanny way of sensing when someone needed help—the shoe-shine boy who required expensive dental treatment . . . the college professor for whom he made possible a year of advanced study in California . . . the deserving girl he put through four years of college. These and many other acts of kindness characterized Joe Wilson. He sought no personal plaudits; in fact, it was difficult for anyone to express appreciation or to thank him for a kind deed because he would turn away almost as if to hide the fact that he had anything to do with it. Quietly and without fanfare, Joe Wilson moved among his fellowmen accomplishing much good in the world and making the lives of others more pleasant. He made the world a brighter place for those who knew him.

Lauren Fessom

Color Television

In Statement before the Federal Communications Commission, General Sarnoff Recommends that FCC Set Color Television Standards Based on RCA All-Electronic System

APPEARING before the Federal Communications Commission in Washington, D. C., on May 3 Brig. General David Sarnoff, Chairman of the Board of the Radio Corporation of America, urged that the Commission, at the conclusion of the hearings then in session, set color television standards based on the RCA all-electronic completely compatible color system. If this be done, he said, color television receivers will be in factory production by June, 1951.

Adoption of color television standards based on the inferior and non-compatible method of the Columbia Broadcasting System, he said, would earn the scorn of the world and impose an extra cost of more than \$100,000,000 a year on the American public for adaptation of black-and-white receivers.

General Sarnoff condemned the CBS color method as "inferior" and "unsound."

"It is my purpose here today to urge you, as public officers, not to turn back the television clock, but to look ahead and take a long-range view," General Sarnoff testified. "The adoption of the CBS system, whose obsolescence is already foreshadowed in this fast developing electronic art, would earn the scorn of the world. At the very moment I am appearing before you, the United States delegates are at a meeting of the International Consultative Committee in London to advocate world television standards on a basis equivalent to present American black-and-white standards. For this Commission to degrade the standards of American television by adopting the inferior CBS system only would be to show the world that we do not have any faith in the standards which our State Department is recommending to the world.

"Adoption of the CBS system exclusively would also earn the dissatisfaction of American families.

They would be induced to buy CBS type sets by a decision of this Commission made at a time when it was evident that the CBS itself would shelve its mechanical system in favor of an all-electronic system."

Main Issue of the Case

Emphasizing that there is no doubt about the desirability of color television, General Sarnoff said that the fundamental issue in this case is:

"Shall American television move forward or backward?"

He pointed out that CBS has asked the FCC to adopt standards based upon "a mechanical, non-compatible system, which gives a degraded picture and has additional defects," and added:

"On the other hand, the Commission is asked by the RCA to adopt color television standards which will permit the utilization of an all-electronic, compatible color television system which does not have those defects and which has picture quality at least equal to that provided by existing black-and-white standards.

"CBS has asked this Commission to adopt a system which would saddle an all-electronic art with a mechanical harness. You are being urged by CBS to build a highway to accommodate the horse and buggy when already the self-propelled vehicle is in existence and has been demonstrated.

"I know that CBS claims it can use electronic terminal equipment in its system. CBS, however, does not and cannot deny that its system has been designed for and is confined by the limitations of a mechanical disc. Therefore, it does not and never can have the performance capabilities of a true electronic system."

General Sarnoff said that "if the CBS color system, with all of its known defects, is now imposed

upon the public, great harm will be done to the growth of television and its public acceptance. The recession in the sale of sets which would result from the adoption of non-compatible color standards and degraded pictures tailored for the CBS mechanical apparatus would, in my opinion, cause the bankruptcy of many of the smaller television set manufacturers of today."

Pointing out that it had been established in the record that an all-electronic system "offers boundless possibilities for continued growth and improvement of the television industry," General Sarnoff continued:

"In my judgment, a compatible all-electronic system is the logical system for the Commission to approve. Were it not for the intensive promotional effort that has been put into this matter by CBS, the suggestion that the American public will use for the indefinite future a non-compatible system with a mechanical disc and degraded picture quality would be ridiculous.

"I would be untrue to my long experience in this business if I did not protest, as strongly as I can against the adoption of standards based on an inferior system. For the Commission to shackle an electronic art to the degraded standards of a CBS mechanical wheel would, in my opinion, be a fatal mistake."

RCA Color Developments

Recalling that CBS had stated that the RCA system could never be improved and should not even be field tested, General Sarnoff went on to compare this statement with the facts.

"We have demonstrated," he testified, "that the RCA color system has the full geometric resolution of existing black-and-white standards.

"We have demonstrated that the RCA color system now has color

fidelity equal to that of any other system, and we expect this to be further improved.

"We have demonstrated that the RCA tri-color kinescopes make possible a receiver of a size about the same as existing black-and-white receivers. This means that RCA color receivers can be manufactured and sold for prices that will be competitive with any other color receiver that has been demonstrated or proposed.

"We have demonstrated that the RCA color system can be networked even over existing coaxial cable facilities.

"Our faith in the RCA all-electronic color television system already has been fully justified.

"Now let us look at the CBS folks who came before the Commission when these hearings began last Fall and said that they were ready then. They said their system needed no further testing and no further improvement.

"What have they done since that time? They have been trying desperately to improve the quality of their picture and to increase their picture size. They have borrowed horizontal dot interlace from the RCA system in their effort to increase the definition of their pictures. They testified that they look forward with anticipation to use of the RCA single tri-color kinescope in order to eliminate their mechanical disc. They say now that, with the use of dot interlace, the quality of the CBS pictures will be improved.

"These supposed improvements in the CBS system are based upon RCA achievements—to borrow a phrase from CBS, they have 'followed in the footsteps' of RCA. But CBS concedes that with these changes the CBS color television system must still be field tested.

"What has the CBS developed for itself? Last week, in New York City, CBS demonstrated its non-compatible, non-commercial laboratory model projection receiver which they call all-electronic. Practically no information has been given to anybody with respect to this laboratory model. There have been no detailed data describing the components and circuits.



DEMONSTRATION MODEL OF TELEVISION RECEIVER EMBODYING RCA'S ALL-ELECTRONIC COLOR SYSTEM AND RCA TRI-COLOR DIRECT-VIEW KINESCOPE TUBE.

"CBS claimed they had color apparatus that was simple, tested and ready for the home. Now they submit an untested, non-commercial model which they concede on the record is only a laboratory specimen and not ready for the home.

"Compare all this with the many and repeated demonstrations of the RCA all-electronic system and the many bulletins we have made available to this Commission and to the entire industry. RCA said that its color apparatus could be improved and made simple. We have done what we said."

Color Standards Requirements

General Sarnoff expressed the opinion that the demonstrations made and the testimony submitted in the hearings have proved that color television has advanced technically to a point that justifies the Commission in setting standards now on a regular commercial basis. "This would enable broadcasters and manufacturers," he said, "to proceed promptly with their plans for providing the public with programs and equipment to receive the benefits of color television."

In addition, General Sarnoff described three basic requirements, which he said RCA believed color television standards should meet. They are:

1. A channel width of 6 megacycles, as proposed by the Commission.
2. The color pictures, by whatever system transmitted or received, should not be inferior in quality and definition to present black-and-white pictures.
3. The color system should be compatible with existing black-and-white standards.

"Broad standards based upon these three requirements will enable color television," General Sarnoff asserted, "to move forward as a service to the public. In my judgment, a color television system that does not meet these broad standards will not be acceptable to the public and should not be approved by the Commission.

"That is why the RCA has devoted its energies to the development of a system which meets each of these three broad standards. We are confident that our system will

meet with full public acceptance and approval and it will enable the Commission and the industry to keep faith with the five or six million present owners of black-and-white receivers."

Reveals RCA Plans

General Sarnoff outlined in some detail the plans RCA would follow under any one of five different decisions the FCC might make in settling the color television question.

"If the Commission were to adopt the CBS proposal only," he declared, "we would be confronted with a field-sequential color system which gives a degraded picture and is non-compatible. We would then find ourselves saddled with a system which we firmly believe is inadequate and inferior and which we seriously doubt would prove acceptable to the public."

Under these hypothetical circumstances, he said, RCA would act as follows:

1. We would make and sell transmitting equipment, on order, to anyone.
2. We would make and sell tubes, including our tri-color kinescopes, and parts, to anyone.
3. We would make and sell field-sequential color receivers, utilizing the tri-color tube, as the public demand for such receivers might exist.
4. We would make and sell tri-color tube converters on the same basis.
5. We would make and sell separate adapter units for television sets already in the hands of the public, as well as for new sets thereafter manufactured."

Cost of Adaptation Estimated

"Building adapters into our sets at the factory presents an entirely different problem," General Sarnoff said. "This, we do not plan to do. It has been estimated that the present annual production of television receiving sets is at the rate of five million a year. With an estimated minimal figure of \$20 for built-in automatic adapters, the public would have to pay more than \$100,000,000 a year for an adaptation to a degraded system which is non-compatible.

"We do not believe that the public will want adaptation to a degraded CBS picture at this or at any other price. Nor do we believe that the public should be forced to pay this tax of \$100,000,000 a year in order to receive the CBS degraded picture.

Public Reactions Will Guide

"If we are wrong, the public will prove us wrong. In all these plans we would necessarily be guided by public reactions and competitive conditions. We would have to modify or adjust our plans in accordance with such reactions and conditions. And we will have to make receivers with adapters, if future experience proves that this is what the public wants."

General Sarnoff said that RCA stands on its record of "energetically developing" those things in which it has confidence. "On the other hand," he continued, "I do not assume that we would be expected to be in the vanguard of promoting any system in which we have no confidence and which we believe is inferior and unsound; a system whose length of life commercially is open to serious question."

He told the Commission that he thought he had detected some intimation in the record that, unless all manufacturers were willing now to commit themselves to full scale

manufacture of a system that is "inferior and not in the public interest," then any decision the Commission might make in favor of the CBS system, "might in some way be frustrated."

General Sarnoff pointed out that if the Commission were to adopt "the best" system, "then no one in our competitive and free enterprise economy of today is going to be able to keep the public from getting it—if it really is 'the best.' Consequently, any inference that an advance commitment by manufacturers, or even compulsion, might be necessary to ensure that the public will be able to buy that which has been assumed to be 'the best' is unrealistic. . . . The best will sell itself on its own merits. Competition will see to that.

"Of course we do not think the Columbia proposal is 'the best.' If it were the best, the Commission would not be faced with the need to get a commitment, or to apply force, to sell it. The need to apply force would come only from the opposite premise—that Columbia's proposal could not be sold on its own merits.

"Now I wish to make it entirely clear," said General Sarnoff, "that in answering this hypothetical question I have not anticipated, and do not expect, that the Commission's decision will be to adopt standards based on the CBS system



PLANT OF THE RADIO CORPORATION OF AMERICA AT LANCASTER, PA., WHERE THE NEW RCA TRI-COLOR KINESCOPIES ARE BEING ASSEMBLED IN "PILOT RUNS". SOME OF THE IMPORTANT COMPONENTS OF THESE TUBES ARE BEING PRODUCED AT THE RCA PLANT IN HARRISON, N. J.

exclusively. We cannot believe that the Commission would outlaw the RCA system and all other systems.

"Should the Commission adopt the RCA system, or any other system which meets the three requirements of the broad standards I have discussed," General Sarnoff said, "the road ahead is clear."

RCA Tube Inspires Confidence

"Our confidence in the new RCA tri-color tubes, which have been demonstrated before this Commission and the industry, is so strong that we are already proceeding with plans for acquiring a new factory and the machinery necessary to produce these color tubes in quantity. These steps involve heavy financial commitments on the part of the RCA. By June of next year we expect to commence the manufacture of color tubes on a mass production basis. In the meanwhile we will have completed our commercial design and development of these color tubes. By that time also our pilot plant will have produced a sufficient number of color tubes, to meet not only our own needs for testing and design purposes, but also to supply those tubes to competitors in the set and tube industries for the same purposes.

"Within sixty to ninety days from now we expect to have about ten development model color receivers using the tri-color kinescopes available in the Washington area for field test purposes.

"During September of this year, we expect to build five or six receivers each week from a pilot assembly operation. This pilot operation will continue until a sufficient number of sets have been made to fulfill our testing requirements and to make color receivers available to other manufacturers for their testing and design purposes.

"If final standards are adopted and commercial operation in color is authorized soon, the RCA color and would be in factory production of color television receivers by June of next year. This would amount to a weekly production rate of 200 color receivers. By the end of that year, our color receiver rate of production will have reached over 1,000 per week. Thereafter, we expect



Dr. Elmer W. Engstrom

*Vice President in Charge of Research,
RCA Laboratories Division.*

production quantities to rise substantially.

"We assume, of course, that competing manufacturers would likewise gear their facilities for production of color tubes and receiving sets once the Commission determines the standards.

"The question was asked as to what percentage of the 20,000,000 sets, which it was estimated will be in the hands of the public in 1954, will be black-and-white if the Commission should adopt the RCA system.

"I think the estimate of 20,000,000 sets by the end of 1954 is too low," said General Sarnoff. "If normal business conditions prevail and if more television stations go into operation reasonably soon, it will be much greater than 20,000,000. In my opinion, there will be 20,000,000 television receivers in the hands of the public by the end of 1952.

"We have faith in the RCA color system and we feel strongly that if it is approved by the Commission a large percentage of the sets outstanding in 1954 will be color sets."

Plan Demonstration of Converter

General Sarnoff revealed for the first time that, within the next six weeks, RCA will demonstrate an

RCA color converter employing an RCA tri-color kinescope. "This all-electronic converter," he explained, "will provide a method of converting existing black-and-white television receivers to color."

With regard to the third color system being considered by the FCC, General Sarnoff said:

"I am informed by our engineers that the CTI system has not been demonstrated to have satisfactory picture quality in color, nor to give a satisfactory picture on present sets. However, if the CTI system overcomes these defects, if it meets the three requirements of the broad standards I have discussed, and if the Commission should adopt the CTI system only, then in general our policies would be the same as if the RCA system had been adopted.

Broad or Multiple Standards

"If the three basic requirements—the 6-megacycle bandwidth, compatibility and picture quality equal to existing black-and-white—are adopted as broad standards, our policies would be the same as if the RCA system had been adopted.

"If the multiple standards are adopted by the Commission, and by that I mean standards that will permit not only the RCA system but also systems which do not meet the three basic requirements of the broad standards, we would do what I have outlined in the event the RCA system were adopted."

As to receivers capable of receiving and reproducing transmissions of all the various systems, General Sarnoff said that such receivers would necessarily be complex and more expensive. "However, we would manufacture and sell multiple receivers," he said, "to the extent of public demand."

In concluding his statement, General Sarnoff analyzed the RCA and the CBS systems in relation to his three basic requirements of color television standards.

"By the adoption of horizontal dot interlacing, CBS has conceded that its system ought to have improved picture quality. If CBS, in spite of its testimony that it cannot visualize the tri-color tube being

(Continued on page 10)

RCA POLICY ON PATENTS

Statement by Brig. General David Sarnoff before the Federal Communications Commission, Washington, D. C., on May 3.

RCA has been licensing its own inventions in the radio and television industry for a great many years. It has also for many years been licensing the inventions of others in those instances where it has sub-licensing rights. The basic structure of this patent licensing was approved by the Department of Justice and the United States District Court for the District of Delaware in 1932.

At the time the 1932 consent decree was entered, the agreements with the American Telephone & Telegraph Co., the General Electric Co., and the Westinghouse Electric Corp., pursuant to which RCA received the non-exclusive right to grant licenses under the patents of these companies were described by the Department of Justice as being manifestly in the public interest.

From time to time since 1932 RCA has acquired licenses for itself under the patents of others and in some instances sub-licensing rights for the benefit of the rest of the industry as well.

Industry Aided by RCA Patents

In 1942 the Department of Justice through the Assistant Attorney General, Mr. Thurman Arnold, sought to set the consent decree aside. After full argument, the decree was reaffirmed by the Courts. The Attorney General withdrew his appeal to the Supreme Court of the United States on this issue.

I believe that the beneficial nature of RCA's licensing policies are apparent from the assistance which the industry has received as a result of these policies.

As I have said, we have been in the patent licensing business for many years. No one can conceivably claim that the radio industry has been anything but helped by RCA's patent position or RCA's patent policies. The history of the whole radio industry has been one of rapid expansion and keen competition.

Coming to the television industry, I believe it will be conceded by all concerned that we would not have the highly competitive, highly successful television industry that we have today were it not for the affirmative assistance which the RCA has made available through its patent licenses and otherwise.

Other Manufacturers Benefit

As a result of this, we now have a television industry of a billion dollars a year. RCA not only gave this industry the benefits of its television patents at no extra charge, but its licensees got blueprints and manufacturing assistance. Competing television manufacturers were invited to our plants and greatly helped to get into competition with RCA.

Our patent licenses contain no restrictive provisions whatever. There is no effort to fix prices, to limit production or to do anything but to further the industry to the fullest possible extent. We maintain an Industry Service Laboratory as a part of our licensing policy to help licensees. Our licenses are uniformly non-discriminatory and our royalty rate is low.

Now, I do not wish to be drawn into detail in this hearing. It is no secret that we are engaged in patent litigation of the greatest importance in AM, in FM and in television. We are either the defendant or the plaintiff in several litigations of far reaching importance to us and we believe to the entire industry.

In these litigations we have been called all the names which the ingenuity of opposing counsel can imagine. We have been accused of every nefarious practice which the fertile imaginations of these gentlemen could breed. We categorically deny all these characterizations and charges and we fully expect to prove them false in open court.

I believe it is sufficient for these proceedings that we stand on our record and I believe you will respect the situation in which we find ourselves with regard to these litigations.

So far as our agreements with others for obtaining licensing or sub-licensing rights are concerned, most of these agreements are on file with this Commission. They speak for themselves. The consideration paid for the value received was arrived at by the combined best judgment of many experts in our organization. As we have stated on other occasions, however, we can not indulge in the public evaluation of the significance of particular patents which belong to others.

We have also submitted to the Commission all patents which we own or under which we can grant licenses which we believe to read on the transmission standards already existing or which are proposed in these proceedings.

Further than this, however, I do not think we should be asked to go.

Exhibition Hall Visitors Exceed 3 1/2 Million

IN its three years of operation since the official opening on May 14, 1947, the RCA Exhibition Hall in Radio City has attracted more than three and one-half million visitors, an accomplishment that places it among the leading tourist attractions in New York City.

The average daily attendance of the exhibit is approximately 3,000. The highest mark was set on January 8 of this year when 11,380 people thronged the Hall to inspect the new line of RCA Victor radio and television receivers. In the past three years, 580 school groups have been given special tours through the exhibit with added film and lecture programs in the Johnny Victor Theatre.

Television In Mexico

Mexico's first television station, equipped with a 5-kilowatt transmitter and associated studio and mobile pickup units supplied by RCA, is scheduled to go on the air in Mexico City this summer. The station is owned and operated by Television de Mexico, S. A.

Toscanini's Triumphant Tour

Enthusiastic Response to 21 Concerts by the Maestro and the NBC Symphony Orchestra Sets New Records in American Musical Annals

AMERICANS turned out in unprecedented numbers to see and hear Maestro Toscanini and his NBC Symphony Orchestra on their first transcontinental tour of the United States. Nearly one hundred thousand persons made up the record-breaking crowds in the twenty cities visited in the six weeks, ending on May, 27.

On June 5, with bravos of his great 1950 tour still ringing in his ears, Maestro Toscanini boarded the *S. S. Vulcania* for a summer in Italy during which he will make two appearances as guest conductor at the famed La Scala Opera in Milan. Upon his return to the United States next fall, he will conduct the NBC Symphony Orchestra in the 1950-51 radio concert season over station WNBC and the affiliated stations of the NBC network.

Results of the recent tour were highly gratifying. As the sponsor, the RCA Victor Division of the Radio Corporation of America received commendations from all over the nation. And the National Broadcasting Company received no less than five certificates of award for its contributions to musical culture through the formation of the NBC Symphony Orchestra and its perpetuation under the direction of Maestro Arturo Toscanini.

Brig. General David Sarnoff, Chairman of the Board of RCA, declared:

"Maestro Arturo Toscanini returned on May 28 from his first transcontinental concert tour, leaving behind him enthralled throngs of Americans who discovered his interpretations of the world's music masters to be an unforgettable experience, and who found Toscanini the man to be even greater than Toscanini the immortal legend.

"Coming at a time when uncertainty prevails in so many quarters and when people everywhere welcome a lift to their spirits, this triumphant journey of the Maestro and his NBC Symphony Orchestra throughout our land takes on added significance. It has been dramatic and inspiring.

"Through their weekly radio concerts over the NBC network and its affiliated stations, through their recordings of the world's greatest music, and through this epochal tour, Maestro Arturo Toscanini and his orchestra of superb musicians have enriched the lives of all of us and endeared themselves to a grateful nation. These efforts have brought to the fore America's love for fine music and the inherent appreciation of our people for beauty and sincerity."

Joseph H. McConnell, President of NBC, stated:

"We are proud to have been a part of this great cultural pilgrimage. We are proud that we were able to help bring Toscanini, the

great musician, to the people of America, who now know him also to be a great, warm human being.

"The reception of the public and press throughout the country has been most gratifying to us, and we feel confident that when Toscanini returns to the NBC podium in the fall for another season, he will bring the NBC Symphony to even greater heights of attainment and perfection, knowing that he is not only playing for great audiences of music lovers; he is also playing for friends."

The response of the audiences moved Maestro Toscanini and the members of the orchestra deeply. They had come to bring fine symphonic music to the people of America, and the people were grateful. In the halls after the concerts, cheers, applause and bravos were mingled with tears of joy. The audience and performers were equally stirred. Toscanini expressed himself over and over again on the wonderful, stimulating audiences.

Outside the concert halls, thousands waited just for a glimpse of Toscanini. They were not raucous, they didn't ask for autographs. Mostly they stood and watched. A voice would cry out of the crowd, "God bless you, Maestro", and a chorus of voices would echo the words, "God bless you, Maestro".

Little town, big town; North and South, East and West, the people came to hear music and to pay tribute to Toscanini, who brought them the greatest musical experience of their lifetime. Not only did they come to hear music, but to see the man, who at 83, is at the height of his artistic powers. They came to see the man who had defied dictators. They came to see a man as famous as anyone in our con-



TOSCANINI WAS ENTHRALLED BY HIS FIRST GLIMPSE OF THE GREAT BONNEVILLE DAM, ONE OF THE MANY SIGHTS HE WITNESSED DURING HIS TRIP.

[8 RADIO AGE]

temporary world, yet who remains modest and shy. They came and they were satisfied.

Met America Face to Face

Maestro Toscanini met America face to face. He met a three-year-old boy at a railroad siding in Mobile, Ala. He met symphony conductors and opera singers. He met the man in the street. And he met the President of the United States.

In every city, not only was Toscanini sought after, but members of the orchestra, too, were asked for and feted. The NBC Symphony Orchestra is composed of virtuoso musicians. Their names are well known in musical circles around the country. They include concertmaster Mischa Mischakoff; Frank Miller, first cellist; Carlton Cooley, first violist; Edwin Bachman, principal of the second violins; Philip Sklar, principal bass; Arthur Lora, solo flute; Paolo Renzi, solo oboe; Karl Glassman, tympany; Harry Glantz, first trumpet; Alex Williams, first clarinet; Leonard Sharrow, first bassoon; Arthur Bery, solo French horn; Neal di Biase, solo trombone, and Edward Vito, harp.

At the train upon arrival in many cities, visitors came seeking them out, vying with one another for the prize of having one of the musicians as a guest. The musicians in the orchestra met many former pupils and former associates in the symphony orchestras of the nation.

Not Only a Tour but a Mission

As the special tour train rolled on through city after city; as one concert after the other was finished, it was apparent to everyone on the trip that this was not just a tour, it was a mission. Each man in the orchestra, as well as Toscanini and the sponsoring RCA Victor officials on the train, felt a sense of responsibility toward the music lovers of America to make this tour a great and lasting monument to American culture. How far they succeeded was told in headlines and

news columns, on the radio, and in magazines throughout the land. It was written, also, in the lives of nearly one hundred thousand Americans, who had the good fortune to attend the concerts.

The cities in which the twenty-one concerts were performed, were New York, Baltimore, Richmond, Atlanta, New Orleans, Houston, Austin, Dallas, Pasadena (two concerts), San Francisco, Portland, Seattle, Denver, St. Louis, Chicago, Detroit, Cleveland, Pittsburgh, Washington, D.C., and Philadelphia. The tour started in New York on April 14 and was concluded in Philadelphia on May 27.

Toscanini, the orchestra and special personnel travelled on a private train assembled and managed by the Pennsylvania Railroad. It moved over the facilities of fourteen railroads during the 8,593-mile trip. In addition to stopping in the tour cities, stops were made at Mt. Shasta, at Bonneville Dam and Sun Valley.

The Sun Valley outing was one of the high spots of the trip for Toscanini and the orchestra. There they rode the ski lift and used the other recreational facilities of this fabulous playground. In the afternoon an outdoor barbecue was given by RCA Victor. An orchestra of toy instruments, called the "Sad Symphony", was made up of NBC musicians. Toscanini joined in the fun himself by riding the ski lift and later conducting the toy orchestra with a pencil as a baton. It was a memorable day for the musicians.

In most of the tour cities, where time permitted, Toscanini and the orchestra did a great deal of sight-seeing. He visited historic Williams-



AT MOBILE, ALABAMA, THE MAESTRO PAUSES TO GREET A YOUNG ADMIRER — ONE OF THE THOUSANDS WHO CAME TO SEE HIM.



TOSCANINI AND SON WALTER STROLL ALONG THE STREETS OF WILLIAMSBURG, VIRGINIA.

SPEEDING ALONG AT 80 MILES AN HOUR, THE TOSCANINI SPECIAL TRAIN IS PHOTOGRAPHED A FEW MILES OUTSIDE OF OMAHA, NEBRASKA.



burg, saw the Cyclorama in Atlanta, toured the French Quarter in New Orleans and saw the San Jacinto Monument and oil wells in Houston. In San Francisco he saw the harbor and, traveling North, viewed Mt. Shasta, where the train paused for half an hour. Toscanini was impressed with the scenic grandeur of the Northwest.

Seeing the great mountains, he recalled to his associates his youthful days when he was an avid mountain climber.

In Chicago he visited the Museum of Science and Industry and kept his guide busy answering questions. In Washington the highlight of his trip was his first meeting with President and Mrs. Truman. The President visited Toscanini backstage before the concert. They exchanged pleasantries about touring and music. Toscanini said he understood the President was also a musician. Mr. Truman replied, "I'm not a musician, but my daughter Margaret is."

Audiences Typical of America

The audiences were a cross section of America. Workers, students, housewives with their babies, political figures, musicians, and businessman turned out. Many people told of having given up other pleasures to be able to attend the Toscanini concerts.

Capacity audiences were the rule of the trip. In cases where fire laws permitted, standees were admitted. In one or two cities seats were put into the projection booths to accommodate music lovers. The orchestra pits in many theatres were

filled with seats. In some of the halls there were hundreds of seats from which the stage could not be seen at all or very little, but music lovers came nevertheless.

The consensus everywhere was that America at mid-century was far richer in spirit and musical appreciation because of the NBC Symphony concerts given over the radio during the past 13 years and because of a tour which Arturo Toscanini, at the age of 83, had undertaken with the orchestra to show his appreciation for America.

Color Television

(Continued from page 6)

made in quantity, adopts a tri-color tube such as the RCA has developed and demonstrated, and throws away its mechanical disc, CBS may be able to overcome a few more of the defects in its system.

"Nevertheless, the CBS system will still have important limitations not found in the RCA system. The CBS picture will still have only 105 lines, will be non-compatible and will have other defects as well.

"One system—the RCA system—is compatible and the other—the CBS system—is non-compatible. It is the unanimous opinion of all parties to these proceedings that compatibility is of the utmost importance. In fact, the President of CBS himself has testified that he would 'love' to have a compatible system. In this statement, he is giving voice to the basic needs of

the entire television industry and of the viewing public.

"As I understand it, it is the field-sequential aspect of the CBS system which prevents compatibility. CBS already has adopted RCA's image orthicon camera tube. CBS already has embraced the RCA single tri-color kinescope in order to eliminate the mechanical disc with its limitations of viewing angle and picture size. CBS already has embraced horizontal dot interlace in order to obtain increased definition in its pictures.

Would End Needless Arguments

"All that remains is for CBS to adopt the dot sequential method of transmitting color. CBS would then be in a position to achieve that compatibility which its President so ardently desires. This would end needless argument and color television could go forward immediately.

"I have watched the developments of radio and electronics for more than forty years and never before have I seen compressed into a single effort so much ingenuity, so much brain power, and such phenomenal results as are represented in these new developments.

"We firmly believe that with the development of its all-electronic, high-definition, compatible color television system and its tri-color tubes, RCA has shown the way for the adoption of color standards now. We recommend that the Commission set color television standards based on the RCA color system."

AT SUN VALLEY, IDAHO, THE MAESTRO AND HIS MUSICIANS RELAX, AS HE CONDUCTS THEM IN THEIR "SAD SYMPHONY" (RIGHT) RCA VICTOR DEALER IN ST. LOUIS DISPLAYS ONE OF THE ATTRACTIVE TOSCANINI WINDOWS ENCOUNTERED ON THE TOUR.



[10 RADIO AGE]

Yearly RCA Business Triples in 10 Years

\$11,236,231 Earned in First Quarter of 1950 Against \$5,932,083 for First Three Months of 1949, Sarnoff Informed RCA Stockholders at Annual Meeting—Net Equaled 75.3 Cents a Share for First Quarter—Discussed Great Impact of Television and Reported It Now Accounts for Nearly 60 Per Cent of RCA Gross Income

VOLUME of yearly business of the Radio Corporation of America has increased to more than three times what it was ten years ago; from a level of \$128,000,000 in prewar 1940 to \$397,000,000 in 1949. Brig. General David Sarnoff, Chairman of the Board, reported at the 31st annual meeting of RCA stockholders held on May 2, in a studio of the National Broadcasting Company in Radio City, New York.

General Sarnoff declared that television has become the most active front of the radio industry and added: "It already has achieved the stature of a billion-dollar-a-year industry. No American industrial enterprise ever moved ahead so rapidly in so short a time. It has wrought a revolution in research, manufacturing, sales, servicing, broadcasting and programming, and its expansion is being accelerated in 1950. In February, this year, RCA Victor produced its millionth television set."

First Quarter Results

Net profit, after taxes, of RCA for the first quarter of 1950, he reported, was \$11,236,231, an increase of \$5,304,148, compared with the same period in 1949. Profit for the first quarter of 1950—before Federal Income Taxes—amounted to \$18,945,231, compared with \$9,804,083 in 1949.

Earnings per common share for the first quarter of this year amounted to 75.3 cents, as compared with 37.1 cents per common share for the first quarter in 1949.

Consolidated gross income of RCA during the first quarter of 1950 amounted to \$127,369,550, compared with \$92,327,827 for the

same period last year. This represents an increase of \$25,041,723 over the 1949 figure.

"Based on earnings and the prospects for this year," said General Sarnoff, "an extra dividend of 25 cents per share on the common stock of RCA was declared by the Board of Directors on April 7, 1950, payable on May 29."

General Sarnoff reported that, during the past ten years, RCA has paid \$69,164,000, or nearly 50 per cent of net profits, in dividends to its stockholders. This is a larger sum than has been paid in this period by any other company principally engaged in the radio business. Of this amount, \$31,752,000 was paid to holders of preferred stock and \$37,411,000 was paid on the common stock. He said that during the same ten-year period the capital funds of the Corporation were increased by \$110,000,000, and now amount to \$185,000,000.

Expressing the gratitude of the management to RCA's more than 40,000 employees, General Sarnoff congratulated them upon their accomplishments and splendid spirit of loyalty. He said that 45 unions now represent RCA workers.

"It is an interesting fact," he added, "that in 1949 RCA Victor Division placed more than 180,000 purchase orders totaling \$125,000,-

000 with 1,800 independent suppliers, the majority of whom are small business firms located in 42 states."

Television

Reviewing the progress of RCA in 1949, General Sarnoff said that television had contributed substantially in making it the most successful year since RCA was founded in 1919. He said that television accounted for approximately 50 per cent of the Corporation's total gross income in 1949, and in the first quarter of 1950 it accounted for nearly 60 per cent.

The 1950 RCA Victor line of television receivers, as well as radio and Victrola phonograph home instruments, has met with high popular favor, he said, with surveys showing that a majority of prospective customers going to stores to purchase television sets ask for RCA. He asserted that, as a result, there is a shortage of RCA merchandise, despite "all the efforts we are making to supply the demand."

Based upon industry estimates, he said that approximately 5,000,000 television receivers will be added in 1950 to the 4,000,000 in use at the end of 1949.

"After the hearings now being conducted by the Federal Communications Commission are concluded," continued General Sarnoff, "it is

POPULAR 45-RPM PHONOGRAPH TURNABLES ARE TURNED OUT IN EVER-INCREASING QUANTITIES ON PRODUCTION LINES AT THE INDIANAPOLIS PLANT OF RCA VICTOR DIVISION.

[RADIO AGE 11]



hoped that the barrier known as the 'freeze' will be lifted in order that new television stations may be added to those now in operation. This action by the FCC would widen the market for receiving sets and increase television as a broadcasting service to the millions of Americans who now live in areas beyond the range of existing stations."

During the past year, RCA scientists and engineers have achieved remarkable results in the continued development of the RCA all-electronic, high-definition, completely compatible color television system, General Sarnoff recalled. Field tests and demonstrations have been conducted in Washington, D. C., since September, 1949, and major advances have been made.

"On March 29, 1950, in Washington, the new RCA electronic direct-view color picture tube was demonstrated publicly for the first time," he said. "It has been acclaimed in engineering circles and in the press as a miraculous development. In fact, it promises to be one of the first of the great inventions to be credited to the second half of the Century. It is an outstanding development of our time, and the master key to practical color television for the home. It provides a color television receiver unencumbered by any mechanical parts or revolving disks. As a result, there is no flicker, no color break-up, no whirl of disks in the RCA all-electronic color television receiver.

"I have watched the development of radio and electronics for more than 40 years. Never before have I witnessed a single device into which has been compressed so much ingenuity, so much research, so much development, and with such phenomenal results. It would be

difficult today to estimate fully the vital significance of the RCA color tube to the future of television."

A major feature of the RCA color system is its complete compatibility with the present black-and-white system, he pointed out, adding that owners of the present television receivers can continue to receive in black-and-white the programs that may be transmitted in RCA color. They can receive such programs, he said, without any modifications or adjustment, and without having to press a button or turn a switch.

Because of the feature of compatibility of the RCA system, he pointed out, those who already own television sets or contemplate their purchase, need have no fear of obsolescence if the RCA system is approved by the FCC. Neither has the broadcaster any need to fear obsolescence of his transmitter, nor the loss of his black-and-white audience when he broadcasts RCA color programs. The RCA color system functions at both transmitter and receiver in complete harmony with the existing black-and-white system.

Another electronic development was demonstrated by RCA to the Federal Communications Commission in Washington on April 6, 1950, General Sarnoff reported. At that time, RCA revealed a new method that makes possible the transmission of color television programs produced by the RCA color television system over existing coaxial cables. Special equipment makes it possible, at the very start of color television service, for all existing network facilities, whether coaxial cable or radio relays, to transmit RCA color television programs.

"We are proud of the magnificent work which our scientists and engineers have done in developing the

RCA all-electronic fully compatible television system and the direct-view color picture tube," declared General Sarnoff. "I am sure that, as stockholders, you will join with the management in congratulating the scientists of RCA Laboratories and the engineers of the RCA Victor Division on their achievement. As a result of their accomplishments, we can see ahead the continued commercial development of practical and simplified color receivers. Thus, our generation is assured of clear and natural color programs at home, and there is every reason to believe that the next generation will be able to see around the world in color television."

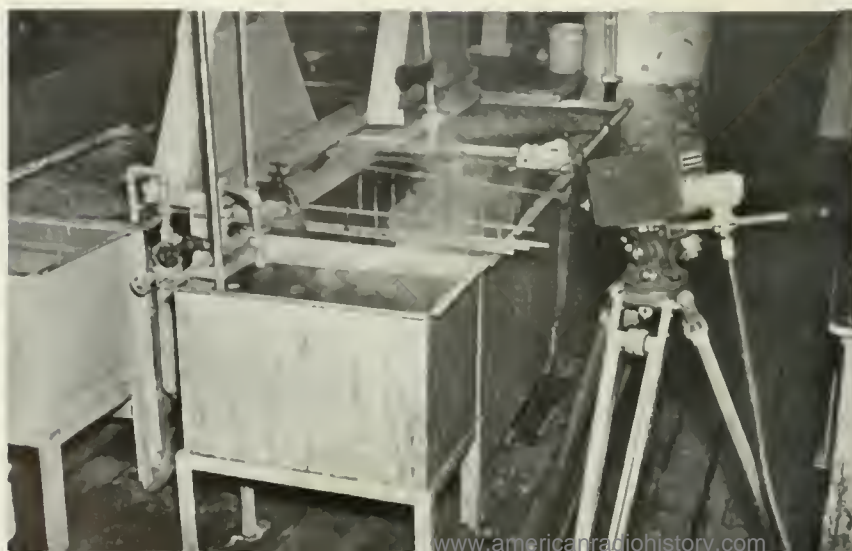
Many new fields of application for television are opening, he said. For example, industrial television is making important strides. RCA engineers are developing equipment for educational and industrial use in such fields as coal mining, chemical processes, medical and surgical instruction halls, classrooms and factories, as well as military applications. A new small television pick-up tube, called the "Vidicon", developed by the RCA Laboratories Division, makes possible the smaller television cameras which are ideal for industrial purposes.

Recorded Music

General Sarnoff recalled that, at last year's Annual Meeting, he reported that the new RCA 45-rpm system of recorded music, introduced in the Spring of 1949, marked "an achievement of great technical and commercial significance." Since then, he said, the "45" has won widespread public acceptance and is rapidly becoming the most popular type of phonograph record on the market.

"These records are being manufactured by RCA at the rate of more than 30,000,000 a year," he reported. "Turntables capable of playing the '45' records are being pro-

(Continued on page 32)



THE RCA INDUSTRIAL TELEVISION SYSTEM IS EXPECTED TO FIND WIDE ACCEPTANCE IN THE REMOTE-OBSERVATION OF MANUFACTURING PROCESSES. HERE A VIEW OF A CHEMICAL OPERATION IS TRANSMITTED BY THE VIDICON CAMERA TO A SCREEN SOME DISTANCE AWAY.



THOUSANDS OF "HAND-PROPS" RANGING FROM CAN OPENERS TO 18TH CENTURY PISTOLS LINE THESE SHELVES IN A SECTION OF NBC'S PROPERTY STOREROOM.

Setting The Stage For TV

NBC's Television Production Facilities Department, with Staff of 250, Designs and Builds Settings for Fifteen Programs Daily

THE modern miracle of television continues to amaze the average viewer and impress the industrial leaders of America. Video's audience has grown from a few thousands in 1944 to today's unparalleled figure of 20,000,000. Yet few outside the industry realize the tremendous expansion of programming facilities and trained personnel, operating far behind the studio cameras, which was necessary to keep pace with TV's progress.

At NBC, the unit responsible for staging the video programs is called the Production Facilities Division. It was started in 1944 with an Art Director and five assistants, and today numbers nearly 250 persons. Every minute of their working day is devoted to plotting, planning, executing orders and meeting inflexible, and sometimes almost impossible, deadlines.

As the network's television schedule grew, demands on Production Facilities became proportionately greater. Producing scenery in the original cramped quarters in Radio

City soon developed into a major problem. There was only one solution. A new, spacious Central Shop at 533 West 56th Street, acquired early this spring, provided the answer. Now, television at NBC has room to breathe, to spread out, to expand as needed, and to experiment on a larger scale than was ever possible before.

The work of this Division starts as soon as the script for a program has been read and its "Staging Routine" indicated. From that point on, scenic designers and artists, carpenters, and property men work with lightning speed to turn out the finished products. Moreover, the staff is not fazed by any requirement. Whether a television script calls for a stuffed seagull, an Egyptian mummy case, or a Spanish market-place, NBC Production never fails to produce the goods.

The fastest-working crew in the TV industry, this unit of the Operations Department provides settings, artwork, titles, properties, costumes, special effects, and make-



By Robert J. Wade

Manager, Television Production Facilities Division, National Broadcasting Company

up for an average of 15 video presentations each day.

At the new 56th Street headquarters, three complete floors, totalling 75,000 square feet of floor space, have been leased from Sheffield Farms, Inc., to house the largest and most complete scenic design facilities in the television industry. This Central Shop serves five to six studios at Radio City; the International Theatre, at Columbus Circle; three studios at NBC's 106th Street Annex; two studios at 66th Street, and additional theatres or studios leased occasionally for special events.

IN PRODUCING SCENERY FOR "MADAME BUTTERFLY", SCENIC ARTISTS WORKED FROM SKETCHES LIKE THE ONE BELOW TO PRODUCE THE REALISTIC JAPANESE SETTING AT THE RIGHT.



The Property Section occupies the building's enormous basement, housing over 10,000 props, in addition to 700 pieces of stock furniture, 1,000 yards of drapery fabric, hundreds of costumes, and odd pieces of scenery. Additional items are being added at the rate of 200 a week.

Carpenter and Paint Shops are located on the street level, where approximately 1,800 basic scenery elements and 850 units of theatrical canvas scenery are stored in racks within easy access. These spacious facilities make it possible to turn out finished scenery on an assembly-line basis. The scenic designers' office and several "dry" rehearsal studios are located on the second floor. Additional working space is available here and is in constant use by scenic painters. Trucks may drive into the plant or up a ramp to the second floor — a highly attractive feature which expedites transportation of sets from shop to studio and back to storage.

Before the move to new quarters was made, NBC television scenery was built and painted in either the RCA Building sixth-floor shop, or at the 106th Street studios. Although these facilities were adequate for the program level in 1948, our staff, toward the end of 1949, was working day and night in both areas. It was often necessary to

build and paint scenery in broadcast studios, where the small floor area made it impossible to set up realistic scenery efficiently. Frequently scenic artists delayed the work of carpenters, and vice versa.

Confusion Caused by Congestion

At one point, during the preparation of a "Texaco" program, the shop was so crowded with scenery, props, personnel and lumber that a crewman, in attempting to remove a piece of scenery, fell behind it, bringing down with him an entire production of the "Phileo Playhouse" which other workmen were feverishly disassembling. The victim, who was extricated one hour later, miraculously escaped injury. At another time, a carpenter, attempting frantically to make additional space in a corner of the Shop, pushed a piece of scenery through a light plaster wall into the office of a startled executive producer.

There was an obvious need for a large central shop where all craftsmen could be formed into a pool, and where all lumber, paint and other supplies could be controlled from a central point. Considerable planning was necessary in order that the move to the new Shop could be made without impairing operations. How well this was done is seen in the fact that, during the

transition, more than 125 programs were staged without serious trouble.

To overcome the problem of mass-producing scenery economically, basic stock units were designed. The estimated cost of creating an average-sized dramatic setting (if executed by a commercial scenic studio) might range from \$3,000 to \$8,000. By exerting some mental gymnastics, the TV designer can generally plan a new set by choosing the proper units from the 50,000-odd items piled up in the stock room. These wall sections, pilasters, doorways, windows, arches, mantels, steps, fences, etc., can be redecorated and reassembled in hundreds of different ways to create the desired effect.

Often an entire production must be designed, down to its smallest detail, then built and painted in one day, with each piece titled and numbered so that studio crews can put scenery together accurately and quickly. The production of "Macbeth" provides a classic example of this speed and efficiency. The Facilities Division designed, assembled and set up a record eight sets, weighing a total of ten tons, and painted an area of 40,000 square feet plus the floor — in just two days! Theatrical producers, working against the clock, possibly could build such a show in two weeks.

As other examples, scenery for the video version of "Dinner at Eight" weighed over eight tons, not including set dressings and hand-props, while an audition of "The Women" at the 106th Street studio involved the use of 132 units of scenery, 12 doors, 5 mantels, and two truckloads of modern furniture.

Properties normally offer more difficulties than scenery, since scripts often call for unusual items. For example, the "Believe It or Not" program needed an authentic Egyptian mummy case; another program requested a 1907 drug-store soda fountain, and still another, a reproduction of the rear end of a San Francisco cable car.

A typical show uses from 80 to 100 props, and NBC retains a prop staff of eight men to track down the required items. Whether his list calls for a "serimshaw pie trimmer made of ivory by sailors in the 1850's", a 17th-century spinning wheel, a stuffed moose head or a railroad sleeping car, the prop man must locate the article. No substitute can take its place in the script.

Versatile Craftsmanship

No matter where a scene is set, NBC's versatile craftsmen can furnish background realistic enough to fool even the sensitive TV cameras. In response to demands for "more and better skies" these men recently

completed a dark grey-green cyclorama 80 feet long and 11 feet high, which is rigged between two pipes for maximum spread and tautness.

The Scenic Section of the Shop devours amazing quantities of materials. Approximately 15,000 gallons of casein paint and 20,000 gallons of thinners, etc. — a quantity sufficient to paint 1,042 small houses inside and out — are consumed each year. In the same period the Car-

entry Section handles over 1,000 pieces of white pine lumber.

Whether the assignment involves a 5-minute spot commercial or a three-hour full-scale extravaganza, Production Facilities is able to complete its task in time for the program's opening. This is possible because of the Division's highly versatile staff and the ample facilities and working space provided in its new quarters.

Royalty Rates Reduced

A REDUCTION of up to fifty per cent in the patent royalty rates of the Radio Corporation of America was announced June 9 by Brig. General David Sarnoff, Chairman of the Board. The reduced rates apply to radio and television receivers, transmitters and tubes, as well as electrical phonographs.

"These reductions in RCA's standard royalty rates," said General Sarnoff, "are in accord with RCA's tradition of continuously reducing, so far as practicable, the cost of bringing inventions and new developments to the industry and the public. RCA's original royalty rate was 7½ per cent for radio broadcast receiving sets. In 1932, this was reduced to 5 per cent, and in 1940, it was further reduced to 2¼ per cent."

The latest reductions, he said, "are a further reflection of RCA's efforts to keep the radio and television industry fully abreast of the art at a minimum cost to the industry and the public." He concluded:

"RCA is particularly happy to be able to make these reductions at this time. The importance of the contributions it has made to the radio and television art and industry has been demonstrated by the widespread use of its inventions and by the successful development of television in which it has pioneered. Television has attained a growth and a public acceptance unparalleled in the history of American industry."

It was announced that the royalty rate for sound radio receiving sets and electrical phonographs was reduced by RCA from 2¼ per cent to 1½ per cent of the price received by the manufacturer. The rate for television receivers, including television combinations, was reduced from 2¼ per cent to 1¾ per cent.

New Rates Effective on June 1

The rate for receiving tubes, including cathode ray tubes used in television receiving sets, was reduced from 2½ per cent to 1¾ per cent. For transmitting and power tubes, the rates were reduced from 3 per cent and 2 per cent to 1¾ per cent. The transmitter and other commercial apparatus royalty rates were reduced from 3 per cent and 2½ per cent to 2 per cent.

These new rates became effective on sales and shipments made by RCA licensees on and after June 1, 1950.

THIS BACKGROUND FOR "MORNING'S AT SEVEN" WAS CREATED BY A PHOTO ENLARGEMENT; TITLES FOR THE PLAY WERE FLASHED AGAINST AN EXACT MINIATURE OF THE SET (FOREGROUND).

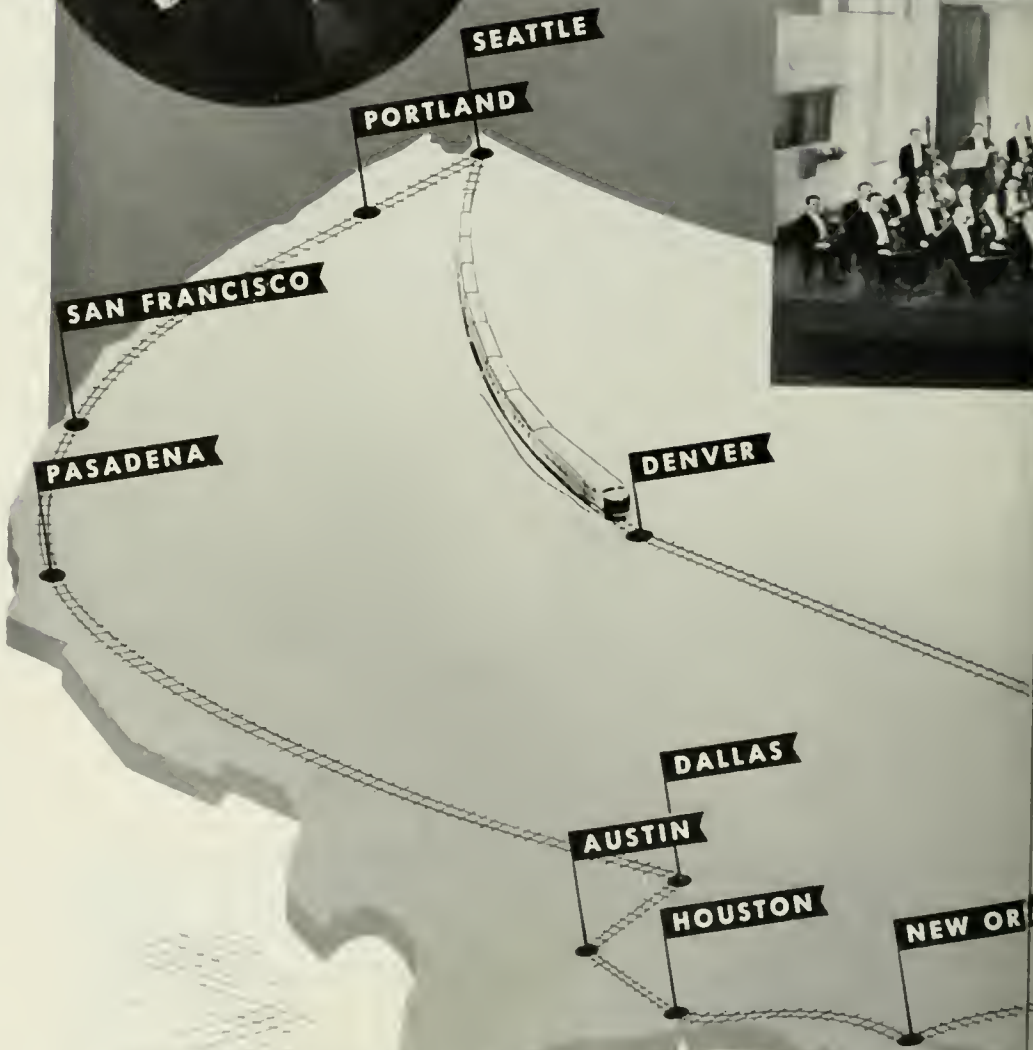


Highlights of the Tour



Toscanini with the

- April 14 New York—Carnegie Hall**
More than 2,800 music lovers gather at New York's music center for the concert which launches the tour.
- April 17 Baltimore—Lyric Theatre**
At this first stop, an audience of 2,600 fills the house where Toscanini had conducted "Gioconda" in 1908.
- April 18 Richmond—Mosque Theatre**
Toscanini electrifies 1,000 Virginians with a thrilling interpretation of "Dixie," played as an encore.
- April 22 Atlanta—Auditorium**
Attendance: 5,100. Again, playing "Dixie" as an encore, Toscanini is not permitted to leave the podium until the melody is played a second time.
- April 25 New Orleans—Auditorium**
Not only the 5,200 persons in the music hall but the entire city pays tribute to the Maestro's magic.
- April 27 Houston—City Auditorium**
Braving extreme heat, Toscanini and the orchestra present a program exceeding the expectations of the 4,300 persons present.
- April 29 Austin—Gregory Auditorium**
Special trains bring hundreds of music devotees to the city to swell the audience to more than 6,000.
- April 30 Dallas—State Fair Auditorium**
4,000 brave a torrential downpour to keep a date with the superlative music of the Maestro and his musicians.
- May 3-5 Pasadena—Civic Auditorium**
On two successive nights, Hollywood stars join 3,000 local citizens to pay honor to the world's greatest interpreter of fine music.
- May 6 San Francisco—Opera House**
Attendance: 3,200. NBC receives scroll for contributions to music.
- May 9 Portland—Auditorium**
Approximately 5,000 hear first concert presented in Northwest.
- May 10 Seattle—Civic Auditorium**
Attendance: 6,000.
- May 13 Denver—Municipal Auditorium**
Largest attendance so far: 7,500. Univ. of Colorado presents scroll to NBC.
- May 15 St. Louis—Fox Theatre**
Attendance: 5,100. "Toscanini Day" proclaimed by city's mayor.
- May 17 Chicago—Civic Opera House**
Attendance: 3,800.
- May 19 Detroit—Masonic Auditorium**
Attendance: 4,850.
- May 21 Cleveland—Public Auditorium**
Record audience of entire tour: 9,500.
- May 23 Pittsburgh—Syria Mosque**
Attendance: 3,700.
- May 25 Washington—Constitution Hall**
President and Mrs. Truman and many government officials in an audience of 3,750.
- May 27 Phila.—Academy of Music**
The 8,593-mile tour concludes before an audience of 3,000.



tours the Nation

the NBC Symphony

the Maestro and the Orchestra



Almost from his birth in Parma, Italy, on March 25, 1867, Arturo Toscanini has been imbued with a dual passion for fine music and democratic ideals.

At the completion of his early schooling, the youthful Toscanini attended the Conservatory at Parma studying the cello and musical theory. As first cellist of an Italian opera company he journeyed to South America. As events were to develop, this journey to the western hemisphere was to be the turning point leading to long and busy years of constantly greater prestige and to a position of universal acclaim.

The episode which was to set the pattern for the young cellist's career took place in Rio de Janeiro during one of the opera performances in that country. The regular conductor of the orchestra had a disagreement with the musicians and refused to go on with a scheduled performance of "Aida". Toscanini, then only 19, but already recognized as an assiduous student of operatic scores, was prevailed upon to act as a substitute director.

Despite occasional appearances as a conductor, Toscanini remained essentially a cellist until 1892, when he was invited to conduct the world premiere of Leoncavallo's opera, "I Pagliacci". Later he introduced Wagner's "Gotterdammerung" in Italy, and was the first to conduct Puccini's "La Boheme".

Word of the great talents of this 25-year-old genius spread rapidly throughout Italy. Four years later he was invited to conduct at the great La Scala Opera House in Milan. Thereafter, for more than 30 years, Toscanini continued to be one of the leading lights of La Scala and was responsible for the introduction of many operas and symphonies.

In 1908, Toscanini came to America and joined the Metropolitan Opera. There he remained for seven seasons after which he returned to his homeland. In 1921, he came back to the United States and from 1926 to 1936 served as director of the New York Philharmonic Symphony Orchestra.

At the age of 69, at the peak of his fame, he decided to retire but Brig. General David Sarnoff and Samuel Chotzinoff, having in mind the formation of an outstanding symphony orchestra for radio broadcasting, induced the Maestro to assume the leadership of the new group. Toscanini accepted the offer and on Christmas night, 1937, directed the NBC Symphony Orchestra in its first coast-to-coast broadcast, an event which was heralded as an historic event in American musical annals. Since that time, the saga of Toscanini has grown along with the stature of the Orchestra.

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BRIG. GENERAL DAVID SARNOFF RECEIVES CITATION FOR GRAND MEDAL OF ASSOCIATION DES INGENIEURS-DOCTEURS DE FRANCE FROM PHILIP CORTNEY, FIRST VICE PRESIDENT OF THE FRENCH ENGINEERS OF THE UNITED STATES, INC. AT RIGHT: RENÉ DE MESSIERES, CONSEILLER CULTURAL, FRENCH EMBASSY, NEW YORK.

AT CEREMONIES in the French Embassy, New York City, on June 6, Brig. General David Sarnoff received the Grand Medal of the Association des Ingenieurs-Docteurs de France for services in war and peace that have in "great measure contributed to the development of public cultural relations on a world scale." Presentation of the award was made by Philip Cortney, First Vice President of the French Engineers of the United States, Inc.

General Sarnoff became the fourth American to receive the medal, others being former President Herbert Hoover; General Dwight D. Eisenhower, President of Columbia University, and Dr. Arthur H. Compton, Chancellor of Washington University.

The Citation noted that General Sarnoff carried out missions of "highest importance" in World War II. It stated that he had "rendered invaluable services to contemporary science and industry," and added: "The great progress now achieved in the field of tele-communications

is in large measure due to General Sarnoff's vision and leadership. Through these personal qualities he has inspired the development of the most advanced apparatus, meeting all exigencies of communication service."

Great Expansion in Electronics

In accepting the Grand Medal, General Sarnoff expressed deep gratitude, and declared:

"The growth of radio has carried with it a tremendous expansion in the science and art of electronics. We are now in an era of radio vision as well as sound, and the promise of the future in tele-communications is greater than ever before.

"International television is not far off. The scientific principles for linking the hemispheres by television already are known. The continued growth of this new art will some day make it possible to see as well as hear around the world.

"When this time comes, New York will look-in on Paris and Paris will look-in on New York. In fact,

the peoples of all nations — large and small — will be able to see and hear each other directly and to understand each other better.

"The Statue of Liberty, which the French people presented to the American people, has been a famous landmark in New York Harbor since 1886. Through international television it will become a worldwide symbol of liberty. The lighted torch held on high will shine around the globe reflecting the friendship that has so long existed between the French Republic and the United States."

Master Antenna Installed In Philadelphia Hospital

Hahnemann Hospital, Philadelphia, has become the first hospital in the world to install an RCA multiple-outlet master TV antenna system. The system provides clear and uniform television reception for patients and staff members in virtually any part of the 20-story building.

The installation consists of an array of rooftop antennas separately tuned for each TV channel in use in the Philadelphia area, a master signal amplifier, and a network of coaxial cable to carry the signals to built-in outlets throughout the building. It is designed to reduce the signal-shielding effects of the hospital building and interference presented by diathermy, X-ray, and other hospital equipment, as well as the problems involved in using a large number of separate rooftop antennas.

In expressing his gratification of the hospital's solution to the TV reception problem for hundreds of hospital convalescents, Frank E. Douglass, Jr., Business Manager of Hahnemann Medical College and Hospital, said:

"Television at the patient's bedside frees him from the bondage of loneliness by giving him the world's greatest entertainers for company. He can derive spiritual comfort from the excellent church programs that television presents, and maintain contact with the events and personalities that dominate the news."

[IS RADIO AGE]



SPECIMENS TO BE OBSERVED IN THE TABLE MODEL ELECTRON MICROSCOPE (SEE FRONT COVER) ARE INSERTED INTO THE INSTRUMENT THROUGH THE SMALL ROD SHOWN ABOVE.

Compact Electron Microscope

New Instrument Expected to Have Wide Usage in Colleges, Hospitals and Industrial Laboratories

A NEW, advanced model of the electron microscope, much lower in cost, less complex and only 30 inches high, has been developed by RCA and will be placed on the market later this year.

Features of the new microscope—its reduction in bulk, complexity and cost—are expected to appeal particularly to many colleges, hospitals and industrial laboratories.

In announcing the instrument, Dr. John H. Reisner, its designer; Dr. James Hillier, research physicist of RCA Laboratories and co-developer of the original RCA electron microscope, and Dr. Richard G. Picard, manager of the RCA Scientific Instruments Engineering, described its structure and principles, and demonstrated its operation.

Of special significance, Dr. Hillier said, is the fact that the lower end of the magnification range of the new instrument overlaps that of the conventional light or optical microscope, permitting the student

to progress by stages from the known to the unknown. He may thus relate the particles and structural details he observes to those made familiar to him by the optical microscope, before advancing to higher magnifications which disclose a vast amount of new detail that he might otherwise be unable to identify.

Equally important, it was pointed out, is the simplicity of operation achieved in the new design, which makes the instrument safe for operation in the hands of a high school student or unskilled laboratory personnel. With no more than an hour of instruction, it was asserted, an operator generally familiar with the optical microscope should be able to insert specimens and produce well-focused pictures.

Dr. Reisner said that a unique advantage in time-saving and convenience is afforded by an engineering advance which for the first time permits insertion of specimens into the evacuated column,

and their removal, without breaking the vacuum. In addition, he said, photographic plates may be changed without admitting more than a small amount of air to the column. As a result, pumping time between plates is reduced to only 90 seconds, which is just about enough time for the photographic development normally carried out between exposures.

Marked Simplicity Achieved

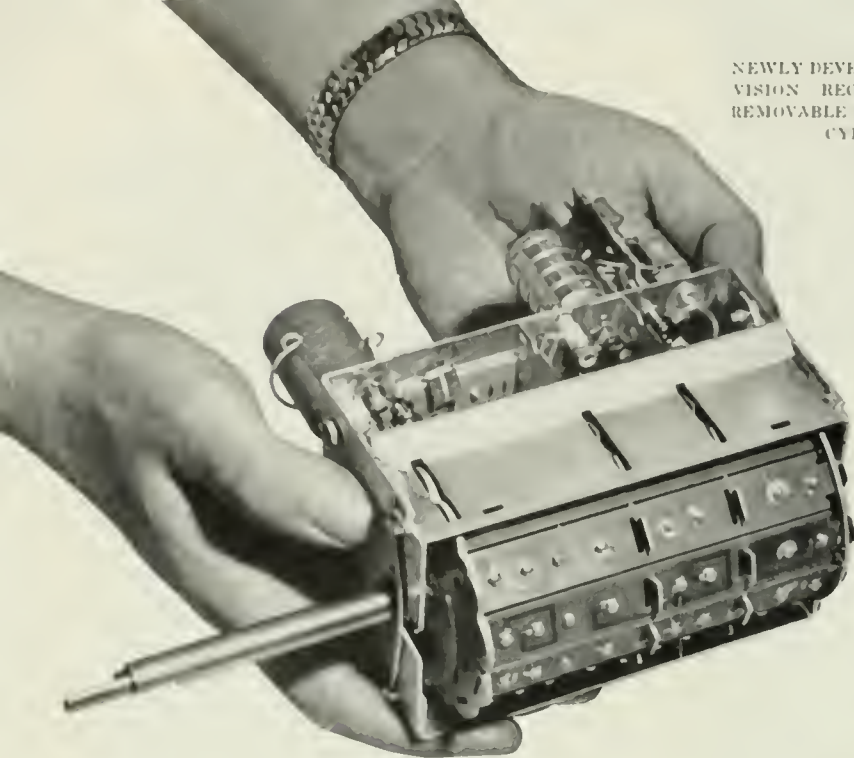
Marked simplicity, Dr. Picard said, is achieved without sacrifice of high-quality performance by means of a combination of design factors, including an entirely new electron optical system employing permanent magnet lenses instead of the conventional electromagnetic or electrostatic lenses. Through the use of permanent magnets, he explained, usual stability is permanently achieved and many controls and components are eliminated.

Incorporating "new approaches to the problem of energizing magnetic lenses, new means of introducing specimens and photographic plates into the vacuum enclosure, and a new means of alignment of optical components," he said, the instrument was developed specifically to meet "the microscope problems now clearly defined by experience, by simplifying constructional design to essentials, and by utilizing new materials in an integrated design".

By retaining the high voltage of the much larger Universal Model, Dr. Reisner explained that greater penetration of the specimen is achieved, thereby producing a more detailed image. Thick specimens such as replicas and tissue sections may be studied by means of the new microscope, he added.

Methods of mounting and introducing the specimen are simple and easily mastered. To change specimens the operator needs only to pull out of the column a sliding rod containing the specimen holder, make the change, and push the rod back in place. A new type of specimen holder facilitates pre-preparation of specimens, so that production-line procedures may be followed in running one specimen after another without any delay.

NEWLY DEVELOPED "PRINTED TUNER" FOR TELEVISION RECEIVERS SHOWING THE NARROW REMOVABLE STRIPS WHICH REPLACE THE USUAL CYLINDRICAL TUNING COILS.



TUNERS ARE QUICKLY ASSEMBLED BY INSERTING STRIPS CONTAINING THE PRINTED CIRCUITS FOR EACH OF THE 12 TV CHANNELS AROUND THE OUTSIDE OF THE TURRET.



DEVELOPMENT of a television tuning unit in which certain of the most important circuit elements are produced by a photo-etch "printing" process—in contrast to the usual wire-wound coils—has been announced by the RCA Tube Department. This unit, which is heralded as a major accomplishment in home-receiver design, provides greatly improved performance of television receivers installed in fringe areas, particularly when the instruments are operated from built-in antennas.

In design, the new RCA unit is a cylindrical turret-type tuner. The turret assembly employs individual coil strips or segments, each containing the printed circuit for a separate television channel. The strips are easily removed for service or replacement. All the tuned circuits are printed with the exception of the oscillator coils for channels two to six.

Tuning is accomplished by rotating the turret by means of a conventional channel-selector switch which connects with the proper coils for each channel. Special features have been incorporated in the tuner to insure durability and trouble-

"Printed" Tuners for TV

New Unit Developed by RCA Will Give Better Performance When Built-in Antennas Are Used

free service. These include stator contact springs of solid hardspring silver, and turret contact rivets of solid coin silver. The unit is capable of withstanding well over 40,000 complete revolutions of the turret.

Initial designs of the new tuner are intended for use in picture systems of the type employed in the 630TS model television receiver. This receiver may be changed over to the new tuner with only two minor electrical changes and only minor mechanical modifications.

Provides Uniform Gain

The new printed circuit tuner provides high and substantially uniform gain on all channels under typical operating conditions. Other features include an excellent noise factor, high rejection of spurious responses, very low radiation and a temperature-compensated, stable oscillator circuit. These character-

istics make the new RCA printed-circuit tuner especially suited to receivers using indoor antennas. The new RCA tuner is also the first to use a type 6CB6 tube as the RF amplifier. Characteristics of this tube include high gain, low noise, and low grid-plate capacitance.

Intensive research leading to the adaptation of printed circuits to television tuners was undertaken by RCA engineers shortly after the end of the war to meet the needs of the rapidly expanding television industry, faced with problems of mass manufacture of intricate units. In addition to eliminating the mechanical winding of multiple coils, printed circuits provide precision inductance and reproducibility in the oscillator circuits and the RF amplifier.

The photo-etch process developed for the RCA printed-circuit tuner begins with the photographing of

a circuit drawing. A contact print is then made from the negative in a copper-clad sheet of phenolic plastic which is coated with a light-sensitive material. The print of plastic sheet is next developed and placed in an etching solution. The solution etches away that part of the copper not covered by the pattern of the circuit, leaving the required copper circuit on the plastic sheet. The sheet is then placed in a die and cut into separate sections and pierced.

Especially suited to television-tuner production, the photo-etching

process is conducive to continued improvement and circuit development, since all that is necessary when a change is to be made in a circuit is to make a new photographic negative. Reproducibility is excellent, with detail and precision of the lines in the circuit approaching photographic accuracy.

The new RCA printed circuit tuner, which has already been subjected to extensive field tests, is now available to manufacturers of television receivers. It will also be available for replacement purposes through RCA parts distributors.



AN OPERATOR LOWERS A COPPER-CLAD SHEET OF PLASTIC, CONTAINING A PHOTOGRAPHIC PRINT OF THE TUNING CIRCUITS, INTO AN ETCHING VAT.

NBC Cited for Program Quality

Eight citations for outstanding accomplishments in the radio and television fields were awarded to the National Broadcasting Company and its affiliates in *Variety* magazine's 17th Annual Showmanagement Awards.

Showmanager Awards went to heads of NBC affiliates; John Gillin, WOW, Omaha, and Clair R. Mc-

Cullough, WGAL (AM-TV), Lancaster, Pa.

NBC's "Saturday Night Revue", received a special citation, and the network's "Voices and Events" program was given special mention.

Three NBC affiliates received plaque awards: WWJ (AM-TV), Detroit; WBAL-TV, Baltimore, and KIST, Santa Barbara.

Boston Jubilee Award Presented to Sarnoff

The Industrial Statesmanship Award of the Boston Chamber of Commerce was presented to Brig. General David Sarnoff, Chairman of the Board of the Radio Corporation of America, on May 18. The presentation of awards highlighted a dinner program of the Boston Jubilee, commemorating the 175th anniversary of the founding of American democracy, held in the Copley Plaza Hotel. In part, General Sarnoff's citation read:

"For your outstanding record of good business citizenship as marked by your many accomplishments which are materially contributing to the economic advance of America in this dynamic age."

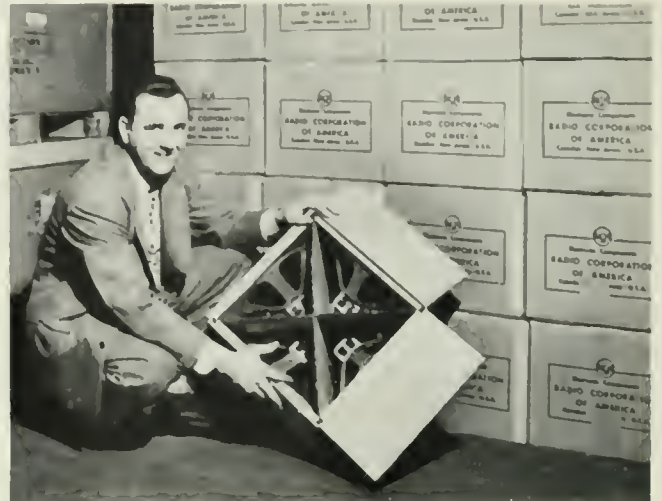
During a round-table discussion, held in conjunction with the Jubilee at historic Faneuil Hall, General Sarnoff made the following remarks:

"I think it is perhaps worthy of interest that in the discussions of the capitalistic system, those who stress sharing the wealth, forget the importance of creating the wealth. You can't share if you have not created. In this past fifty years, there has been a creation of wealth under the private enterprise system in America that has provided not only our own high standards of living, but also has made it possible for us to preserve the lives of many beyond our own borders. . . .

"It has seemed to me that in the preservation of the private enterprise system, there has recently grown up the philosophy of 'survival of the sickest' instead of 'survival of the fittest'. And that is a change from our former concept. It is also worthy of note that in the many investigations which take place in our country, and I doubt whether anyone here is free from those investigations, it is almost always true that a successful company and a successful enterprise is the subject of suspicion and investigation. I wish they would start investigating the failures instead of the successes. There might be some very interesting economic information developed as a result."



BY DEVISING A NEW METHOD OF CRATING LOUD-SPEAKERS, RCA'S TRAFFIC EXPERTS ARE ABLE TO PACK AND SHIP 80 UNITS IN ONE CARTON INSTEAD OF FOUR UNITS BY THE OLD METHOD.



THE Traffic Division of RCA Victor is responsible for spending some \$6,000,000 annually for freight services and approximately \$450,000 a year for passenger services. Impressive as these figures may seem, they still do not consider the finished goods from Home Instrument and Engineering Products departments which are sold f.o.b. factory and therefore shipped collect. Yet through it all, Traffic must be able to perform these services while continually keeping in mind the required essential of Thrift.

Traffic uses all forms of transportation—shipping via parcel post, water, railroad, motor carrier, freight forwarder, Railway Express Agency, air freight and air express. Travel on company business calls for similar diversification. For example, the task of routing, scheduling and obtaining suitable equipment for the Toscanini Transcontinental Tour Train was handled by the Traffic Division. RCA's freight and passenger bill would be increased by about \$700,000 if it were not for the efforts of the Traffic Division.

It was not so very many years ago that industrial traffic activities were limited almost entirely to shipping by railroad from a freight

Moving Products and People

That is Function of Traffic Division Which Spends \$6,000,000 a Year Doing It



By Richard C. Colton,
*General Traffic Manager,
RCA Victor Division*

station in one town to a freight station in another town. Now all this is changed and today traffic personnel think in terms of the best method of moving goods from the end of the assembly line in the factory to a position inside the premises of the consignee. Traffic responsibilities such as freight rates, economical routing, loss and damage claims, freight bill audit, rate quotations, legal considerations, etc.,

no longer form the limits of traffic interest. Today materials handling and packaging, as they overlap with transportation, are of serious concern. In fact, in RCA Victor, for the past two years, a Division Packaging, Materials Handling and Traffic Coordination Committee has been meeting every other month to discuss items of mutual interest. This Committee has standardized imprinting on cartons, worked out many Divisionwide purchase specifications for packing materials, acted as a clearing-house for publications and articles on packing and allied subjects, invited prominent speakers to address the Committee, and carried on extensive educational activities in the packaging, materials handling and traffic fields.

Of particular interest is the new bulk pack developed by the Packaging Engineer of Component Parts to handle speakers from Camden to Indianapolis. Packaging was assisted by Materials Handling and Traffic in working out a bulk pack that eventually reduced the packing

cost per speaker from 11c to 3c—a major accomplishment.

Traffic has worked with the Camden Trucking Section and other organizations in developing advantageous over-the-road private carriage operations. RCA Victor trucks are now operating on regular schedules between Camden on the one hand and Indianapolis, Lancaster and New York City locations on the other hand. These trucks provide good service and because they are fully loaded both ways, also provide most economical transportation.

Works to Minimize Costs

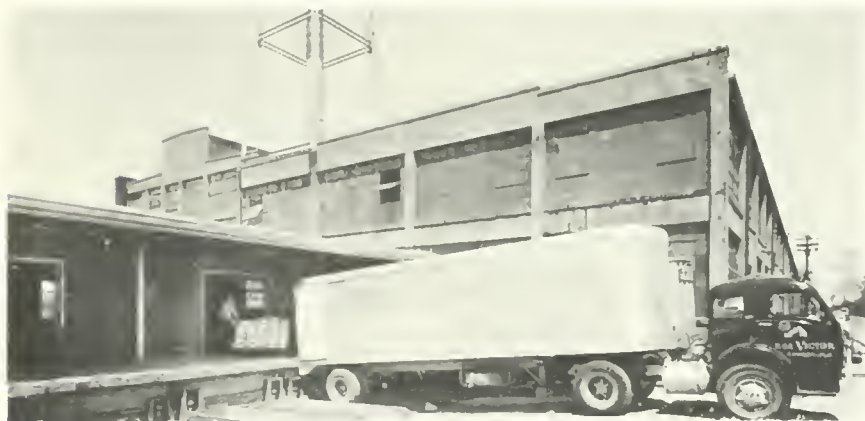
Traffic works constantly with all organizations to keep premium transportation cost at a minimum. Premium transportation is defined as expense of service that is costlier than other cheaper and normally available service. Production Control, Purchasing and Sales people work closely with Traffic in scheduling shipments for release in economical quantities and with sufficient time in transit to permit routing via lowest-rated services. If the normal routing is not satisfac-

tory, traffic personnel is contacted for the fastest and yet cheapest emergency routing. Distributors of RCA Victor products have not been overlooked either. More than 2,000 copies of a comprehensive 40-page Traffic Guide for Distributors of RCA Victor Products have been released to distributors and dealers throughout the country.

During 1950 RCA Victor traffic personnel will expedite or trace over 20,000 urgently needed shipments. Some 12,000 passenger reservations

will be made by the Passenger Transportation Groups. Traffic analysts will audit about 250,000 transportation bills for correctness of freight rates and classification descriptions. Yes, company traffic is moving in thousands of tons of materials and products each month — that is the RCA traffic picture. It is a fast moving business, this keeping abreast of new ways to ship to assure the best and cheapest transportation commensurate with service requirements.

ONE OF THE FLEET OF COMPANY-OWNED TRUCKS LEAVES THE INDIANAPOLIS PLANT WITH AN EMERGENCY LOAD OF 45-RPM RECORDS DESTINED FOR OVERNIGHT DELIVERY TO A DISTRIBUTOR.



Simple "Ruler" Measures Speed of TV Signals

An ingenious television "ruler", called a "Microstick", which can actually measure the millionths of a second it takes for a television signal to travel across the face of a kinescope, has been devised by the RCA Tube Department as an aid to servicemen in television picture analysis.

The Microstick is a transparent plastic ruler which in use is held flat against the safety glass of a television receiver to check a number of factors important to reception. The ruler is scaled for use with all picture tube sizes.

The Microstick may be used to measure the bandwidth of a television receiver, calibrate vertical wedges in test patterns, determine

the beat frequency of interference, and measure the air-path distance of "ghosts" or other reflected signals. In addition, the ruler is useful for determining the frequency of "ringing" in video circuits and for measuring the duration of sync pulses, horizontal blanking, and other types of video signals.

Conceived by John Meagher, RCA Tube Department television specialist, the Microstick is designed to aid technicians, students, and others in gaining a clearer understanding of the important time factors in television. Mr. Meagher is the author of the widely used TV "Pict-O-Guide" for television troubleshooting.

Design of the Microstick is based on the fact that the electron beam in a kinescope is deflected from the left to the right-hand edge of the picture in approximately 53.3 micro-

seconds, forming one horizontal scanning line. Because of this, a ruler made equal in length to the width of the picture and divided into approximately 53 equal divisions, each division representing one millionth of a second, is capable of measuring the duration of any signal present in picture. Knowing the duration of the signal or the number of cycles of signal that occur in a given time, it is easy to compute the frequency of the signal.

JOHN MEAGHER OF THE RCA TUBE DEPARTMENT, DEMONSTRATES THE "MICROSTICK", A TRANSPARENT PLASTIC RULER WHICH HE DEVELOPED TO SIMPLIFY TELEVISION PICTURE ANALYSIS.

[RADIO AGE 23]





THIS BUILDING, RECENTLY ACQUIRED AT HARRISON, N. J., WILL ADD FACILITIES FOR THE MANUFACTURE OF ELECTRON TUBES FOR RADIO AND TELEVISION.

SCENE IN PICTURE-TUBE PLANT, MARION, INDIANA, WHERE KINESCOPIES ARE BEING TURNED OUT BY THE THOUSANDS TO MEET THE INCREASING DEMAND.

Plant Expansions Continue

Additions at Canonsburg and Harrison Are Steps in Long-Range Program

TWO additional steps in a long-range program of plant expansion, intended to meet the increasing requirements of the rapidly growing electronics industry, were announced recently by the RCA Victor Division. Manufacturing facilities at Canonsburg, Pa., and Harrison, N. J., are involved in these moves.

At Canonsburg, the Division has leased a modern one-story building which will be equipped for conveyor line assembly operations for the production of radio and Victrola radio-phonographs with an annual output of a million units. At Harrison, a new building with 126,000 square feet of floor space, has been purchased for the manufacture of electron tubes.

The addition to the Canonsburg plant, which adjoins the record factory opened by RCA Victor in 1917, will provide 90,000 square feet of manufacturing space and will employ approximately 700 men and women. Production is expected to start about August 1.

At first, these facilities will be used to augment the radio set production of the Bloomington, Ind., plant. Later, when added television manufacturing equipment is installed at Bloomington, Canonsburg will assume the Company's entire radio set production. This transfer of operations should be completed

in time to meet the fall demand for television receivers which is expected to exceed that of 1949.

Acquisition of the Harrison property highlights a program of expansion by the RCA Tube Department involving many millions of dollars. This addition will employ more than 500 persons.

Expansion Began at Lancaster

Expansion of tube production facilities began shortly after the war, when RCA purchased a large, new plant at Lancaster, Pa., where mass-production machinery was installed for the manufacture of television picture tubes, television camera tubes, transmitting tubes and power tubes. Since then, additional

machinery has been installed in the original building and in a large, new structure for the production of television tubes.

During this same period, RCA installed much automatic machinery to increase the production of miniature-type electron tubes at its Indianapolis plant. Large numbers of these tubes are used in television receivers as well as in industrial and communications equipment.

A little over a year ago, RCA purchased a plant at Marion, Ind., which was expanded to provide more than 130,000 square feet of space for the manufacture of television picture tubes. At all of the Division's plants, machines which have been making older types of metal and glass tubes are being re-designed and modernized to provide additional production capacity.

Currently, all RCA Tube plants are running at full capacity and achieving new records in output. Employment is at an all-time peak.

EXTERIOR OF MARION, INDIANA, TUBE FACTORY OPENED A YEAR AGO AS ANOTHER STEP IN ENLARGING RCA FACILITIES FOR MAKING 16-INCH TELEVISION PICTURE TUBES.



Suggests Ways To Wage Peace

In Address to Naval Engineers, General Sarnoff Evaluates Perils Confronting the World

IN a forthright evaluation of the perils confronting the world through the cold war, the spread of Communism and the creation of such formidable weapons as the H-bomb, Brig. General David Sarnoff, Chairman of the Board of the Radio Corporation of America, in an address before the American Society of Naval Engineers in Washington, D. C., on April 28, declared that if the cold war remains in deep freeze for the next decade, we may never see another world war.

General Sarnoff offered six ways to wage peace. The first way, he said, was "to make aggression on a global scale an act of suicide for the aggressor nation." President Truman, he added, was unerringly correct in ordering the vast machinery of research to be set in motion for the production of the H-bomb.

"The world crisis must be met on many fronts," he said. "There are no 'pink pills' for peace. There is no easy or speedy road to its attainment. It is a long, hard journey."

Pointing to the fact that the whole alphabet of Russia's cold war has been compressed into four C's of Confusion, Collapse, Chaos and Communism, General Sarnoff said that for every problem the cold war places at America's door, Russia faces five greater ones, gorged as she is by the conquests of her penetration in Europe and Asia. World peace, he asserted, must come from the hearts of men. We must lead from strength, not from weakness, he said, for power is the only language which the aggressor understands.

Six Ways to Peace

The six ways to peace suggested by General Sarnoff were as follows:

1. Adequate military preparation that would enable us to hit back hard and at once with such power as would deter any but mad men from striking the first blow.

2. The removal as far as possible of the tensions arising from

mutual fears and suspicions, from miscalculations or misunderstandings now existing between the two great power groups, and thus keep the cold war from getting hot, before the stockpiles of horror weapons reach a critical mass.

3. A strong and positive policy against step-by-step aggression—a policy by which the world may know the limits of our toleration. The problems that now confront us, he said, will not solve themselves automatically.

4. An economically and industrially strong America. The greatest gift to global communism would be a serious recession in our own economy.

5. Our leadership and contribution in restoring the shattered economy of the free world and its full confidence in free institutions.

6. Spreading the message of America on both sides of the Iron Curtain, so that our investment in peace and the maintenance of a free world front will not be lost.

"Much of what I have said," continued General Sarnoff, "rests on the pillars of education. We cannot hope to win the cold war of Soviet Russia without an alert and informed public opinion in our own country."

Persuasion and menace, he pointed out, were the twin instruments of Russian propaganda, with rumors of peace talks always combined with threatened or actual acts of aggression.

"An informed and effective public opinion in a democracy like our own is not merely the responsibility of self-education," he continued. "It is also the responsibility of those who guide a free press and a free radio; of public leaders who influence our policy, and of those who control the agencies of Government."

"The predictions and contradictions of public leaders and scientists on the new and total danger to civilization threatened by the recently harnessed forces of nature

are not conducive to public confidence. There can be no denying the speculation of scientists that our physical discoveries have opened up the possibility of world annihilation; just as there can be no denying the philosophical implication that the same forces may prove a blessing in disguise. Out of the necessity of controlling, limiting or channeling such forces, from destructive into constructive energy, eventually may come the outlawry of war and world-wide peace."

Leaders' Responsibility at Peak

At no time in our history, General Sarnoff declared, have the leaders of industry had a greater responsibility to our total economy. In these circumstances, it was ironic, he said, "that in our own country attacks continue on bigness in industry, solely because big industry is big. With something like 400,000 manufacturers in the United States, there are those who preach fragmentation here, as against the five and ten year plans and the vast installations which a ruthless power abroad is intent on building to effectuate its own plans."

General Sarnoff urged that "the Voice of America" be greatly strengthened. "It seems to me," he said, "that in addition to Marshall aid we need to find methods to export the purposes of the Marshall plan as well; for it includes ideas as well as goods and money."

"I emphasize this because I note from foreign reaction that our friends, as well as our potential enemies, have not taken too much trouble to make clear to their peoples our purposes and policies in straining our resources to give European aid. We should not allow the opinion to be built up abroad that Uncle Sam has limitless resources."

"We should make it clear that, in seeking agreements to remove exchange and other barriers, we are seeking that measure of unification which would make our help to European recovery truly effective. We should inform our friends abroad that, in our efforts to make greater the Voice of America, we would welcome its expansion to the voice

(Continued on page 32)



AT THE FIRST PUBLIC DEMONSTRATION OF TEX, THE AUDIENCE GETS A CLOSE-UP VIEW OF THE TELEPRINTER COPY ON A TELEVISION SCREEN SUPPLIED WITH SIGNALS PICKED UP BY THE VIDICON CAMERA AT RIGHT.

“TEX” Demonstrated

Two-way Customer-to-Customer Communications Link With Netherlands Opened to Public

A NEW two-way, customer-to-customer overseas radio teleprinter exchange service, called TEX, was demonstrated May 10 for the first time by RCA Communications, Inc., in cooperation with The Netherlands Postal and Telecommunications Administration. The new service was made available to the public on May 15, its initial application providing direct connections between teleprinters in New York City and all parts of The Netherlands.

The demonstration consisted of an exchange of official messages, current news information and informal conversations between con-

sular officials and members of the press assembled in the RCA Exhibition Hall, 40 West 49th Street, and a similar group in The Hague.

“For the first time in communications’ history,” H. C. Ingles, President of RCA Communications, explained, “direct teleprinter contacts on an intercontinental scope will be available to the general public. RCA private-line teleprinter installations in customers’ offices in New York hereafter will be connected direct to teleprinters in Holland through the Telex network there. Telex corresponds to the domestic teleprinter network (TWX) in this country.”

For the use of firms not now equipped with teleprinters in New York City, the necessary equipment has been installed at RCA offices, 66 Broad Street.

Charges for TEX are made on a time basis rather than on the usual telegraph word-count basis. Rates are \$3.00 per minute with a \$9.00 minimum for each connection. Operating at a speed of approximately 60 words per minute, the new service provides facilities comparable to normal conversational speeds by transoceanic telephone,



USERS OF THE TEX SYSTEM OF TWO-WAY COMMUNICATIONS SEE BOTH OUTGOING AND INCOMING TEXT WHICH IS PERMANENTLY RECORDED BY THIS RCA COMMUNICATIONS TELEPRINTER.

and at a lower cost per minute. The regular telegraph charge is 30 cents per full-rate word.

“New techniques were required to develop this direct customer-to-customer service,” according to Sidney Sparks, Vice President in charge of Commercial Activities, RCA Communications, Inc. Mr. Sparks explained that the present method of handling the bulk of RCA’s regular overseas message traffic is based on a network of five-unit teleprinter machines. These machines operate electrically to convert individual letters and figures into code combinations of five-signal units. Because of the wide usage of such equipment, this system is particularly adaptable to the interchange of radio and land-line message traffic.

“However,” he added, “in order to make all the necessary letters, figures and signs required for telegraph traffic, almost all usable combinations of the five units are employed, which makes the system somewhat susceptible to mutilations due to static, interference and fading. Prior to the war, RCA developed a system which used seven-unit combinations and, for radio transmission, greater stability and reliability were achieved.”

To clarify the operation of TEX in the first public demonstration, use was made of RCA’s new industrial television system. A Vidicon camera, focused on a teleprinter, was connected to a battery of television receivers in the auditorium, and the incoming and outgoing texts appeared on the TV screens as they were transmitted across the ocean.

This combination of the latest developments in television and international communications, it was said, indicated the possible use of similar installations for military and commercial conference services. Such a service would provide an immediate written record of intercontinental conversations that could be observed simultaneously in numerous locations.



AN RCA-EQUIPPED SOUND TRUCK GIVES A MODERN TOUCH IN THIS ANCIENT SETTING IN FRENCH MOROCCO.

MODERN TOWERS ARE PART OF THE ANTENNA SYSTEM INSTALLED BY THE RADIO CLUB OF MOZAMBIQUE.



Africa — Market of the Future

Tour of 15 Cities of "Dark Continent" Reveals Possibilities of Great Electronic Developments when Economic Status of Countries Becomes Favorable to World Trade

TO MOST of us, Africa has meant "The Dark Continent", land of jungles, deserts and naked savages. After visiting a number of the continent's growing cities, in a 25,000 mile trip planned specifically to survey sales possibilities of the Company's electronic products, the author prefers to think of Africa as one of the great markets of the future.

After taking off from La Guardia Airport, brief stops were made in England and France before dropping down on Tangier as the first of our objectives in Africa. Here the East and the West meet and the result is a rapidly growing, modern city, surrounding a teeming native section. The modern city is based on three things: trade in goods with Spain, Morocco and other parts of North Africa and Europe; the free exchange of all currencies; and a low tax rate which makes it attractive to European corporations as a registration point. The native city, or Casbah as it is sometimes



By B. F. Moore, Jr.,

Regional Director for Europe, Africa and the Near East, RCA International Division

called, adds the color and romance of the East.

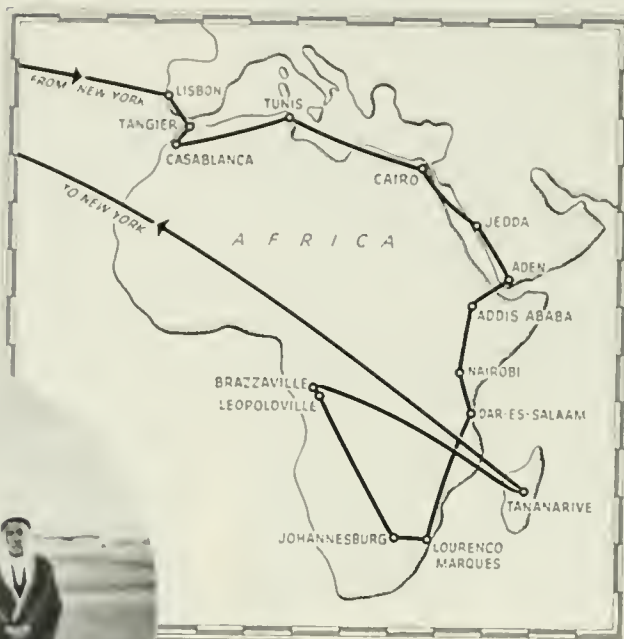
The effect of the three points mentioned above is that Tangier, site of RCA Communications' powerful station, is expanding rapidly. Office buildings, apartments, and homes are going up everywhere. Business is booming for everybody. As long as normal trade into many

countries is hampered by governmental restrictions of all sorts, Tangier will continue to prosper.

A short automobile ride took us to Casablanca, in French Morocco. Most of us first heard of Casablanca after Roosevelt and Churchill held their famous conference there, an epochal event which, incidentally, was completely unknown to the people in the city until after the leaders were on their return journey.

Immediately, after the war this city was a paradise for many ex-GI's who engaged in the import business which was thriving because of the peculiar status of the country. The United States Government has never recognized French sovereignty over French Morocco but instead continues to recognize the Sultan of Morocco. Under this arrangement the French Government was obliged to issue import permits freely to Americans in business. Although the legal status has not changed, permits are now greatly restricted and business

BELOW: THE AUTHOR AND TWO OF THE MANY RCA DISTRIBUTORS WHOM HE VISITED ON THE AFRICAN TOUR, WHICH COVERED THE ITINERARY AT RIGHT.



with the United States is correspondingly reduced.

Casablanca is growing even faster than Tangier. Everywhere buildings are being erected, and the population is said to have tripled in the last few years.

Although the degree of growth varies from city to city, all over Africa great expansion is evident. While the airplane made much of this possible, two other factors have contributed to the post-war impetus. First is the fear of another war and second, lower taxes in the colonies than in the home countries in Europe. Both of these have attracted investment money to Africa from Europe.

Tunis, in Tunisia, was the next city visited. This North African area belonging to France is administered entirely from the French viewpoint. This means that it is a protected market for French goods, and American radios and electrical appliances are not admitted. As long as similar French goods cannot compete in a free market because of their high costs,

American products are unlikely to be admitted.

The only permanent American military cemetery in North Africa is located just outside Tunis, amid some of the ruins of ancient Carthage. When landscaping and building are completed, it will be an impressive and beautiful spot.

Cairo is only a short night flight from Tunis. Due to increased sales to the dollar area of the long staple cotton for which Egypt is famous, and to sales for dollars to areas like Japan, Egypt is in much better financial shape than in 1948, the year of our previous visit. Tourists have also increased greatly in numbers and provide another source of income.

The contrast with 1948 was even more striking because of the present atmosphere of normal living compared to the war conditions existing then.

Egypt an Important Market

As a result of all these factors Egypt has become an important market for American radios and certain electrical appliances. Broadcasting and communications equipment, which form part of the RCA line, are also finding an increasing market here. Now that Egypt is an independent country rather than a protectorate of Great Britain, it is

shopping in all the world markets and picking the best products, insofar as its currency situation permits.

In Cairo, we viewed the almost completed building where an RCA 50-kw broadcast transmitter will be installed. Located on the edge of the desert, it is a symbol of the progress taking place in modern Egypt. Although Egypt has a vast area, almost all of its 16,000,000 people are crowded into the narrow valley of the Nile, and all their food comes from the same valley. Intensive farming methods must be used and the government is attempting, by radio and in the schools, to educate the people and modernize their methods.

The next city was Jedda, in Saudi Arabia. Here the Westerner finds himself in a completely different world. There is practically no green anywhere; all is desert sand and rock. It was Sunday to me but not to the Moslem world. Their "Sunday" is our Friday.

The practicality of the Arab costume appeared immediately. While I was sweating in a suit and sand was blowing down my neck, our Arab friends were comfortable in their loose robes. Their burnooses kept the sand out.

Major Income from Oil

Before oil was discovered in this area, nearly all of Saudi Arabia's outside income came from the pilgrimages to Mecca. Today, this income is negligible compared to that derived from oil. But the sudden influx of wealth has brought problems as well as benefits. The impact of Western civilization introduced by the oil companies has also greatly affected the country.

After centuries of following the same customs, the people do not change their habits overnight; however, radios and some appliances are finding an ever increasing market. The erection, perhaps this year, of a power plant for Mecca and Jedda will hasten this trend.

For years RCA has supplied small communication transmitters and receivers to the Post and Telegraph Administration of the Saudi Arabian Government. The quality and ruggedness of these units have earned for RCA the respect and

admiration of the officials and operators in the Administration.

The British-controlled areas visited were Aden, Kenya, and Tanganyika. No dollar imports of consumer goods are permitted, and, in general, it is necessary to produce in the sterling area if one is to sell in these territories. Because of this the only present possibility for RCA lies in the sale of theatre equipment manufactured by RCA Photophone Limited in London. Nor can American-made engineering products be sold here. Virtually the only prospective customers are the Administrations, and they buy only British goods.

Kenya a Huge Game Reserve

If Kenya were not so distant, it would earn many dollars from tourists to the huge game reserve. Seeing all sorts of animals roaming in the wild, all about you, is a thrill.

Ethiopia is a rich country with many resources, but much time and capital will be required to develop them. Dollars are being earned, but import controls have recently been established which prohibit the import of American consumer goods.

Before an American operated airline started to function in this country of few roads and railroads, goods were transported almost entirely by donkey. Today combination cargo and bucket-seat planes pick up hides, coffee, and other products all over Ethiopia and bring them to a central point from whence they are ultimately exported. This is another illustration of the way the airplane is opening up territory. However, because Ethiopia is near the Equator, we were told that a ride in a plane with a cargo of raw hides is a sensory experience not to be forgotten.

Much communications equipment is needed but the finances of the country permit only a very slow expansion of facilities.

The Radio Club of Mozambique operates the largest commercial broadcasting station in Southern Africa, at Laurence Marques, in Portuguese East Africa. For RCA

MODERN TRANSMITTER BUILDING, ERECTED BY THE EGYPTIAN STATE BROADCASTING SYSTEM, IS TYPICAL OF THE PROGRESS BEING MADE IN THAT COUNTRY.

people it is an inspiring sight to see this station with its five short-wave broadcast transmitters, four of which are RCA, 7½-kw units, model ET-1750. Programs are beamed to Portugal, to Portuguese West Africa, to the Union of South Africa and other points. The success of the station is shown by the constant expansion of its facilities, paid for solely out of earnings.

Johannesburg, in the Union of South Africa, presents a picture of bustling activity. In New York everyone seems to be in a hurry, but in Joburg, as it is called, the tempo seems even greater. Joburg is not the largest city in Africa, but more business and more enterprises of every sort are concentrated there than in any other city.

The foundation of all the country's wealth is gold. South Africa devotes great amounts of capital and much manpower to finding the gold and extracting it from the earth. Of course, after the precious metal is refined and sold to the United States, we carefully bury it again at Fort Knox.

Has Other Mineral Resource

South Africa has many other mineral resources, including diamonds, copper, coal, and manganese. It also exports citrus fruits and other agricultural products.

Notwithstanding the wealth, imports of American consumer goods have been prohibited, a situation that is not likely to change for some

time. Engineering products are being imported in considerable quantity, but the general trend on all imports is to favor the sterling area and soft currency countries.

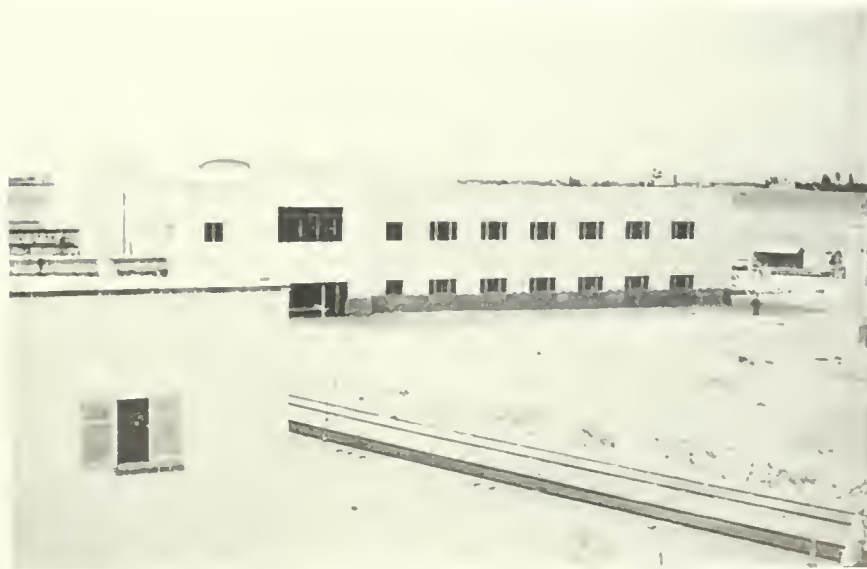
Of all the countries of Africa, the Union is probably the most advanced and ultimately will be the most industrialized. To a great extent this is due to the temperate climate. In the hot tropical countries, industrialization is difficult if not impossible.

Considerable quantities of RCA engineering products equipment are in use in the government services. Many units were sent on lend-lease during the war, and have operated so well that much more has been purchased since.

It was interesting to hear the announcer at the Johannesburg airport call out "All aboard for Leopoldville, Accra, Dakar, Lisbon and New York." It sounded like the 5:15 from Grand Central, but the distance is 8,000 miles.

We debarked at the first stop, Leopoldville. The Belgian Congo is a wealthy colony. It has many minerals including uranium as well as other resources. Here, as in Ethiopia, the greatest problem is transportation. A railroad runs from Matadi on the Atlantic Coast to Leopoldville, a distance of 200 miles, but because of the congestion in Matadi, it takes an average of two months for goods to cover the 200 miles to Leopoldville. From

(Continued on page 32)



[RADIO AGE 29]



LEFT: AN RCA TECHNICIAN, WORKING HIGH ON THE SUPERSTRUCTURE, ERECTS A TELEVISION ANTENNA FOR ONE OF THE TV RECEIVERS ABOARD A CANADIAN CARRIER.

CREW OF A CANADIAN WARSHIP WATCH PROGRAMS ON RCA TELEVISION RECEIVERS INSTALLED IN MESS-HALL.



WITHIN a few hours after three Canadian warships had tied up at Pier 26, North River in New York, in a courtesy visit to the city last April, crack crews of RCA Service Company had completed installation of nine RCA television receivers in the officers' and men's quarters aboard the vessels. Considering the unusual problems involved, the installation is believed to have set a speed record in carrying out an extensive installation of this kind.

Queen of the flotilla, the *Magnificent*, a 682-foot light fleet aircraft carrier was returning to its base at Halifax after participating with British and U. S. Navy units in joint exercises in the Caribbean. Her escorts, the *Micmac*, a 2748-ton destroyer and the *Swansea*, a 1440-ton frigate, had sailed from Halifax a few days earlier to accompany the carrier into New York.

Plans for "Operation TV" were worked out rapidly after the Canadian Consulate in New York had expressed a desire for the receivers. Elaborate arrangements already had been made for the city-wide entertainment of the crews during their five-day stay in port, but only part of the personnel could be given shore-leave at a time. Because of

Television Entertains Visiting Canadian Naval Crews

RCA Technicians Complete Extensive Installation of Receivers and Antennas in Record Time

this, the Consulate believed that television would serve as a diversion for those remaining aboard ship.

The *Magnificent*, with its crew of 100 officers and 800 men, tied up at the pier at 11 o'clock on the morning of April 7. Waiting on the dock were six RCA Service Company trucks, fully manned with experts in antenna installation and set servicing. Earlier, trucks had unloaded 10 of the latest models of RCA television receivers in both table and console models. Within a few minutes after the gangplank had been placed against the side of the carrier, some of the RCA technicians were aboard and roaming through the big ship, seeking locations for receivers. Others climbed high into the upper rigging looking for suitable antenna supports among the maze of cables and signal lines.

After the two escort vessels were berthed, other Service Company crews boarded them and went

through the same procedure. So well organized was the work that by late afternoon nine television sets were in operation. The tenth was held in reserve, but was never used.

One of the real problems encountered in the project was the lack of an adequate power supply for the receivers. For technical reasons, the power generated aboard the ships could not be used. When the Naval Shipyard at Brooklyn learned about this difficulty, a special detachment, under command of Lt. G. A. Erickson of the Planning and Estimate Group at the Yard, laid temporary cables along the dock and to the receivers on each ship.

The interest of the ships' personnel in television programs proved greater than was anticipated. Ward rooms and mess halls often proved too small to accommodate the audiences attracted by the video programs, particularly pick-ups of sports events.

America in The Electronic Age

*Scientific Marvels Will Open New Wealth in Sky, Earth and Sea,
General Sarnoff Tells John Carroll University Graduates*

AMERICA is entering an amazing Electronics Age of "unlimited growth" in which television will have the most far-reaching immediate impact upon our national life, economy and politics, Brig. General David Sarnoff, Chairman of the Board of the Radio Corporation of America, declared at the commencement exercises of John Carroll University in Cleveland on June 12.

The scientific marvels of the Electronics Age will create new industries, open new wealth in sky, earth and sea, and help weld this planet into 'One World' at peace, General Sarnoff predicted. War with Russia is not inevitable, he said, and the United States now can use its courage, strength and scientific skill to promote "a world of progress" and "freedom of the individual."

General Sarnoff received an honorary degree of Doctor of Laws from the University for his pioneering leadership in radio, television and electronics.

The enormous development of television, General Sarnoff said, is fully as important as was the invention of the electric light, automobile, airplane and radio.

Not only will television be "one of the ten great industries of this country within the next ten years," he said, "but television also will be a potent force in shaping American history by influencing voters.

"By the time the presidential campaign of 1952 gets under way," he pointed out, "we should have coast-to-coast television and more than 20,000,000 sets in use. That will mean an audience of about 80,000,000.

"Indeed, television may well be a determining factor in choosing the next President of the United States.

"The eye, as well as the ear, will influence the vote. In choosing a candidate it may be that his television personality will be a deciding factor. He will have to be telegenic, wear the right haberdashery, flash a friendly smile and be sincere.

"How sincere the candidate looks to the voter may be more important

than how eloquent he sounds; a smile may be worth more than 10,000 words."

Also, in the critical field of international relations, General Sarnoff said, television may well be one of the tools of science which will weld this planet into "One World."

"When international television comes, as it will, people throughout the world will see democracy and the American way of life in action instead of merely being told about it."

Looking to the future, General Sarnoff said: "Science sets the pace. New industries yet undreamed of will be created and developed." He predicted that even such electronic wonders as color television, radiograms at fantastic speeds, Ultrafax sending a million printed words a minute, radar, electronic computers and electron microscopes will soon seem routine.

Descendants Will Call Us Slow

"Fifty years from now our descendants will say that we were very slow in 1950," he continued. "Their automobiles, locomotives and ships may be powered by atomic energy. Their systems of transportation will surpass in safety, speed and comfort anything we have today. Those who may wish to stay at home and see the world will be able to look around the globe by color television."

General Sarnoff told the graduating class that it was entering "a world of progress, where new forces open broader fields for unlimited growth and expansion."

His own youth, he recalled, gave proof that "America is faithful to its glorious traditions as a land of opportunity and liberty." And he reminded the graduates that, because they have this rich American heritage of freedom and opportunity, they have great responsibilities to safeguard and promote it by observing all the duties of good citizenship.

In conclusion, General Sarnoff noted the pressure of the "cold war," but declared that "reality and

reason alike suggest that there should be no immediate danger of armed conflict between the United States and Russia." He urged a strong America, and added:

"We must maintain our confidence and courage, our national preparedness and leadership, our scientific advances and technical skill. By continually strengthening these girders in our spiritual, economic and political structure we shall grow in power to fulfill our responsibility to the world. Clear thinking, realistic understanding and patriotic support from every individual is necessary if war is to be prevented and world peace is to be made enduring. America seeks the friendship of all people.

"Those of us who have passed through two devastating world wars, hope that you young people will be spared a third conflict; that you will behold the dawn of universal prosperity and peace so that you may live in happiness and be free to apply your talents to constructive purposes.

"War is not inevitable. When the shadows seem to lengthen let us remember that it is always darkest before dawn. In the sunshine of the new day may peace on earth and good will among men prevail and fulfill the high purposes of God."

RCA and DuMont Settle Patent Litigation

Dismissal of litigation which has been pending since 1948 between Radio Corporation of America and the Allen B. DuMont Laboratories, Inc., concerning claims of patent infringement on radio receivers, electron tubes and radio transmitters, was announced jointly on June 6, by Brigadier General David Sarnoff, Chairman of the Board, Radio Corporation of America, and Dr. Allen B. DuMont, President of the DuMont Laboratories.

At the same time, it was announced that RCA had granted DuMont its standard licenses covering radio receiving and transmitting tubes, television receivers and transmitters. DuMont has granted a license to RCA for the same categories of equipment.

Business Triples in 10 Years

(Continued from page 12)

duced by RCA Victor in excess of 1,000,000 annually. Judged by its great popularity, the RCA 45-rpm system of recorded music has proved a development of which we may well be proud."

Early in January, 1950, RCA Victor announced that it would issue superior 33 $\frac{1}{3}$ -rpm long-play records. They have been on the market since March. These records of improved quality and tonal fidelity feature the world's greatest artists, performing the world's finest music, for the benefit of music lovers who desire continuous selections in long-play form. The "33 $\frac{1}{3}$ " records supplement the complete line of recordings on 45- and 78-rpm disks; they do not displace "45's" or "78's" in the RCA Victor catalog, but are an additional service.

"All major recording companies, except two, and a large number of small manufacturers now offer the '45' type of record," declared General Sarnoff, "while more than 70 instrument manufacturers have incorporated turntables to play the '45' records in their products."

To accommodate these three types of records, General Sarnoff said, the RCA Victor 1950 line of Victrola phonographs and radio-television combinations features instruments that play all three phonograph speeds. It will be RCA's continued policy, he added, to make available to the public RCA Victor's unsurpassed library of music and noted artists, recorded for all phonograph speeds.

Broadcasting and Telecasting

General Sarnoff said that notable progress has been made by the National Broadcasting Company — a service of RCA — both in radio broadcasting and television during the past year. The dimensions which radio has reached, he said, graphically illustrate the great potential which exists for television. According to the latest statistics, 10,700,000 American homes are equipped with 65,100,000 radios. Adding to this figure the number of portable radio sets and radios for automobiles, there are more than

85,000,000 radios in the United States.

"The operation of a television network is as yet unprofitable, but the margin of loss is steadily being reduced," he said. "We are confident that television stations and networks will become profitable enterprises within a reasonable time, as the size of the audience, number of advertising sponsors and advertising rates increase."

Looking Ahead

Discussing the future outlook, General Sarnoff declared in conclusion:

"The volume of business and earnings of the RCA for the first three months of 1950 are gratifying. The prospects for the year as a whole are good. It is to be expected that a constantly changing and expanding art and industry, in a world that is far from settled, should present many problems for solution. In our efforts to solve these problems on a firm and lasting basis, we must ever be mindful of the interests of the public, our customers, our employees, and our stockholders. We sincerely believe we are doing so and as the record shows, we are making substantial progress from day to day and year to year. We want all of these interests to benefit from the progress made by the Radio Corporation of America."

Africa — Market of The Future

(Continued from page 29)

there to the interior cities the only movement is by river steamer. Much loading and unloading takes place which inevitably causes much breakage and adds to the ultimate cost of the goods.

Two of the first RCA 50-kw short-wave broadcast transmitters are installed on opposite sides of the Congo river. One is in Leopoldville and the other in Brazzaville, in French Equatorial Africa. Much additional RCA equipment is giving a good account of itself in both areas.

Madagascar, the last country visited, is one of the largest islands in the world. Although a French colony, it seems to have attained more autonomy than colonies nearer France.

Africa is a continent of opportunity. While dollar sales now are not large in proportion to other areas, it is one of the few undeveloped and rich areas now rapidly expanding. RCA is getting a good share of the business open to Americans now, and we will continue to exert every effort to get more.

Ways to Wage Peace

(Continued from page 25)

of all the democracies so that the message of freedom may ring out through their own agencies of communication. So much for our friends. For those who have declared cold war upon us, our task is to penetrate the Iron Curtain. I do not believe it is impenetrable to ideas."

General Sarnoff concluded: "Reality and reason would dictate that there is no imminent danger of armed conflict between Russia and the United States, if we maintain our national confidence and courage, our preparedness and leadership, our scientific achievement and technical skill. We must strengthen our economic stability and fulfill our responsibility to the world.

"No one is wise enough to chart the horoscope of humanity's future in the new physical era before us. But this much seems clear. We are rounding a turn on the road with two forks ahead that lead in two different directions. One presents a new vista of universal prosperity and peace; the other shows the dark shadow of universal destruction.

"With signposts so clearly marked, it is impossible to believe that man will deliberately take the wrong turn. Man's basic instinct is to preserve himself and live, not to destroy himself and die. It is my conviction that the secrets of nature which scientific research is now beginning to reveal to us, will one day make war unthinkable and peace inevitable."

How electronic "paintbrushes" create pictures in our newest art form

There's not a single moving part in a Kinescope —but it gives you pictures in motion

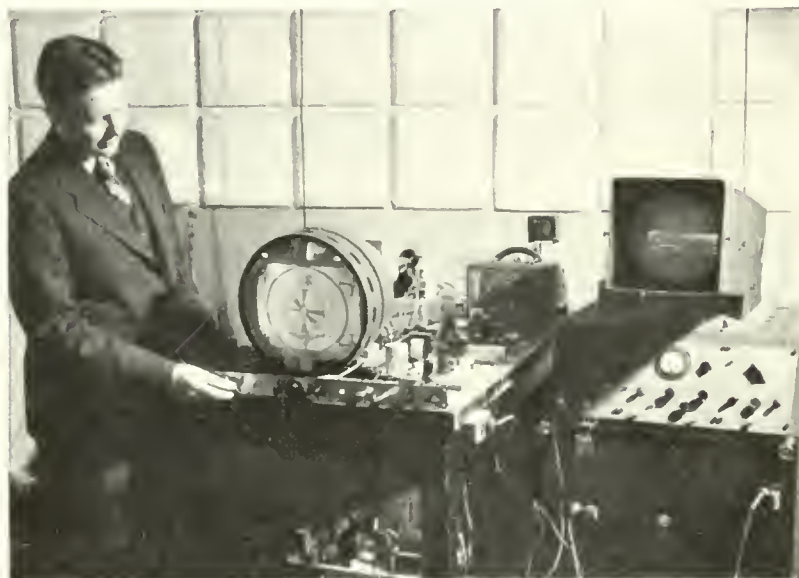
No. 4 in a series outlining high points in television history

Photos from the historical collection of RCA

● Ever watch an artist at work—seen how his brush moves over the canvas to place a dot here, a shadow, a line, a mass, or highlight there, until a picture is formed?

Next time you're asked how television pictures are made, remember the paintbrush comparison. But the "brush" is a stationary electron gun, and the "paint" is a highly refined coating of fluorescent material made light or dark in orderly pattern by electrons.

Developed by Dr. V. K. Zworykin, now of RCA Laboratories, the kinescope picture tube is one of the scientific advances which gave us *all-electronic* television . . . instead of the crude, and now outmoded, mechanical techniques.



An experimental model of the kinescope developed by Dr. V. K. Zworykin of RCA Laboratories is seen undergoing laboratory tests.

Today, through research at RCA Laboratories, these complex kinescope picture tubes are mass-produced at RCA's tube plants in Lancaster, Pa., and Marion, Indiana. Industrial authorities call this operation one of the most breath-taking applications of mass production methods to the job of making a precision instrument.

Thousands of kinescope faceplates must be precisely and evenly coated with a film of absolutely pure fluorescent material . . . the electron gun is perfectly synchronized with the electron beam in the image orthicon tube of RCA television cameras . . . the vacuum produced in each tube must be *10 times more perfect* than that in a standard radio tube—or in an electric light bulb!

Once it has been completely assembled, your RCA kinescope picture tube is ready to operate in a home television receiver. In action, an electrically heated surface emits a stream of electrons, and the stream is compressed by finely machined cylinders and pin-holed disks into a pencil-thin beam. Moving back and forth in obedience to a radio signal—faster than the eye can perceive—the beam paints a picture on the face of the kinescope. For each picture, the electron beam must race across the "screen" *525 times*. To create the illusion of motion, 30 such pictures are "painted" in every single second.

Yet despite these terrific speeds, there are no moving mechanical parts in an RCA kinescope. You enjoy the newest of our arts because electrons can be made to be obedient.



New 16-inch RCA glass-and-metal kinescope picture tube, almost 5 inches shorter than previous types, incorporates a new type of glure-free glass in its faceplate—Filterglass.

PRINTED IN USA



Radio Corporation of America

WORLD LEADER IN RADIO—FIRST IN TELEVISION



Recorded only in the distortion-free quality zone, music "comes alive" on RCA Victor 15-rpm records.

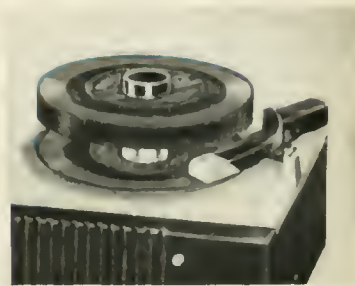
*What **magic number** makes music mirror-clear?*

Now, for more than a year, music-lovers have had—and acclaimed—RCA Victor's remarkable 15-rpm record-playing system. Already, millions know "15" as the magic number that makes music mirror-clear.

As was said when the American Society of Industrial Engineers presented RCA Victor with its 1950 Merit Award, "We are moved to admiration by your bold departure from past practices in developing a completely integrated record and record-player system."

Research leading to "15"—confirmed at RCA Laboratories—covered 11 years... and resulted in small, non-breakable records which can be stored by hundreds in ordinary bookshelves, yet play as long as conventional 12-inch records. The automatic player, fastest ever built, changes records in less than 3 seconds—plays up to 50 minutes of glorious music at the touch of a button! Every advantage of convenience and cost, marks "15" as the ideal system!

Another great RCA development is the finest long-play record (33 $\frac{1}{3}$ -rpm) on the market—for your enjoyment of symphonies, concertos, and full-length operas. Radio Corporation of America, Radio City, N. Y. 20.

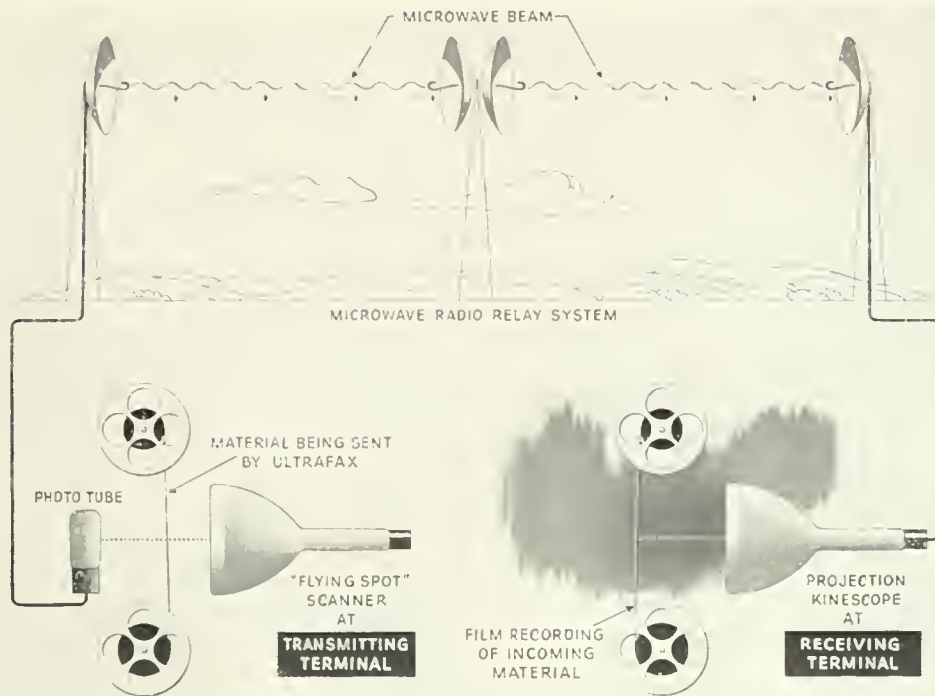


Fully automatic RCA Victor 45-rpm record player and records—small enough to hold in one hand... inexpensive enough for any purse.



RADIO CORPORATION of AMERICA

World Leader in Radio — First in Television



PERIODICAL DEPT.

SIMPLIFIED DIAGRAM OF A COMPLETE ULTRAFAX SYSTEM SHOWING THE PRINCIPAL ELEMENTS WHICH MAKE POSSIBLE THE MILLION-WORDS-A-MINUTE TRANSMISSION SPEED OF THE NEWLY DEVELOPED MEDIUM OF COMMUNICATION.

Ultrafax: Million Words a Minute

Sarnoff Foresees Ultrafax Opening New Era in National and International Communications—He Urges Study Looking Toward the Establishment of a New National Communications Policy

ULTRAFAX, a newly developed system of television communications capable of transmitting and receiving written or printed messages and documents at the rate of a million words a minute, was demonstrated publicly for the first time by the Radio Corporation of America at the Library of Congress, Washington, D.C., on October 21.

Brigadier General David Sarnoff, President and Chairman of the Board of RCA, declared that Ultrafax, which splits the seconds and utilizes each fraction for high-speed transmission of intelligence, is as significant a milestone in communications as was the splitting of the atom in the world of energy.

Among the possible developments which General Sarnoff foresaw were:

1. The exchange of international television programs achieved on a transoceanic basis.

2. A service of television and Ultrafax by which the same receiving set would bring various types of publications into the home, or a newspaper for that matter, without interrupting the program being viewed.

3. A system of world-wide military communications for this country, scrambled to the needs of secrecy, which with ten transmitters could carry in sixty seconds the peak load of message traffic cleared from the Pentagon Building in twenty-four hours during the height of World War II.

4. The establishment of great newspapers as national institutions, by instantaneous transmission and

reception of complete editions into every home equipped with a television set.

5. The transmission of a full-length motion picture from a single negative in the production studio simultaneously to the screens of thousands of motion picture theatres throughout the country.

6. The possibility of a new radio-mail system with the vast pickup and delivery services of the Post Office Department.

Representatives of the United States Armed Forces, Government agencies, industry and the press witnessed the introduction of this advanced communications system. RCA presented the demonstration as a "progress report" to show that the system has reached a stage of development where plans can be