

RADIO AGE

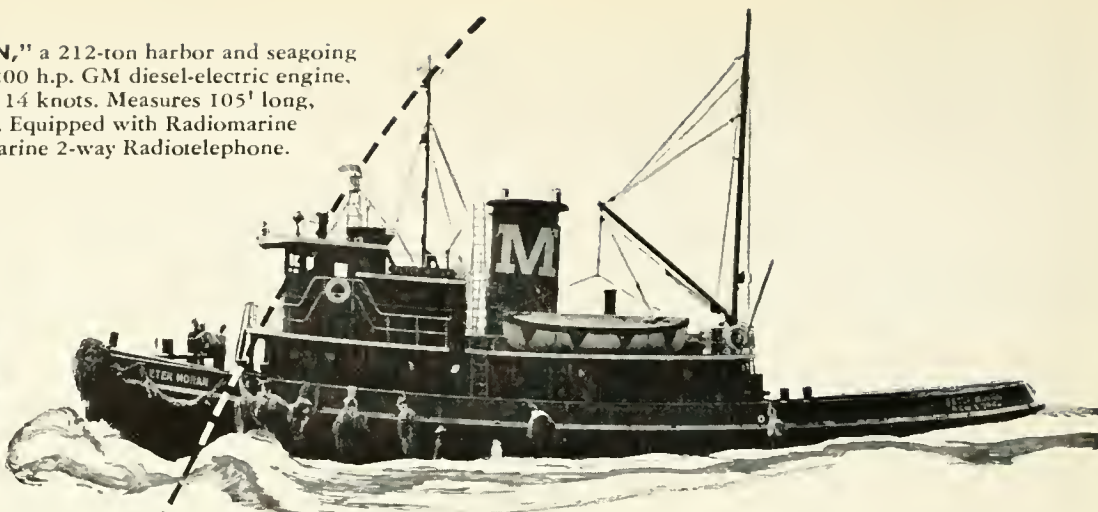
RESEARCH • MANUFACTURING • COMMUNICATIONS • BROADCASTING • TELEVISION



OCTOBER
950

TELEVISION

The "PETER MORAN," a 212-ton harbor and seagoing tug, powered by a 1200 h.p. GM diesel-electric engine, reaches speeds up to 14 knots. Measures 105' long, 25' beam, 13'6" draft. Equipped with Radiomarine Radar and a Radiomarine 2-way Radiotelephone.



Captain HERBERT DICKMAN navigating with Radiomarine Radar aboard the "Peter Moran." Says Skipper Dickman: "I have handled several different makes of radar in my seagoing experience. None of them perform as well as this new Radiomarine Model CR-103 small radar."



RADIOMARINE RADAR

Aids the "Peter Moran" in maintaining schedules

TIME, TIDE AND WEATHER stay no man's pleasure. But, no matter what the time (day or darkest night) or what the weather (even rain), the "Peter Moran" is able to navigate safely and maintain faster schedules—with the aid of Radiomarine Radar.

This increased efficiency of the "Peter Moran's" operation pays off in the performance of both regular and emergency tug services quickly and economically.

In crowded New York Harbor, docking and undocking the largest passenger liners or towing barges, car-floats, lighters and other floating craft is routine

work for the "Peter Moran." Radiomarine Radar results in the saving of hours under way and gallons of fuel, in spite of adverse weather conditions.

The Moran Towing & Transportation Co., Inc. of New York, New Orleans and San Francisco—owners of "the world's largest tug fleet" and pioneers in harbor, coastwise, inland waterway and deep sea service—are also pioneers in the use of radar on tugs.

For greater safety and greater operating economy for your vessels, write for information on Radiomarine Radar, communications equipment and electronic aids to navigation.

RADIOMARINE CORPORATION of AMERICA, 75 Varick St., New York 13, N. Y. Offices and dealers in principal ports.
Foreign Distribution and Service—RCA International Division, 30 Rockefeller Plaza, New York 20, N. Y.



RADIOMARINE CORPORATION of AMERICA

A SERVICE OF RADIO CORPORATION OF AMERICA

RADIO AGE

RESEARCH • MANUFACTURING • COMMUNICATIONS • BROADCASTING • TELEVISION



OVER

Working more than 1300 feet above New York streets, a rigger climbs NBT's temporary antenna mast during the erection of the multi-antenna television tower on the Empire State Building.

VOLUME 10 NUMBER 1

OCTOBER 1950

CONTENTS

	PAGE
INJUNCTION SOUGHT BY RCA-NBC ON FCC COLOR TELEVISION ORDER	3
MESSAGE TO RCA VICTOR DISTRIBUTORS	1
RCA TO SHOW LATEST ADVANCES IN COLOR TELEVISION SYSTEM	5
NBC TO EXPAND PRESENT LEAD IN TV	5
AMERICA IS CHALLENGED	6
FIVE NEW TV STUDIOS FOR NBC	10
BARRYMORE AND SHAKESPEARE	12
TV-FM ON THE WEST COAST	13
ELECTRONS DETECT STRAY COINS	14
TELEVISION BELOW THE BORDER <i>by Meade Brunet</i>	15
RCA "MILLION-PROOF" TELEVISION RECEIVERS	16
THE TV SERVICE PROBLEM <i>by C. M. Odorizzi</i>	19
"STARMAKER" MICROPHONE	21
FOR REMOTE PROGRAM PICKUPS	23
RADIO TO CONTINUE AS A VITAL FORCE	24
TV AND RADIO IN EDUCATION <i>by Judith Waller</i>	25
RELATION OF SCIENTIFIC RESEARCH TO WAR PREPAREDNESS <i>by W. W. Watts</i>	28
MOBILE UNIT ON WAY TO KOREA	30
SARNOFF RECEIVES DEGREE FOR LEADERSHIP IN RADIO AND TELEVISION	30

PERIODICAL DEPT.



Services of RCA are:

- RCA Laboratories Division
- RCA Victor Division
- RCA Communications, Inc.
- Marine Corporation of America
- NBC Broadcasting Company, Inc.
- RCA Institutes, Inc.
- RCA Service Company, Inc.
- RCA International Division

RADIO CORPORATION OF AMERICA
RCA Building, New York 20, N. Y.

DAVID SARNOFF, *Chairman of the Board* FRANK M. FOLSOM, *President*
LEWIS MACCONNACH, *Secretary* ERNEST B. GORIN, *Treasurer*

Radio Age is published quarterly by the Department of Information,
Radio Corporation of America, 30 Rockefeller Plaza, New York 20, N. Y.

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



ROBERT MONTGOMERY TURNS HIS ACTING AND DIRECTING TALENTS TO THE PRODUCTION OF "YOUR LUCKY STRIKE THEATRE", ONE OF NBC'S OUTSTANDING TELEVISION PROGRAM SERIES.

Injunction Sought by RCA-NBC on FCC Color Television Order

Complaint Declares Irreparable Injury will be Caused to Public, Manufacturers and Broadcasters by Standardizing on Incompatible System — FCC Order Called Illegal, Arbitrary and Capricious.

A TEMPORARY injunction to restrain the Federal Communications Commission immediately from enforcing its order for the adoption of incompatible color television standards, pending a hearing for a permanent injunction, was sought in Federal Court on October 17, 1950, by the Radio Corporation of America, National Broadcasting Company and RCA Victor Distributing Corporation, a wholly-owned subsidiary of RCA.

In a complaint filed in United States District Court in Chicago, RCA, NBC and the RCA Victor Distributing Corporation declared that the FCC order of October 10 adopting the color television method promoted by the Columbia Broadcasting System will result in irreparable injury and damage to the public, which has more than two billion dollars invested in television sets, to the nation's television broadcasters with their huge investments, and to the television manufacturing and distributing industry.

The complaint charged that the Order is contrary to the public interest, is arbitrary and capricious, exceeds the legal authority of the Commission and is not supported by the evidence.

"The effect of the Order," said the complaint, "is to authorize the commercial broadcasting of color programs upon CBS standards to the exclusion of the commercial broadcasting of color programs on any other color television standards. Thus, commercial broadcasting in accordance with the RCA system is prohibited, although it, unlike the CBS system, is compatible and can be received on existing receivers without modification and without degradation of picture quality, and which can be broadcast by all television broadcasters without dilution of their audience.

"Although the Commission has no jurisdiction over television set manufacturers, the Commission sought to require that such manufacturers agree with the Commission to build all their black-and-white television receivers according to specifications laid down by the Commission. These specifications required extensive alterations in present production model receivers. The Commission stated to the television set manufacturers that if they did not agree so to build their sets the Commission would forthwith and finally adopt the CBS color system.

"The Order adopting the incompatible CBS color system impairs the advantages of compatibility now possessed by the RCA system. If the Order standardizing upon the CBS color system remains in effect and receivers capable of operating on those standards are sold, the existence of those receivers in the hands of the public will operate as a deterrent to the adoption of the RCA system by the Commission at some future date."

Injury to the public, broadcasters and manufacturers, as a result of the FCC order, was emphasized in the complaint.

"Ten years having elapsed since the adoption of commercial television standards during which the public has invested approximately two billion dollars in television receivers," the complaint stated, "the Commission cannot consistently with its obligation to protect the public interest adopt a color system which is incompatible with the black-and-white system on which more than 30,000,000 of the public depend for their television service.

"The broadcasting of television programs on the CBS standards will deprive broadcasters of the television audience that has been grad-

ually built up over a period of four years, to the irreparable injury of the television broadcast service, and will deprive the existing television audience of a part of the television broadcast service, to the irreparable injury of the public interest."

Declaring that the Order cannot be sustained, the Court was informed that the Commission's staff engineer, who took the most active role throughout the hearing on behalf of the Commission's technical staff and who is in charge of the Commission's laboratory which tested the various color systems, invented a device usable only in the CBS system and applied for a patent thereon.

"On disclosure of this fact," the complaint asserted, "objection by RCA was overruled and the staff engineer continued in the proceedings as theretofore.

"On information and belief the Commission relied on this staff engineer's advice because the majority of the Commission have no engineering training and the decision of the Commission is stated to be based entirely upon engineering considerations.

"Although the engineer fore-swore any financial interest in his device he did have professional prestige and reputation at stake which could be furthered only if the CBS system were adopted. On information and belief he advised the Commission in the absence of the parties and participated in the formulation and preparation of its Reports and the Order herein complained of."

The complaint pointed out that RCA and NBC have a present investment of approximately \$100,000,000 in television. It was not until 1941, however, that the Commission first set standards for commercial operation of black-and-

white television as a service to the public.

"The total present investment of the television manufacturing industry is estimated at not less than \$300,000,000," the complaint stated. "The total investment of the television broadcasting industry is estimated at \$50,000,000.

"The adoption of the incompatible CBS color television system will impede the future growth of the television industry upon which RCA and NBC, with all other television manufacturers and broadcasters, depend. It will as well imperil the employment of the more than 30,000 people RCA and NBC employ in television manufacture, but also the hundreds of thousands employed throughout the television industry."

The complaint reminded the Court that the Commission's "First Report on Color Television," issued on September 1, shows that the Commission was not satisfied with the incompatible CBS system. There are many instances, it pointed out, in which the Commission stated that it desired more information with respect to defects of the incompatible system and the Commission's description of this system is in terms of "adequacy" rather than in terms of "high-quality performance."

"With minor exceptions," the complaint continued, "those of the television manufacturing industry who submitted comments with respect to said Second Notice stated that to change their production of black-and-white receivers so as to accept the proposed standards was impractical, unnecessarily costly to the public, and could not be done in accordance with the time schedule set forth in the Second Notice."

RCA comments submitted to the FCC pointed out the fact that the Commission's proposal to adopt an incompatible system was based on scientifically incorrect conclusions, was at variance with the evidence submitted at the hearings, and was contrary to the public interest, convenience and necessity, the complaint affirmed, adding:

"In addition, the comments directed the Commission's attention to certain readily available infor-

mation of controlling significance which the Commission failed to consider although it had the duty to do so before reaching a final decision. This is particularly true in view of the fact that the Commission's Report showed that it did not understand various aspects of the RCA system."

The complaint declared the FCC's Order to be "illegal, void and beyond the power, authority and jurisdiction of the Commission," for the following reasons:

The Order is contrary to the public interest, convenience and necessity, the basic statutory standard contained in the Communications Act of 1934.

The Order violates Section 303 (g) of the Communications Act of 1934 (which generally encour-

ages larger and more effective use of radio in the public interest).

The Order is unsupported by substantial evidence, is arbitrary and capricious, and is an abuse of discretion.

The Order was adopted before the Commission had discharged its statutory duty to inform itself adequately before issuing a final order in a rule-making proceeding. The Commission wrongfully refused to consider additional evidence of determinative significance to its decision and wrongfully denied the RCA Petition.

The Order is based upon the rejection by the television industry of the two illegal conditions set forth in the First Report

MESSAGE TO RCA VICTOR DISTRIBUTORS

Walter A. Buck, Vice President and General Manager, RCA Victor Division, sent the following letter regarding color television to all RCA Victor distributors on October 20:

Regarding the color television situation, here's the outlook:

Black-and-white television will remain the backbone of the industry for some years to come, with continued expansion and improvement of black-and-white program service. Regardless of outcome of current controversy and type of television broadcasting finally adopted, substantial color broadcasting is at least two years away for following reasons:

First, Public will be hesitant to install cumbersome, gadgety converters and adapters because of expense involved, limited number programs broadcast, and limited size and degraded quality of picture received. Color pictures can be no larger than 12½ inches and definition is reduced from 525 lines to 405 lines. Same thing applies to new sets. Leading manufacturers have indicated reluctance to risk resources, reputations, by rush production of high-priced receivers for questionable broadcasting system that will not give satisfaction in the home and will probably soon be obsolete.

Second, Sponsors will be slow to incur heavy expense of color broadcasts for limited audience.

In the meantime, RCA is working intensively toward perfection of all-electronic color broadcasting system compatible with present sets, with demonstrations of progress scheduled for early December.

RCA believes incompatible system of color broadcasting ordered by FCC is scientifically unsound and not good enough for American public.

It all adds up to this. Customers can buy black-and-white sets today with complete confidence that they will get years of satisfactory service and improved entertainment from them; that perfection of all-electronic color broadcasting system will not make their sets obsolete.

(which, in effect, compel the industry to include bracket standards in the manufacture of television sets and which orders this done without a hearing.

The Order is contrary to the terms of the Commission's Notice of July 11, 1949, pursuant to which the hearings on which the Order purports to be based were held.

On the facts disclosed, the staff engineer should not have been permitted to continue in the proceeding.

The Order deprives the plaintiffs of property without due process of law, contrary to the Fifth Amendment to the Constitution of the United States.

Besides its move to restrain enforcement of the FCC Order, the complaint asked the Court, after final hearing, to order and decree that the FCC Order adopting the incompatible color system "is, and has at all times been, beyond the lawful authority of the Commission, in violation of the legal rights of plaintiffs, and is wholly void, arbitrary and unreasonable, and that the Order be perpetually vacated, set aside, suspended and annulled, and the promulgation, operation and execution thereof perpetually restrained and enjoined."

RCA to Show Latest Advances in Color Television System

Improvements in Receivers, Picture Tube and Converters to be Revealed in Washington, D.C., Beginning December 5.

PLANS of the Radio Corporation of America to show the latest improvements in its compatible all-electronic, high-definition color television system in a series of demonstrations beginning December 5, 1950, in Washington, D. C., were disclosed October 17 in telegrams sent to the radio-television manufacturing industry.

The telegrams, signed by E. C. Anderson, Vice President in Charge of the Commercial Department, RCA Laboratories Division, read:

"Reference Color Television Situation. The last demonstration of our color television system was made by RCA to its licensees in Washington on March 30, 1950. Since then, we have made substantial improvements along the lines set forth in our progress report of July 31, 1950, previously mailed to you.

"We are preparing to give our licensees another demonstration which will incorporate the improvements we have made to date in the set and tri-color tube. At this dem-

onstration, we will also show a color converter for the RCA system.

"We expect to be ready to give this demonstration in Washington, D. C., on December 5, 1950. Details of exact time and place will follow. Hope you and your engineers will be present.

"At this demonstration, we will supply you with information about our latest simplified circuits, the converter and the tri-color tube. We shall continue to give you further demonstrations periodically so that you may see the successive steps in our progress.

"In our petition of October 4 to the Federal Communications Commission, we said:

"By June 30, 1951, we will show that the laboratory apparatus which RCA has heretofore demonstrated has been brought to fruition in a commercial, fully-compatible, all-electronic, high-definition system of color television available for immediate adoption of final standards."

NBC to Expand Present Lead in TV

NBC's commanding lead in all facets of television broadcasting will be vastly expanded in the coming year, representatives of the network's affiliated television stations were told at the fourth annual convention in White Sulphur Springs, West Virginia, on October 19.

When present construction plans are completed, Joseph H. McConnell, President of the National Broadcasting Company, revealed to the meeting, NBC's plant investment in television will be between \$35,000,000 and \$40,000,000. Plans are in the making, he added, for the acquisition of still more top talent and for expansion into morn-

ing network programming as soon as the current afternoon schedule is sold.

"In our general sales strategy," McConnell said, "we're devoting particular attention to advertisers who are spending their budgets in visual media. We have in television the greatest selling medium for the eye, and we're proving to the visual advertiser that television can do more for him than the printed media he is using and do it more economically when you take sales effectiveness into account. We'll sell television to these advertisers in place of the magazines and supplements they are buying, and we'll

sell them radio as the economical mass medium to reach the people they aren't reaching by television."

The program strategy at NBC television, Sylvester L. Weaver, vice president in charge of Television explained, "is to attract all sets to our great entertainment, to give the all-set circulation exposure to cultural and informational currents in which the people have only slight interest, and stimulate that interest until it becomes a special interest." The result, he added, "will be the most important single influence in the American scene on the minds and opinions of the people, and our influence will be positive."

America is Challenged

America Is Challenged by Greatest Threat Ever Faced by Free Men, Head of RCA Tells Veterans of Foreign Wars at Chicago—He Urges National Policies and Plans to Meet Political, Military and Industrial Requirements of Menacing Situation That May Compel America to Wage Global War—Russian and Satellite People Must Be Told The Big Truth About The Big Lie, He Declares.

IN a scathing denunciation of international Communist tactics, Brig. General David Sarnoff, Chairman of the Board of the Radio Corporation of America, declared that this country must take steps in time to meet the challenge of present Soviet leaders who, he charged, represent "the greatest threat ever faced by free men".

General Sarnoff, speaking before Veterans of Foreign Wars of the United States at their 51st Encampment in Chicago on August 28, outlined 12 basic points of appraisal and suggested action. He told the men who had served in one, or both, of the two World Wars that "the days of diplomatic pussy-footing are over," and that the time for "positive action" has arrived.

Points outlined by General Sarnoff follow:

1. Communism is spreading its insidious propaganda relentlessly over many parts of an anxious world. Red Fascism threatens destruction to life and liberty, and an end to human progress. The present Soviet leaders represent the greatest threat ever faced by free men.

2. We must formulate sound national policies and prepare practical plans to meet the political, military and industrial requirements of a menacing situation that may compel us to wage war on a global scale.

3. We must concentrate and not scatter our military and material resources, our man-power and our strength. This is precisely the trap that Russia has set for us and this is the trap we should avoid.

4. We must speed up our program of all-out national preparedness and bring to bear upon this effort the full weight of Ameri-



BRIG. GENERAL DAVID SARNOFF RECEIVES THE GOLD CITIZENSHIP MEDAL OF THE VETERANS OF FOREIGN WARS FROM COMMANDER-IN-CHIEF CLYDE LEWIS. THE PRESENTATION TOOK PLACE AT THE 51ST NATIONAL ENCAMPMENT OF THE V.F.W., IN CHICAGO. SEATED IN LEFT FOREGROUND IS COMMANDER-ELECT CHARLES C. RALLS.

- can skill and ingenuity. American industry and labor will cooperate patriotically.

5. Declare a moratorium on national politics and thus help to close the ranks against the common enemy. Accelerate national unity by using the best brains in our country to help solve the critical problems before us and the world-wide political commitments we have assumed.

6. Establish immediately, universal military training in the United States.

7. Put high on the list of priorities, a thorough protection against sabotage — which could prove worse than a battle lost.

8. Subject to suitable controls and practical safeguards, permit and assist Japan and West Germany to rearm, to the extent that these two countries fit into the over-all plan of resisting Russian aggression.

9. Develop a comprehensive system of Civilian Defense. Public knowledge that such protection exists, will allay fear and keep us fit to do our job.

10. Communist propaganda makes false promises to suffering masses and stirs them to hatred and revolt. Once under their control they rob the masses of their freedom and substitute the terrors of the police state for de-

gency and justice. Through radio and television, through the motion picture and the printed word, and with every means at our command, it is our duty to tell the world the Big Truth about the Big Lie. We must expose the lies and spike the false propaganda that come from behind the Iron Curtain.

11. Americans want to know the facts and are not afraid to learn the truth. Americans expect their Government to lead the Nation and the world in this time of peril.

12. The vast resources of the United States, if handled wisely, should be capable of meeting the Russian challenge. Americans, now as always, will respond to the Nation's call. When its freedom is endangered, America, springing to action, is unbeatable.

Scattered Effort Ineffective

General Sarnoff reminded the Veterans of Foreign Wars that day by day, since the end of World War II, Americans have witnessed events which, in their bold and devastating aims, have made it clear that the time has come for the concerted development of this nation's resources — spiritual, industrial and military. Scattered and unplanned effort will not be effective enough to meet the challenge, he declared, and added:

"The leaders of the Kremlin have left no doubt that they intend to impose their will on all mankind: not through peaceful persuasion, but by lying, intrigue, infiltration, sabotage and force.

"In such a crisis, it is foolish to parry the thrusts of the aggressor with our fingers. Thus we only injure our fingers and do not hurt the enemy. Should it later become necessary to fight with our fists, the injured fingers would make our fists impotent. We must courageously formulate and pursue bold policies on a global scale. In psychological, as in military warfare, defensive strategy alone rarely leads to victory."

Tactics of the Kremlin, he asserted, are clearly based on the old slogan, "divide and conquer". By diverting our forces first to one

pressure point and then to another, they hope to scatter our strength into ineffectiveness, he charged, and said:

"The major question is: What next?"

"Some seem to believe the answer can come only from the Kremlin. I do not believe that. We have picked up the challenge in Korea, and while you and I deplore the loss of life and the general destruction that is now taking place in that unfortunate country, we may thank Providence for a timely awakening to the imminent danger. The stark realism of the Communist aggression has stirred us from an almost suicidal complacency."

Accusing the Communists of smothering the truth with their falsehoods, General Sarnoff pointed out that through radio and television, the motion picture and the printed word, Americans have a great opportunity to reveal the truth to the rest of the world.

"We must expose the lies and spike the false propaganda that come from behind the Iron Curtain," he affirmed. "We have worked out a new formula against the Big Lie invented by Hitler, practiced by Goebbels, and now employed by Stalin and Malik. Our formula is the Big Truth. As I said the other day at the University of Chicago Round Table Conference, we must tell the Big Truth about the Big Lie.

"If truth is incapable of overtaking the lie, then there is something seriously wrong with our whole structure of life. But we can reassure ourselves: the truth will prevail. It is the foundation of democracy, and it is the basis of our belief."

General Sarnoff expressed the opinion that America's policies and plans must be made and remade to fit the fluid situation. This calls for national unity at home if we are to reflect it abroad, he asserted, declaring: "Now is the time for a moratorium on politics. I do not mean that we should stop constructive criticism, for it is a necessary element in any free society. It can aid our Government and our leaders in all fields of endeavor. It can aid the whole world.

"What we need is a closer and a stronger link between the Brains of America and the Brawn of America. The best brains in our country, regardless of political affiliations, are needed to help solve the pressing problems in this time of trouble and to defeat the cunning of the enemy in a 'cold war' or a 'hot war'. Today, as you are well aware, the cold war is rapidly warming up.

"Let us not worry at this crucial moment about the dangers of a 'Brain Trust'. A democracy can deal with it when necessary. But it cannot cope with the perils to

VETERANS FROM ALL PARTS OF THE NATION MEET IN THE CHICAGO ARENA FOR THE 51ST ENCAMPMENT OF THE VETERANS OF FOREIGN WARS





V.F.W. PARADE ON CHICAGO'S MICHIGAN BOULEVARD.



the Nation that can come from a 'Brain Rust', or a 'Brain Bust'.

In an appraisal of Soviet resources, General Sarnoff said that the history of Russia is marked by political, agricultural and industrial ineptitude. Until lately, the industrial development of Russia was almost negligible, compared with that of England, France, Germany and the United States, he opined, asserting that most of the Soviet Union's major industries have been built up largely through the help of experts from other na-

tions. He reminded the Veterans that "the world knows how Russia obtained the secrets of the atom bomb!"

Nevertheless, it would be hazardous to underestimate the Soviet military potential, General Sarnoff continued, adding:

"It is believed that Russia is presently able to put about 200 divisions on the field of battle. Since the end of World War II, her ability to equip and supply these divisions has been greatly increased by control of the satellite industrial na-

tions of Eastern Europe. Moreover, there is no reason to doubt that Russia is producing the atom bomb.

"When you add to these factors their devilish cunning in the political arena, their disregard for International Law, their distortion and disavowal of agreements, and the likelihood of striking the first blow when they are ready to do so, the present Soviet leaders represent the greatest threat ever faced by free men."

Americans Can Take Courage

General Sarnoff said that Americans can take courage, however, when we appraise our own strength—both as a great agricultural and industrial power and as a people imbued with the spirit of democracy and individual human dignity.

"The vast resources of the United States, if handled wisely, should be capable of meeting the challenge we face," he declared.

His appraisal of American resources follows:

The agricultural economy of the United States has been developed to a point where we can meet the requirements of our own population and help our friends abroad. From this agrarian activity has sprung the largest food processing industry in the world.

The country's output of goods and services is now running at the staggering rate of 270 billion dollars a year—an all-time record for America's industrial supremacy.

The electrical industry has reached a generating capacity of 68,000,000 kilowatts — nearly twice the total we had only ten years ago.

Our steel production is greater today than that of all the rest of the world combined, including Russia.

In the automotive field, no other country approaches our capacity to produce nine million motor vehicles a year.

Substantially the same story can be told about radio, aviation, rubber, textiles, chemicals and other major components of our industrial economy.

Aligned with these vast enterprises are unmatched systems of

transportation and communication.

The American industrial machine, already huge, underwent enormous expansion during World War II. Existing plants were enlarged and new ones built. To such war implements as ships, airplanes, tanks and guns, the United States applied the techniques of mass production. Never before were such tremendous quantities of equipment manufactured in so short a time. We supplied not only our own armed forces, but those of our allies as well.

Industrial Capacity Expands

In the five years since that war, our industrial capacity has continued to expand. At the same time, scientific research has been widely extended and new laboratory facilities have been provided.

We learned during World War II that no nation can remain strong if it slackens even for an instant its interest in science. Progress in this field has put America at the forefront and has tremendously strengthened our national defense.

General Sarnoff said the electronics industry is an outstanding example of the part research plays in our national security. He recalled that American scientists have pioneered in this field for more than 30 years, and told his listeners that the expansion of radio and electronic activities during and since the war has been phenomenal. He disclosed these figures: number of manufacturers in this industry in 1940, 425; today, 1,200; value of the industry's peacetime products was a half billion dollars in 1939; today's rate, two and one half billion dollars. This is an increase in production of 500%.

Most of the electronic industry's postwar expansion has occurred under the impetus of television's remarkable growth, he said, estimating that by the end of this year, there will be approximately 10,000,000 television receivers in as many American homes. This means a potential daily audience of between

35,000,000 and 40,000,000 persons. "Most of these people live in the great population centers of the nation," General Sarnoff stated. "Through television, they form a powerful nucleus for concerted action in time of emergency; for television is one of our greatest mediums for the dissemination of information, instruction and training.

"If we had international television today—and I believe we shall have it within the next five years—the Voice of America would be the Voice and Vision of America. What a powerful weapon of propaganda that would give us! For then the whole world would see what millions of American viewers saw—the wonder of the UN sessions at Lake Success—and the arrogant filibuster of President Malik would have been its own most effective antidote for the Russian propaganda."

Should war come, television will be a vital factor in communications on land, sea and in the air, he asserted, adding: "No matter where a battle is waged, it can be under the eyes of television and may be viewed by the military strategists even across the seas. It is within the range of possibility that the public will watch the action on battlefields while sitting at home in front of television sets."

General Sarnoff assured his audience that American industry—of which radio and electronics are a part—represents a great force for peace and a mighty power in war.

"At this moment our Nation is being alerted," he continued. "Should the need arise for full-scale war production, you may be sure that our industries know how to convert their products into the necessary weapons of war. American industry and labor will respond in the future as they have in the past—with patriotism and skill.

"The story I have been telling you is a part of the Big Truth about America. It is the story of unmatched agricultural, scientific and industrial achievement; of opportunities for individual initiative that develop under the free enterprise system; of national teamwork; of social and economic progress.

"But this is not the whole story. The spiritual part of America is even more important. Our freedoms to worship as we please, to think and to speak, to listen and to look, to work and to live where we choose, are precious privileges of our peaceful way of life. All these now are threatened by the enemies of freedom."

TELEVISION ENABLES MILLIONS TO VIEW UN SESSIONS AT LAKE SUCCESS.





RADIO CITY'S FAMOUS CENTER THEATRE DURING CONVERSION INTO WORLD'S LARGEST TELEVISION STUDIO.

Five New TV Studios For NBC

In a Major Expansion Program, the Network has Converted Two Large Theatres and Three Broadcast Studios for TV Use.

THE National Broadcasting Company's lavish fall line-up of television programs, which will be produced at the rate of 100 a week, necessitates production wizardry unequalled in the legitimate theatre. Moreover, many of these individual productions require facilities comparable in scope to anything ever attempted on Broadway. To make this possible, NBC, during the summer months, has been carrying on a gigantic project of TV studio expansion. This has involved converting three large radio broadcasting studios and two sizable theatres into television studios.

The mammoth task included the leasing and transforming of the world-famous Center Theatre, rebuilding the Hudson Theatre, revamping studios 3-A and 3-B in Radio City, and reconstructing the famous 8-H, largest broadcasting studio in the world, and home of the NBC Symphony. The accomplishment is remarkable less for the amount of materials used than for the difficulty of the operation, which, in many cases, had to be carried on at night, under adverse conditions. Problems were posed by the necessity of maintaining quiet for normal broadcasting activities, and by the structural obstacles of major construction in build-

ings already completed.

Conversion of the Center Theatre, the world's largest legitimate theatre with a seating capacity of 3,000, into the world's largest television studio was a considerable feat. The stage of the theatre, which for many years had been used for ice shows, had to be completely rebuilt, a vast network of pipes removed, and a 30-foot extension to the stage replaced with 130 orchestra seats. A ramp for camera dollies and two side-stage extensions were added in front of the proscenium to accommodate musicians on one side and commercial presentations on the other.

New Studio Made Fireproof

To comply with New York City fire laws all material in front of the proscenium had to be made fireproof with gypsum plank and concrete covering. A light bridge 65 feet long and 15 feet wide was installed over the forestage, hung from the ceiling and operated by a motor. Ordinary theatre spotlights are not strong enough to light a TV show; they cause shadows which the cameras readily pick up. For the benefit of the studio audience eight small loudspeakers were installed. To have used one large speaker would have created a feed-

back howl in the broadcast microphone.

A temporary control booth now set up on stage right will eventually be replaced by a permanent booth at the back of the orchestra. In addition, NBC has reactivated the famous turntable and three-elevator stage system originally built into the theatre, but which was inactive during presentation of the ice shows. The stage system, a duplicate of that used at Radio City Music Hall, will allow for a wide variety of effects not possible in other television theatres.

Conversion of the mammoth playhouse has given NBC an additional 4,200 square feet of television stage which will permit the network to do productions comparable to the most lavish on Broadway. The elaborate technical stage equipment, as well as the special storage and dressing room facilities, make the NBC Television Center Theatre the best-equipped auditorium studio in the world.

The theater opened officially on September 25, with a simulcast of "The Voice of Firestone". The program was chosen for the honor because of its distinction in being the oldest coast-to-coast musical show on NBC.

Revamping of the network's famous concert studio 8-H presented a different problem. All of the structure inside the studio had to be removed and a new overhead construction, using over 30 tons of steel, was erected. The difficulty of



IN REVAMPING NBC'S FAMOUS CONCERT STUDIO 8-H, WORKMEN REMOVE CEILING BEAMS TO MAKE WAY FOR A STEEL OVERHEAD CONSTRUCTION.

bringing 32-foot-long, 16-inch eye-beams into a building was solved by hoisting the beams up NBC freight-elevator shafts in 16-foot sections and splicing them together in the studio.

The balcony of the studio is being rebuilt as control, observation and dressing rooms. The studio, which is 76 feet wide, 130 feet long, and 34 feet high, will provide 10,000 square feet of working space.

Rebuilding of studio 8-H recalls many of the radio triumphs which emanated from that hall. It was there that Eddie Cantor broadcast his great variety shows, setting new patterns in radio entertainment. From its stage Arturo Toscanini first conducted the newly-formed NBC Symphony Orchestra in 1937.

The noise and confusion of demolition have caused NBC engineers considerable concern. In studio 3-A,

originally designed for recording, the whole wall and ceiling treatment (with acoustical elements adjustable for music or speech) had to be ripped out. Demolition had to be done quietly, so as not to interfere with broadcasting in other parts of the building. Since heavy hammering reverberations can be carried along the steel members of the building and cause audible vibrations, noisy work was done after midnight.

Studios 3-A and 3-B have been re-treated acoustically on both walls and ceilings. Control booths have been rebuilt so that they can be used for audio operations, video operations — separately or simultaneously. In each studio, NBC engineers built a separate lighting-control booth, with switchboards and dimmer boards controlling all ceiling lights.

A stupendous job was done on the Hudson Theatre. More than half the orchestra was floored over at stage level, leaving 174 orchestra seats for the studio audience. The stage extension is to be used for bands, equipment for TV commercials, camera dollies, yet the audience's view of the stage will not be blocked. From a glass-partitioned box behind the control booth the sponsor can watch the stage and observe the activities of the director and engineers in the control booth without interfering with operations.

RCA Pledges Full Cooperation to President Truman

A pledge of fullest cooperation in the national effort by the Radio Corporation of America, its subsidiaries, officers and employees at home and abroad, was telegraphed to President Truman at the White House by General Sarnoff on July 20.

The full text of General Sarnoff's telegram follows:

"Please accept my congratulations on your illuminating messages to the Congress and the people of the United States which set forth frankly and clearly the seriousness of the situation we face and the efforts of our Nation to resist aggression and help preserve world peace.

"Speaking for the Radio Corporation of America and its subsidiaries which include the National Broadcasting Company and the RCA Communications, Inc., and for our officers and employees at home and abroad I pledge you our fullest cooperation in the national effort. We are at your service."

New Electron Microscope Advances Tissue Research

Study of structural details of relatively thick specimens of biological and plant tissues will be made possible by a new high-resolution electron microscope, designed for operation at 50 to 100 kilovolts, which was described by RCA engineers at a recent meeting of the Electron Microscope Society of America in Detroit. The new instrument makes possible useful direct magnifications of 1,000 to 20,000 diameters and is greatly simplified for easier operation and maintenance, according to Dr. John H. Reisner, of RCA's Scientific Instruments Engineering Group.

[RADIO AGE 11]

Barrymore and Shakespeare

A Lucky Discovery Revealed Discarded Recordings of Noted Actor, which Became Nucleus of Widely Acclaimed NBC Programs.

EIGHT years after his death, John Barrymore's magic as an interpreter of Shakespeare was brought to NBC's nation-wide audience through the ingenuity of Program Director James Fleming and staff engineers, who transformed four scratchy, discarded transcriptions into clean, clear reproductions of the bard's immortal classics. The series of programs entitled "John Barrymore and Shakespeare", for which the network won wide acclaim, consisted of Barrymore's selected passages from "Hamlet", "Macbeth", "Richard III", and "Twelfth Night".

If Fleming, editor of NBC's "Voices and Events" program, had not decided last May to broadcast a dramatic flashback to the week of John Barrymore's death in 1942, the rare transcriptions probably would have lain unused in the NBC record warehouse.

The transcriptions—old, rough, dusty—were made during a series of broadcasts from Hollywood in 1937 for reference, not for rebroadcast. Taken off the NBC network line in New York, they were marred by countless clicks, ticks, and other surface noises engendered by the 3,000-mile connection. The "Hamlet" transcription was particularly noisy because the broadcast had occurred during a violent electrical storm, which peppered the reception with sharp cracks every time the lines were hit by lightning.

Listeners Acclaim Program

In spite of the poor quality of the discs, Fleming decided to dramatize his "Voices and Events" program with Barrymore's version of Hamlet's speech to the players. The response was extraordinary. Letters, telegrams and telephone calls asking for more Barrymore poured into the NBC News and Special Events Department from all over the United States.

Two officials of the Shakespeare Festival at Stratford-on-Avon, England, learned about the Barrymore transcriptions and suggested to

William F. Brooks, NBC vice-president in charge of News and International Relations, that the programs be rebroadcast in connection with this Summer's festival.

In preparing the series for rebroadcast Fleming marshalled all the mechanical and electronic resources which have been developed since the original broadcasts thirteen years ago. With the help of NBC's audio-engineering and sound-effects departments he was able to "clean up" the old transcriptions, making them clear, audible, and virtually like new.

A major problem was to eliminate various surface noises. In re-recording the old transcriptions on tape, engineers first chose, by microscopic examination, the cleanest copies of the records. Then the sound was filtered, electronically, to eliminate excessive low frequencies.

One purely mechanical method of eliminating undesirable noise was to cut out that portion of tape—usually an inch or two—which represented a crackle or a click, and substitute a quiet piece of tape on which were recorded only normal background (or room) noises. This kind of manipulation was possible because the disturbances usually occurred during pauses between words.

Fleming did, however, have to cope with a more subtle problem, caused in the 1937 broadcasts by Barrymore's tendency to creep up on the microphone. Realizing that Barrymore had done very little Shakespeare on the air, NBC studio engineers in Hollywood built a small fence, or corral, around his microphone to keep him at the desired distance. At times, however, he became so transported by emotion that he leaned over the fence, bellowed into the mike, and his words came over the air in a muffled roar.

Fleming had to choose between clarifying Barrymore's words, thereby distorting his voice and raising surface noises, or preserving the original, muffled version.



EVEN A STURDY GUARD-FENCE COULD NOT ALWAYS KEEP JOHN BARRYMORE AT PROPER DISTANCE FROM THE MICROPHONE DURING HIS SHAKESPEAREAN DISCOURSES.

He compromised by making the words somewhat more intelligible without distorting Barrymore.

"I knew that the listener was going to have to work hard in one or two places," Fleming said, "but I preferred to keep Barrymore as he was."

On the positive side of the ledger Fleming added music and sound effects. He substituted a stark, peremptory kettle drum for the original transition music. He implemented the cries of the Ghost of Hamlet's father (produced by a musical saw) with a wild, unearthly wind.

During the final tragedy of the duel scene Fleming added a note of realism with the sound of clashing rapiers. And he gave perspective to both of those outdoor scenes by recording the original disc through an echo chamber. In 1937 Barrymore spoke into a microphone in a broadcasting studio, and there was no impression of space or depth.



TELEVISION TRANSMITTER OF KRON-TV WHICH COMBINES WITH MODERN ANTENNA TO RADIATE PICTURE SIGNAL TO VIEWERS IN BAY CITIES.

KNRC'S 550-FOOT TOWER IS PINCHED IN AT BASE AND NEAR TOP TO IMPROVE THE RADIO SIGNAL RECEIVED IN HOMES OF THE SAN FRANCISCO AREA.



TV-FM on the West Coast

Latest Developments in Antennas and Transmitters Provide Extended Service in San Francisco Area.

ON the marsh flats bordering San Francisco bay stands an unusual landmark, a 90-ton, 550-foot steel tower resting on a 10-inch cone, giving the monument a soaring and spectacular appearance, like a slim pencil balanced delicately on its point.

This impressive structure, designed by RCA, serves as the AM broadcasting antenna for station KNBC, San Francisco. In operation since October 24, 1949, the antenna, which embodies features never before used in broadcasting, greatly increases KNBC's effective radiated power and adds 10,000 square miles to the station's primary coverage area.

RCA engineers call the structure an "articulated joint" vertical radiator. The "joints" are insulator cores — one at the 400-foot level and the other at the base. The ten-inch lower cone supports the entire weight. The upper cone divides the

tower into two insulated segments. This two-piece antenna augments the horizontal signal and decreases the skywave signal, thus reducing the twilight fading zone to a minimum.

Another feature never before used in antenna design is the three-quarter-inch copper tubing which extends from base to top along each corner of the tower. Also to increase conductivity, 120 narrow strips of copper, each 500 feet long, extend outward in all directions from the base of the tower. These "radials" are buried seven inches under the ground.

Radiator Has Other Advantages

The vertical radiator has other advantages. It acts as tower and antenna, thereby combining economy and efficiency. The use of six guy wires, three for each segment of the tower, eliminates the need for deep concrete foundations and

FILM ROOM OF TELEVISION STATION KRON-TV SHOWING PROJECTORS FOR FILMS (REAR), OPAQUE SLIDES (LEFT) AND TRANSPARENCIES (CENTER). CAMERA IS AT EXTREME RIGHT.



heavy steel construction used in self-supporting towers. Foundations of an ordinary tower the same height would be many times larger than the 12-foot square concrete base which supports the 90 tons of steelwork.

RCA also has installed a new FM antenna for KNBC atop San Bruno Mountain, highest point on the San Francisco peninsula. Taking to the air last October, KNBC-FM's new equipment increases the station's effective radiated power from 3,000

watts to 45,000 watts. With 15 times more power and enjoying the highest elevation in the area, KNBC has gained countless thousands of new FM listeners.

The FM transmitter is housed in an all-concrete, spacious single-story building which overlooks the entire bay area. KNBC-FM shares the structure with KRON-TV, San Francisco's third television outlet, and also RCA-equipped. The site of the KRON-KNBC building and the TV and FM towers has become known as TV Peak.



PYLON ANTENNA OF KNBC'S FM STATION ABOUT TO BE LIFTED INTO POSITION ATOP SAN BRUNO MOUNTAIN, HIGHEST POINT ON THE PENINSULA.

MASTER CONTROL ROOM OF TELEVISION STATION KRON-TV WITH VIDEO MONITORS IN REAR AND TRANSCRIPTION TURNTABLES IN FOREGROUND.



[14 RADIO AGE]

Electrons Detect Stray Coins

Stray coins mailed in envelopes with box-tops and soap wrappers, during contests staged by advertisers, are being spotted at one contest headquarters through the use of RCA's Electronic Metal Detector.

At the office of Associated Activities Inc. of Minneapolis nationally-known advertising service organization, the RCA instrument is used to screen the mountains of mail received in premium promotions as final insurance that no coin has escaped the sorters. This measure, says the firm, retrieves each month many dollars that might otherwise be lost to the advertiser, with resultant confusion and delay in the mailing of premiums to consumers.

It isn't so much the value of the lost coins that concerns the contest promoters as the much greater loss in customer goodwill through delayed mailing of the premiums. Coins clipped or taped to a box-top or wrapper may become detached and remain in the envelope. To guard against loss of such coins, all mail, after sorting, is passed through an aperture in the metal detector on a continuous belt. The entrance of a coin into the electromagnetic field generated within this aperture causes a change in the field, activating a mechanism which diverts the coin-bearing envelope into a separate receptacle.

Film Operators Attend Course in Theatre TV

Thirty motion-picture projectionists, employed by theatres in Manhattan, Brooklyn, Albany, Chicago, Los Angeles, Queens Village, N. Y., and other cities, have completed a special theatre television training course conducted by the RCA Service Company at Camden, N. J. The trainees will be in charge of the RCA theatre TV equipments that are to be installed in ten cities this fall.



MODERN EQUIPMENT AND TECHNIQUES TYPIFY THIS TELEVISION STUDIO OF STATION XHTV, RECENTLY OPENED IN MEXICO CITY.

Television Below the Border

Pioneer Stations in Mexico, Brazil and Cuba Go on Air to Accompaniment of Official Fanfare.



By Meade Brunet

*Vice President of RCA and
Managing Director,
RCA International Division*

TO the accompaniment of official pomp and pageantry carried out to a degree seldom, if ever, approached at similar events in this country, television stations in Brazil and Mexico made their official debuts in August and September. Their appearance on the air highlighted once again the rapid march of progress of our neighbors "below the border". In addition, two Cuban TV stations plan to begin operations in October. The new stations in São Paulo, Mexico City, Havana—all of which are RCA-equipped—will bring international

television much closer to realization.

The transmitter of Brazil's Radio Tupi is located in the State Bank Building, São Paulo's highest edifice, and a three-bay super-turnstile antenna, capable of radiating 20 kilowatts of power, crowns the building, 520 feet above the street. Modern television studios have been built in Sumare, a São Paulo suburb. RCA microwave transmitting equipment is used to link studio, outdoor mobile pickup units and the main transmitter.

The new station, PRF3-TV, which is owned and operated by Brazil's largest radio network, Emissoras Associadas, is using United States television standards of 525 lines, 60 fields, and is assigned to Channel 3.

A four-hour television demonstration, which served as a preview to Radio Tupi's official opening, was attended by President Eurico Dutra, U. S. Ambassador Herschel Johnson, and Nelson D. Rockefeller, in addition to 500 representatives of government, industry and society. The demonstration, conducted over a closed circuit, was the highlight of the official inauguration of the Museum of Modern Art in the Chateaubriand Building at São



XHTV'S SUPER-TURNSTILE ANTENNA TOPS MEXICO CITY'S SKYLINE.

Paulo. Approximately 5,000 persons viewed the exhibition on RCA television receivers installed in the lobby of the building.

The TV preview, which was received enthusiastically by São Paulo residents, created an urgent demand for receivers. To meet it, RCA moved fast to supplement its ocean-bound shipments with a plane load of instruments, scheduled to arrive for the station's official opening.

Arrangements for installation of the RCA equipment were made by Dr. Assis Chateaubriand, Director General of Emissoras Associadas, through RCA Victor Radio, S. A., RCA's associated company in Brazil.

On the occasion of its opening station PRF3-TV received the following congratulatory telegram from Brig. General David Sarnoff, Chairman of the Board, Radio Corporation of America:

"Please accept my heartiest congratulations on the opening of your great new television station at São Paulo. Its lofty tower over Brazil symbolizes unity of purpose among the Americas in extending the cultural arts and the benefits of democratic freedom to the people of our lands. This is indeed a memorable occasion, not only for Brazil, but

(Continued on page 18)

RCA "million"



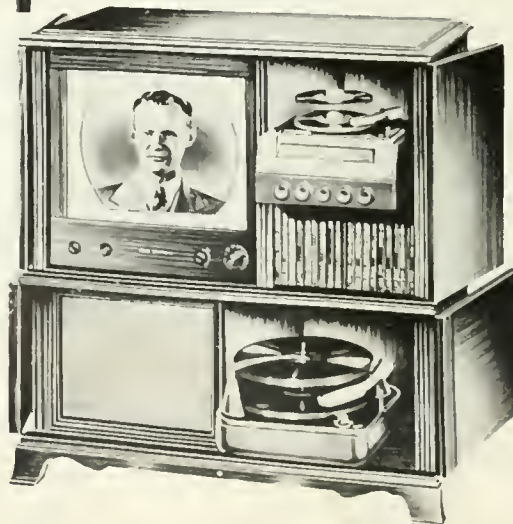
Thousands wait their turn to enter the RCA Exhibition Hall for a view of RCA's new line of television receivers shown in part on this page. To date, more than one million families have chosen RCA Victor television.



The **KINGSBURY**
16-inch screen.



The **YORK**
19-inch picture tube.



The **RUTLAND**
16-inch tube with radio
and 3-speed turntables.



The **FAIRFIELD** has a 16-inch screen
cabinet with figured doors and end panels.



The **SEDGWICK** with its 19-inch screen
tables and FM-AM facilities lets you see and hear.

"shock-proof" television receivers



ed in a
screen.



The **MODERN** has a swivel base which permits its 16-inch screen to be turned for the best viewing angle.



The **HILLSDALE** provides a 19-inch picture in a compact cabinet with doors that cover the screen.

ed turn-
v line.

The **HIGHLAND** has a 16-inch tube and is available in cabinets of mahogany, walnut or limed oak finish.

The **PROVINCIAL** has full-length doors which can be closed over the 16-inch tube and speaker grill.



Television Below the Border

(Continued from page 15)

for the entire Western Hemisphere. You are deserving of highest personal compliments for leadership in putting station PRF3-TV on the air. All success to you and your countrymen in making television history."

Mexico's first television station, operating on Channel 4 with the call letters XHTV, was officially inaugurated in Mexico City early last month.

The inaugural program consisted of a remote pickup in which President Miguel Aleman delivered a message to the Mexican people at a joint session of the Mexican Congress in the historic Chamber of Deputies, a few blocks from the presidential palace. Since the opening, regularly scheduled programs are telecast on weekdays from 5 to 7 p.m. On Sundays, the time is extended from 4 to 7 p.m., in order to cover the bull fights. The government of Mexico plans to use television receivers in schools as part of its educational program.

XHTV is located in the 20-story National Lottery Building, highest structure in the Mexican capital, and is equipped with a 5,000-watt transmitter, antenna, and associated studio and mobile pickup equipment supplied by RCA. It is owned by Television de Mexico, S. A., an enterprise of Romulo O'Farrill, Sr., publisher of the newspaper *Novedades*.

Facilities of XHTV are similar to those of television stations in the United States. Two floors of the modern building house the studios, control room, sponsor's booth, rehearsal room, dressing rooms, property storage section, transmitter, service shop and offices of the new station. In addition, provisions have been made on the ground floor for a large auditorium which will be used for televising concerts and stage plays. RCA Victor Mexicana, S. A., RCA's associate company in Mexico, installed the equipment.

BRAZIL'S PIONEER TELECASTER, PRF3-TV, IS LOCATED IN SAO PAULO'S HIGHEST BUILDING WITH ITS ANTENNA 520 FEET ABOVE STREET.



[18 RADIO AGE]

Staff Studies U.S. Methods

In preparation for the station's opening, Mr. O'Farrill arranged for members of the staff to visit the RCA Victor plant at Camden, N. J., for a study of manufacturing operations, and the National Broadcasting Company studios in New York for observation of program production methods.

Plans are in progress for the opening during October of two television stations in Havana, Cuba. One of the newcomers is CMQ in Havana's \$2,000,000 Radio Centro. This station under the operation, ownership and management of Goar Mestre is speeding installation of an RCA 5 KW television transmitter and studio apparatus—microwave relay equipment and cameras and studio facilities. A mobile TV unit for CMQ received a send-off at Rockefeller Plaza last July during New York City's celebration of Television Week.

Installation of the second Cuban television station, owned by Union Radio, is practically complete. The station equipment, weighing more than 22,000 pounds, was flown to Havana by two National Airlines C-46 Transports. The shipment included a 5 KW transmitter and complete mobile equipment, microwave relay equipment, television cameras, film projectors and other studio facilities. The Union Radio transmitter and studio will be housed in an old mansion which is being reconverted for television use.

Special reinforcement is being provided for the 200-foot antennas of these Cuban stations because of their location in the "hurricane belt".

Both stations have had teams of writers, announcers, commentators, directors and engineers studying television operations in the United States. The distributor for engineering products in Havana, Cuba is Humara y Lastra, who have been distributors on RCA and Victor products for more than 40 years.

These three Latin American countries—Brazil, Cuba and Mexico—are the only countries in the Western Hemisphere outside of the United States, where it is known that television broadcasting is available to the public.



TELEVISION SERVICE, PROVIDED BY TRAINED TECHNICIANS IS A PARAMOUNT FACTOR IN THE RAPID GROWTH OF THE TV INDUSTRY.

The TV Service Problem

Quality of Service Supplied to Set Owners Must Advance in Step with the Growth of the Video Industry or that Progress will be Retarded.



By C. M. Odorizzi
*Operating Vice President,
RCA Victor Division*

THE quality of television service must match stride with the growth of the television industry or that growth will be retarded. No other industry producing such a highly-technical product as television has grown so rapidly in such a short time. No other industry has ever faced the problems of providing technically trained manpower in such quantities as television's fantastic growth has required.

At the end of last December there were 4 million television receivers in service—3 million more sets have

been added since then up to the first of September. The industry forecasts that more than 2 million receivers will be sold during the balance of the year. This means that dealers throughout the country must be prepared to install and service, during the last quarter of the year, half as many receivers as were sold during the entire 4-year period of 1946-1949.

The real problem of the industry this fall and winter will be the training of a sufficient number of skilled technicians to install and service the receivers which manufacturers plan to produce and sell.

The answer as to whether or not a dealer should perform his own service depends entirely on the dealer—on his available capital, his volume, and his objectives. Many dealers operate fine service departments and take great pride in the excellence of their service.

Technicians Properly Trained

These men have been willing to invest the necessary capital to provide good service facilities, space for the service shop, good office records, and excellent test equipment.

Of equal importance, they have seen to it that they have properly trained technicians and experienced supervisors. They have a sizable investment in installation materials and in repair parts to take care of old as well as new models. The successful servicing dealer keeps accurate cost records, and sells and merchandises his service in the same way that he handles his products.

All of us have seen examples of small dealers, large dealers, and even large department stores, that have rushed into the servicing business without the ingredients which are so necessary to a successful operation, only to discard the program when they found that it was unsatisfactory and unprofitable. In like manner, television service contractors have gone bankrupt, usually because they lacked good business management. Many of them did not provide adequate reserves, and, in an effort to obtain a greater volume of business, sold their services too cheaply to provide high-quality workmanship.

I believe the television service contract to be the greatest merchandising tool that has ever been placed in the hands of dealers. If there is one pitfall that the TV industry must avoid, it is the pitfall of the 50c radio service calls and the sharp radio service practices which we all remember. Consumers are perfectly willing to pay reasonable service charges on mechanical and electrical products.

Effect of Local Conditions

Unlike radio and many other electrical and mechanical appliances, the performance of a television receiver does not depend solely on the product. Local conditions—a gas tank, a tall building, a hill, or any other obstruction between the transmitter and the receiver—may have a greater effect on its performance than its built-in selectivity or its general quality. It has been our experience that the performance of two identical receivers may vary greatly, not only within the same city block, but within an apartment house, or even within a single apartment, and from one side of the room to the other.

While manufacturers have made

amazing progress in chassis simplification, we must keep in mind that even today's television receiver of the highest quality has more than 20 tubes, over 1,000 separate components, and several thousand connections, most of which are subject to gradual deterioration and failure through usage. While great strides have been made in receiver design, any assumption that today's television receivers do not require occasional service is simply not realistic. No dealer can afford for long to perform gratis or to constantly argue with his customers the merits of service charges required by the limitations of local reception.

Too many dealers take the easy way out and sell receivers without adequate provisions for installation and service, hoping that they will squeeze through the warranty period without burdensome service costs. Some dealers, in single station areas where reception problems are not too difficult, are already adopting the old radio practice of giving away service without charge, not realizing that this practice represents a serious profit drain, particularly as additional transmitters go on the air and reception difficulties increase.

Must Maintain Service Quality

While progress requires constant product improvement and simplification, any manufacturer who permits his quality standards to deteriorate places a heavy burden on his dealer organization. Whether or not a dealer handles his own service, neither he nor his service contractor can afford the cost of servicing a receiver of poor quality.

I am proud to be associated with a company which not only was an early pioneer in the television in-

dustry, but which has constantly held leadership in television design improvements. For example, in the new RCA Victor TV receiver line, is a chassis with fewer tubes, almost 30 per cent fewer components and connections, and with 50% less power consumption than its predecessor. Despite this simplification, the numerous improvements not only have resulted in a more powerful chassis with better picture and sound quality, but one which will be easier to service.

Field Testing Essential

Every important engineering change must be thoroughly field-tested before it is finally introduced into the product for sale to the consumer. At RCA, we think of quality as something real—something that can be seen and heard. It begins with good basic engineering. It is built on good components and materials. It is assured and maintained by constant day-to-day field testing, by carefully reviewing service reports from the field, and by rigid inspection on the production line.

Manufacturers and distributors have important responsibilities in helping dealers and servicing contractors in the task of improving the standards of television service. Each television market varies greatly in the character of reception problems. The problems in Easton, Penna., for example, are entirely different from those in New York. The consumer in each area is entitled to know what he should and should not expect in the way of television reception, installation, and service.

Since the beginning of television, one of the greatest problems of the

industry has been to provide a sufficient number of well-trained technicians to keep pace with the industry's growth. Manufacturers and distributors can be helpful to field service organizations by making their service notes available immediately after a new line is introduced—particularly on new models where important circuit changes are involved. Servicemen are needlessly handicapped if they are not fully equipped with schematics and other technical details.

An example of this cooperation is the Service Clinic Lectures which have been sponsored by RCA Victor distributors for their dealers throughout the country. So far this year, over 200 of these service lectures have been held in the 57 television markets for thousands of servicemen and contractors who service TV receivers for RCA dealers.

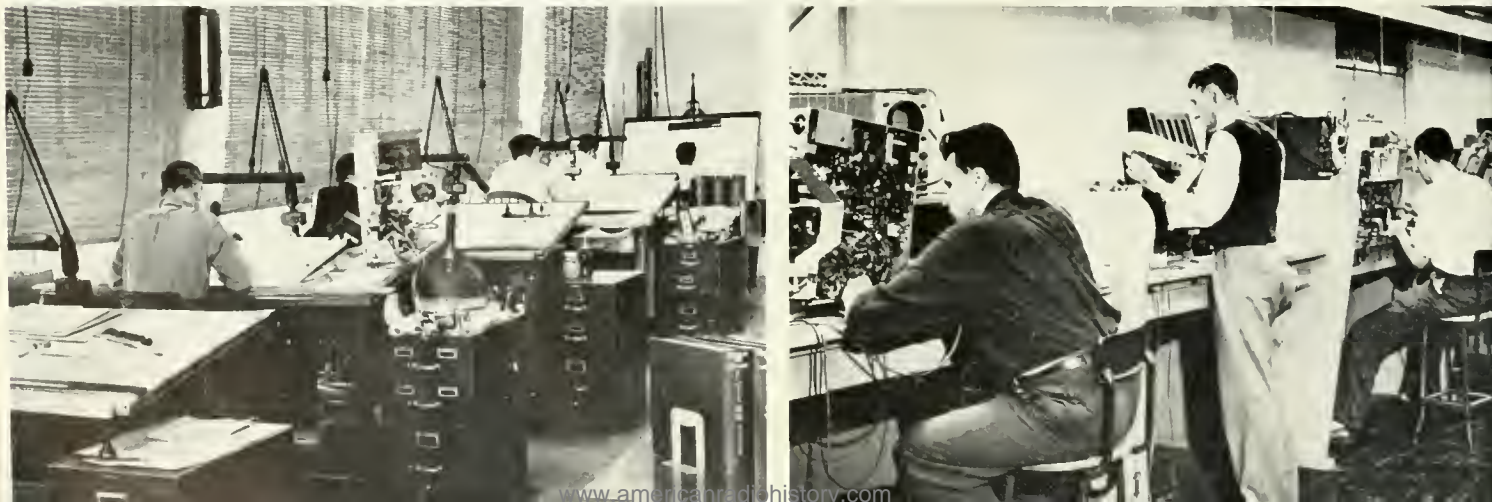
Lectures for Servicemen

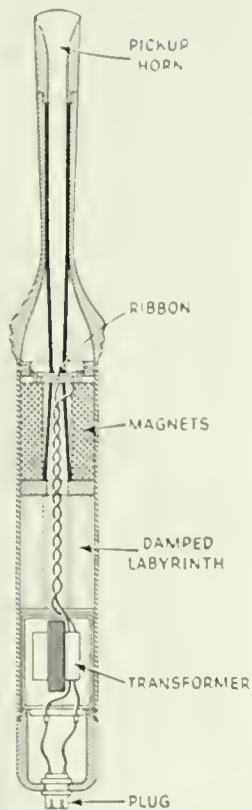
Coincident with the introduction of our fall television line, a series of 80 service lectures, featuring a technical sound slide film and practical discussions on installation and servicing, together with complete service notes and technical manuals were furnished to more than 10,000 servicemen.

Television manufacturers and distributors together have spent literally millions of dollars in similar efforts to train field technical personnel properly and to raise the general standards of television service. This is an endless task that will never be fully completed, but, with the precautions that I have outlined and with constant vigilance on the part of all of us in the industry, I am confident that we shall succeed.

INFORMATION FOR THE USE OF TELEVISION SERVICEMEN IS CAREFULLY PREPARED AND WIDELY DISTRIBUTED IN BLUEPRINTS AND TECHNICAL PUBLICATIONS.

THE FINEST SCIENTIFIC TEST INSTRUMENTS ARE AVAILABLE TO THE EXPERT TECHNICIANS AT ALL RCA TELEVISION SERVICE BRANCHES.





ADVANCES IN ACOUSTICS MADE POSSIBLE THE STREAMLINED "STARMAKER" MICROPHONE NOW WIDELY USED IN RADIO AND TELEVISION.

"Starmaker" Microphone

Designed Especially for Television, New Streamlined Instrument Also Ideal for Broadcast Studio Use.

FIRST microphone designed especially for television but equally suitable for many broadcast station applications has been placed on the market by RCA under the name of "Starmaker."

One of the slenderest and least obtrusive broadcast microphones yet developed, the "Starmaker" operates on the pressure ribbon principle and is so designed that it will not hide the faces of singers, speakers, or others using it, nor is it conspicuous in the average setting. The streamlined mike is rendered unobtrusive, not only by its size and shape, but also by a special "TV gray" finish which makes it appear to fade into studio backgrounds or blend with the clothing of entertainers. It is suited for sound reinforcement and radio broadcast pickup, and has an output comparable to larger conventional

studio microphones. It is non-directional and handles equally all tones between 50 and 15,000 cycles.

The "Starmaker" has a maximum diameter of only an inch and a quarter, and weighs only 15 ounces. It is as sensitive as the finest of current broadcasting microphones and may be substituted for any high-quality professional studio microphone.

The "Starmaker" is a non-directional, rubber-pressure type microphone with a slender 7/8-inch diameter horn for increasing response in the high-frequency regions. Portable and free from wind blast and air rumble, the new microphone contains no vacuum tubes, no condensers, and no special amplifiers or power supplies. It can be lifted from its stand and carried around in the hand. It is virtually impervious to mechanical shock.

RCA Surrenders Rights to Four Trade-Marks

Three of television's best known trade-marks and a famous miniature tube name are being voluntarily surrendered to the public domain by the Radio Corporation of America, Frank M. Folsom, President, announced on August 17.

Mr. Folsom said that the U. S. Patent Office has been requested by RCA to cancel its registration of these registered trade names: Iconoscope, first electronic "eye" of the television camera; Kinescope, picture tube of television home receivers; Orthicon, improved television pick-up tube; and Acorn, tiny radio tube now a commonplace in portable sets.

"Now that television has become established," Mr. Folsom declared, "RCA finds gratification in the fact that the industry uses these names in a generic and descriptive manner. In relinquishing our registrations for the benefit of the industry, we are following RCA's traditional policy of stimulating progress in the radio and electronic fields."

The three television trade-marks are of Greek derivation. Kinescope, registered by RCA in 1932, stems from "kineo," meaning "to move," and "scope," signifying "observation"; Iconoscope, registered in 1935, incorporates the Greek "icon," meaning "image"; Orthicon, registered in 1940, employs the prefix "ortho," meaning "direct."

Distributor Acquired

Physical properties of Bickford Brothers Company, wholesale distributors in the Buffalo and Rochester areas, have been acquired by RCA Victor Distributing Corporation, Paul Wolk, President of Bickford Brothers, and H. M. Winters, Director of RCA Victor's Distribution Department, made the joint announcement on July 28.

Winters also disclosed that the RCA Victor Distributing Corporation, wholly-owned RCA subsidiary would take over the operation of two Bickford branches.

Bickford Brothers has been in operation in Buffalo since 1939.





O. B. HANSON (RIGHT), NBC VICE PRESIDENT AND CHIEF ENGINEER, WITNESSES A DEMONSTRATION OF THE NEW BRIEF-CASE FIELD AMPLIFIER BY ITS DEVELOPERS, J. L. HATHAWAY (LEFT) AND R. C. KENNEDY.

For Remote Program Pickups

NBC Engineers Develop Compact Field Amplifier that can be Carried to Out-of-Studio Broadcasts in Ordinary Brief-case.

USING the latest developments in miniature vacuum tubes and associated components, two NBC engineers, J. L. Hathaway and R. C. Kennedy, have succeeded in designing a practical, ultra-compact, light-weight field amplifier which not only embodies all the principal features of much larger standard models but adds some innovations of its own, yet can be carried in an ordinary brief-case.

For many years, broadcast engineers assigned to handle programs originating outside the studio have been pleading for relief from the large and cumbersome field amplifiers they have had to transport to banquets, sports stadia and news events. They have pointed out that a man loaded down with such an imposing array of broadcast apparatus frequently had difficulty talking his way into certain types of public and private affairs which had been scheduled as broadcast programs. By the time the thwarted engineer had maneuvered his luggage from the front entrance to the rear and up a stairway to the scene

of the program, the "show" may have begun without him. With the new field amplifier, such a disturbing and sometimes costly situation is not likely to occur. A man with a brief-case in hand does not attract special attention in the most exclusive of public places.

One glance at the contents of the carrying-case demonstrates the ingenuity of the Hathaway-Kennedy team. In addition to the amplifier itself, which includes a complete set of batteries sufficient for 25 hours of intermittent operation, there is room for three microphones with their cables, and space for spare cables, batteries and tubes. The amplifier and brief-case weigh only 17½ pounds.

Components Carefully Selected

In selecting components for the amplifier, performance and compactness were equally essential. For instance, more than a dozen miniature and sub-miniature tubes were subjected to rigid tests before the most suitable type was found for the microphone circuit. In the same

way, a critical volume control was not approved until it had been mechanically rotated 50,000 times without showing signs of wear.

That the new unit is as versatile as it is small is evidenced during the testing and balancing of telephone lines leading from the site of the program to the main control board at the studio. This process, called equalizing, is essential in order to insure the transmission of sounds free of distortion. Formerly, equalizing was accomplished with the aid of a test tone transmitted over an extra set of telephone wires from the studio to the field amplifier. The new instrument generates its own tone signal thereby making it possible to reduce the equalizing time from 15 minutes to 30 seconds. Where the time available before the start of a program is limited, this saving in time could well mean the difference between a program of maximum tone fidelity and one of distinctly inferior quality, plagued by hisses, hum and other foreign noises.

Tests of the brief-case amplifier have been conducted throughout the country with gratifying results.

Fourteen Stations Join NBC Television Network

Fourteen television stations, at present affiliated with NBC but non-interconnected have become interconnected with the NBC television network.

As of Oct. 1 NBC had 47 television stations on its interconnected network and 16 on its non-interconnected network, a total of 63 outlets.

The most recent additions to the interconnected network are: WSAZ-TV, Huntington, W. Va.; WFMY-TV, Greensboro, N. C.; WBTV, Charlotte, N. C.; WMBR-TV, Jacksonville, Fla.; WSB-TV, Atlanta, Ga.; WBRC-TV, Birmingham, Ala.; WAVE-TV, Louisville, Ky.; WFBI-TV, Indianapolis, Ind.; WOC-TV, Davenport, Iowa; WOI-TV, Ames, Iowa; KSTP-TV, Minneapolis-St. Paul, Minn.; WOW-TV, Omaha, Neb.; WDAF-TV, Kansas City, Mo.; WSM-TV, Nashville, Tenn., and WTTV, Bloomington, Ind.

[RADIO AGE 23]

TV TOWER—1,057 FEET—SUPPORTS THE ANTENNA OF WCON-TV LOCATED IN THE HEART OF ATLANTA, GEORGIA. TOPPING THE RCA TV ANTENNA IS AN RCA FM PYLON.

Radio to Continue as a Vital Force

J. H. McConnell, President of NAB, Assures Station Executives that Sound Broadcasting is Certain to Adapt Itself to Changing Environment Created by Television.

A PROPHET that radio broadcasting will continue as an effective and vital force in American society and society for as the trend is in the radio industry forecast was given by Joseph H. McConnell, President of the National Broadcasting Company in an address to the South Carolina Broadcasters Association at Myrtle Beach, S. C., on July 1.

"It is my conviction," McConnell said, "that sound broadcasting is now the most advertising medium of the country. I do not mean to say that radio will not undergo drastic changes in the years ahead. The organization and content forms and structure is a changing work. Radio has been experimenting itself in advertising conditions ever since it was established a generation ago responding to new requirements and changing itself as it went along.

"Today, radio's environment is being profoundly altered by the new force of television, and having very much the effect on this side of advertising as the same. But I am confident that the sound broadcasting medium, which has met and grown throughout the social and economic upheavals of the '20's and '30's, will adapt itself to the new environment of the '40's and '50's. It will do so because we, the broadcasters of America, will have the flexibility to develop the new services and business methods which will meet the new demands.

"I have already pointed out changes in the market because my confidence has a basis in the sound broadcasting and in advertising as well. While we are developing television as a medium, we are determined to see that our sound broadcasting will continue as a sound and needed medium in a permanent basis. The facts are that the radio is today one of the most vital.

Among the facts cited by McConnell were the great opportunities afforded to radio by today's market, with its increase in con-



JOSEPH H. McCONNELL

sumer demands and purchasing power and the expansion of the advertising medium to include the share of the country's growing advertising expenditures. He stressed that radio is not a single medium, but a group of media, with functions as varied as the demands of the market.

Equation for Radio's Value

Stating that the equation for measuring radio's advertising value is nine times greater in radio today, McConnell developed the fact that even after the full effect of television is taken into account, national radio will remain the largest and most comprehensive medium in America offering sales effectiveness at a cost value as other media and radio.

Referring to the present international crisis, McConnell urged that the broadcasters to counter the efforts of Communist agents to penetrate the broadcasting industry and encourage it from within. It is not enough, he declared, to attempt to minimize the effect of Communist propaganda by directing support to propaganda materials.

Radio's message, he said, must be firmly supported and advance the ideals of American democracy and radio cannot accomplish this mission with confidence or effectiveness if its harbors traitors within its own ranks, he asserted.

"We propose to keep our own house clean to the very best of our ability," McConnell told the South Carolina broadcasters, "and I am sure that all other broadcasters will want to do the same."

Taking into account the full effect of television, McConnell said, national radio during the coming season will deliver a larger audience than it delivered in any year between 1941 and 1943. He also pointed out that while all other media radio has never raised its rates in recent years to reflect its increased cost of operation and that while the advertiser pays more for every service and commodity he uses and charges more for his own product, he is still buying radio at a 1941 rate and obtaining more for his money than in 1941.

Television's effect on radio listening is nowhere near as drastic as popular belief would indicate. McConnell declared. Pointing the worst comparison on present trends and statistics would mean a decrease of only 4.7 per cent in the number of American evening radio homes in the 1945-46 season as compared with 1944, he asserted. This percentage is obtained by applying the present Nielsen research figure of 1.75 per cent drop in evening listening in a radio home when a television set is installed to the average 1945-46 figure of 22,000,000 radio families and 20,000,000 television families, he explained. In 1945-1946, the average number of evening radio homes decreased for the effect of television will be the same as in January 1947, when there was no doubt as to the effect of the sound broadcasting medium. McConnell explained, and

(Continued on page 22)

TV and Radio in Education

Newest of the "Lovely Arts" Has a Lane for Children which can be Utilized in Interpreting the American Way of Life for the Nation's Impressionable Juveniles.



B. Judith Water

General, Public Affairs and
Education
NBC General Division

...many ways in which an American ... a woman ...

The fact is that ... we ...

Adults Must Learn Themselves

...adults ...

...national ...

...The ...

...I ...

...Parents ...

THE writer ...

BROADCASTERS REALIZE THAT THE MOST URGENT BUSINESS OF THE MOST ENTERTAINING AND ENJOYED THEY RATE.

"THE EDUCATION OF AMERICAN TEACHERS HAS BEEN A BLACK PILL FOR THE CHILD OF THE FUTURE."





THROUGH TELEVISION TODAY'S CHILD VIEWS INAUGURATIONS AND CONVENTIONS, SEES AND HEARS CONGRESS IN ACTION.

glad they could read at all. When popular education began, the pessimists were certain that learning would make the masses dissatisfied and so upset the status quo; the optimists were pretty sure that a status quo based on ignorance probably ought to be upset. When the automobile arrived, the pessimists predicted that people's legs would shrivel up and cried that if God had meant men to ride on wheels he'd have provided built-in roller skates; the optimists were glad they could get around easier.

Yes, I am an optimist—I always have been. In particular, I am an optimist about radio and television. And I have five excellent reasons. I base my optimism on the affirmative case for the media, the horse sense of the American parent, the resilience of the American child, the ingenuity of the American teacher and the enlightened selfishness of the American broadcaster. Let's examine each of these characteristics and then you may determine for yourself whether my optimism is foolish or not.

Radio and TV Picture Life

The affirmative case for the media. Both radio and television serve the American home and the American school in interpreting for them a way of life. Because of them, today's citizen child has a greater "freedom to grow". He can far exceed the experiences of children in all previous generations, for the world today is brought close

together by these powerful, swift-moving means of communication. He can see and hear history being made. He can view inaugurations, and political conventions; he can see and hear the President, and the cabinet and the Congress which determines policy. He can see and hear the news of the world—on the day it happens. The list of attractive, diverting and entertaining programs for children is too long to go into here—but they have lured children—and caused comment, as you know.

This brings me to my second article of faith—my belief in the horse-sense of American parents.

Attitude of Parents

Of the several attitudes which parents may take toward radio and television, I should like to single out two which seem to me to be misguided, and which I do not believe the great body of sensible parents will adopt.

The first is held by those parents who shower praise on the new medium because it keeps the youngsters quiet. The second belongs to those parents who have never seen a program, yet condemn it because they have heard "how awful the programs are".

It seems to me it is time we all realized that the child parked in front of a television screen or radio set is not under the care of an electronic baby sitter. He is truly engaged in what is, to him, an important learning process. The re-

sponsible parent should experience this learning process with the child, as frequently as possible. Every child wants to share new sensations and new ideas. Moreover, he wants them interpreted to him. He wants to find out how they relate to him, to his family, and his friends.

There is still another attitude which I do not believe will prevail over the inherent good sense of American parents. It is the notion that a simple formula can be developed which will solve all problems.

It is surprising how many people would like broadcasters to be arbiters of public taste and morals. The industry is, of course, responsible for its program fare, and for the exercise of fundamental decency and good manners in its presentation. But they, the broadcasters, cannot make taste judgments for you or your neighbors or your children, any more than the automobile manufacturers can build automobiles with built-in drivers.

Most Parents Realize Facts

I think most parents realize this fact. I think too, that their fundamental good sense will recommend to them the practice of some sensible measures in regard to the lively arts. They will help their children develop habits of moderation in listening and viewing. They will share this new experience with their children and will make use of their opportunities to develop discrimination. They will also help their children plan sensible listening schedules, and will give as much time and thought to the preparation of these schedules as they give to the planning of the rest of the educational and recreational diet.

This brings me to my third reason for optimism: my faith in the resilience of the American child. I believe that he is normally a pretty hardy creature, with fairly healthy instincts, and not nearly so fragile as some of his protectors would imply. Unless we insist on rearing him in a hot house under forced feeding and a sterilized environment, he will develop a quite amazing capacity to assimilate an astounding number of impressions, facts and ideas.

(Continued on page 31)



Relation of Scientific Research to War Preparedness

Since Military Preparedness is no Longer a Matter Merely of Men, Materiel and Campaign Planning, Science and Industry Must Share Partnership with the Armed Forces in any Modern, Large-Scale Conflict, Says W. W. Watts.



By W. W. Watts,

Vice President in Charge of Engineering Products Department, Radio Corporation of America.

MILITARY preparedness is no longer a matter merely of men, materiel, and the planning of a campaign. The rapid advancement of human knowledge, notably in the past 50 years, and especially in the period between the two world wars, has made of it a state of dynamic progress, in which science and industry share a partnership with the military.

During our lifetime, the very nature of warfare has changed. The age of electronics, and now of nucleonics, makes obsolete a tactic or a new equipment almost as soon as it is used. The welfare of the people behind an armed force, even the subtleties of their state of mind, are as strong a predisposing factor to national security as the resources which can be brought to its support. Military preparedness thus has come to mean total effort, and, with it, total responsibility for its success.

Until recently, both pure and applied science went their own way, uncovering new fields of knowledge, finding new means of using it, without any special inspiration by possible military objectives.

In a sense, the scientist had to

be a salesman to get the armed forces to use his invention or application. Though I am now talking historically, this relationship of science and the military manifested itself too recently for comfort on certain instances we all recall.

Certainly, history is replete with examples of inventors who carried their work to rulers and attempted to "sell" it on the basis of its military value. The story of Robert Fulton and his submarine is a classic example, all the more so since virtually the same thing happened to Samuel Holland with his more practical development of the same idea, almost a hundred years later.

Human Welfare Advanced

Yet it has been through military acceptance of science's new developments that human welfare has been advanced, and that great social changes have been wrought. The advancement of radio science in the past 50 years is possibly history's most outstanding example of how

a product of the laboratory, which received its initial support from the military, found virtually limitless non-military applications.

We could go back earlier — to the development of gunpowder, which blasted the way for Western European civilization — to the sailing vessel, which displaced the slave-driven galley and opened new worlds for exploration and commerce — to the ironclad warships, which were the precursors of today's huge naval and commercial vessels.

We could also recall other instances without number, but they would illustrate one great fact — the scientist was not in times past a partner in the military effort. His work might be used, he might even be called upon as a consultant on specific problems, but it was not until 10 years ago that scientific research and development were formally integrated into our national security potential.

Earlier beginnings had been made in our own country, and nations

THIS ELECTRONIC COMPUTER, DEVELOPED DURING WORLD WAR II TO MEASURE WITH HIGH ACCURACY THE SPEED OF PROJECTILES, IS AN EXAMPLE OF THE APPLICATION OF INDUSTRIAL RESEARCH TO MILITARY NEEDS.



that were to be our allies in conflicts of the half century — in utilizing scientists' contributions in military affairs. Abraham Lincoln set up the National Academy of Sciences during the Civil War. Woodrow Wilson had authorized the National Research Council during the first World War. But it was not until June, 1940, that a scientific organization was set up with ample funds and authority, and constituted a partner in the military effort. The organization was the National Defense Research Committee, which later became the Office of Scientific Research and Development. The distinguished scientist Dr. Vannevar Bush, was named by President Roosevelt to direct this new activity.

Technology Pattern Developed

Under Dr. Bush's distinguished leadership, the pattern was developed for the battle of technology that is continuing today, to keep our military preparedness "a jump ahead" of our potential enemies. During the war, the OSRD spent about \$135,000,000 a year. It assigned research projects and non-profit development contracts to some 300 university and industrial laboratories, putting to work the best brains in the country in a team effort which is the basis of our successful scientific ventures today. The OSRD contracted for more than 2,000 investigations, of which 564 were completed. Over 200 devices were produced for the war effort, many of them of such transcendent importance that we may fully ascribe to them the credit for tilting the balance of the conflict for our victory.

The development of micro-wave radar was undoubtedly the leading achievement of "our side". This was one of the major fields of research and development by the OSRD, taking the biggest slice, \$30,000,000, out of its annual budget. Submarine warfare came next in importance, with a \$19,000,000 budget. Other principal fields of OSRD activities are indicated by the names of its 18 divisions, among which were Radio, Explosives, New Missiles, Special Projects, and Fire Control.

All along, of course, the Armed Forces had and still have their own research and development establishments. These include the laboratories of the Air Materiel Command for the Air Forces, the Naval Research and the Naval Ordnance Laboratories, the Office of Naval Research for the Navy, the Signal Corps Laboratory, the Engineer Board, the Armed Forces Board, among many others. If I have omitted mentioning them, it is for lack of time, certainly not in depreciation of their good work.

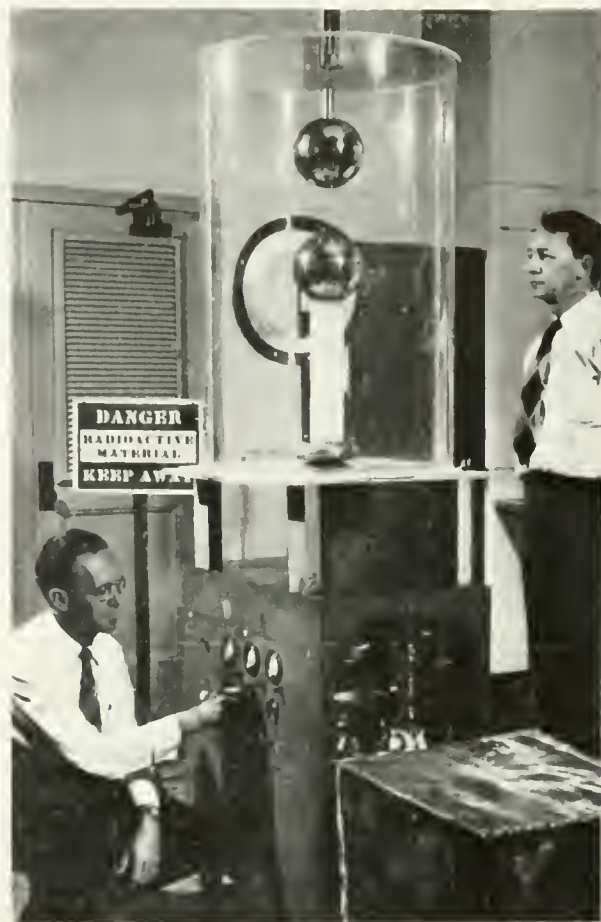
Science Evolves Teamwork

As a result of our wartime experiences, and the continuing activities in the field, a unique teamwork has evolved in our scientific establishments. Research for the Armed Forces, as for other scientific objectives, falls into four categories. These four types of research are fundamental, background, applied, and developmental. Prior to World War II, only a small amount of government money was spent on any of these types of research, and the little which was done was of a developmental nature through contracts with industrial concerns. During and since the war, however, the picture has changed considerably in several respects. In 1947, a typical post-war year, our government spent a total of \$500,000,000 on all types of research for the Armed Forces. Of this amount, about 90 per cent, or \$450,000,000, was spent on applied research and development studies. The contracts which this huge sum represents went, not to just a few larger universities and industrial concerns, but to schools and companies of all sizes.

The importance of these figures lies not so much in their indication of the role played by the university in technological support of our national security, as in the system by which the academic researchers and their professional colleagues in private industry work hand in hand for a common objective. In essence, this is the solid inner core of the strength of science in a democracy.

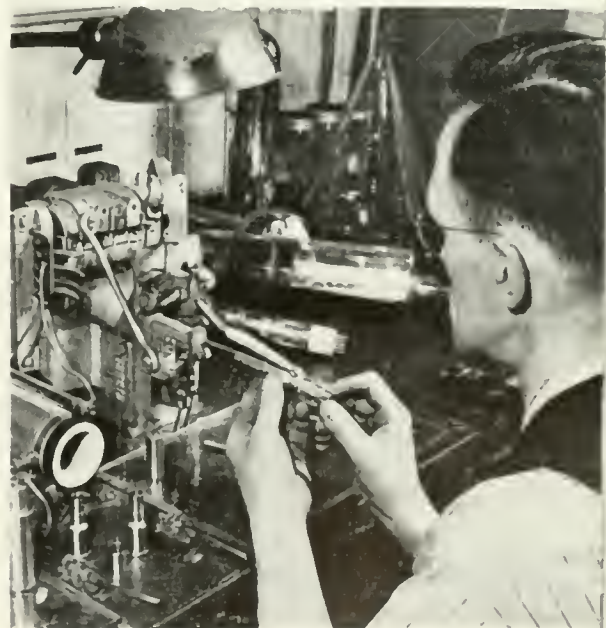
The pattern begun by the NDRC

(Continued on page 32)



RCA SCIENTISTS EXPERIMENT WITH A HIGH-VOLTAGE GENERATOR, USING RADIOACTIVITY AS ITS SOURCE OF ENERGY.

ASSEMBLING ELECTRON GUN OF CATHODE-RAY TUBES, WHICH ARE THE HEART OF RADAR UNITS WIDELY USED BY ARMED FORCES.





THE KOREAN-BOUND RADIO CARAVAN PAUSES IN FRONT OF THE FAMOUS LONG-WAVE TOWERS OF RCA CENTRAL ON LONG ISLAND BEFORE STARTING ITS LONG JOURNEY TO THE WAR-FRONT.

Mobile Unit On Way to Korea

Designed by RCA, Radio Caravan will be used to Lighten Army's Burden in Handling Certain Types of Messages.

A COMPLETE mobile station for handling various types of radio communications, now on its way to the Korean fighting front, is expected to relieve Army facilities of much of their burden of important press, government and personal messages that they must currently handle, according to an announcement by Harry C. Ingles, President of RCA Communications, Inc.

The RCA unit, assembled at the

request of the U. S. Armed Services, includes facilities for radiotelephone, radiophoto and voice program service, as well as regular telegraph service. The station will make it possible for men in front-line forces to communicate with their families by direct radiotelegraph service, Mr. Ingles added.

The mobile unit has been housed in Army-type trucks and trailers that can be quickly moved to meet Army requirements. Sixteen radio

operators and technicians will provide continuous, 24 hour service for handling radio communications direct with San Francisco, and, via this route, to other countries.

Henry A. Mortara, of the RCA San Francisco office, is to direct the group in Korea. Mr. Mortara gained valuable experience in this type of operation during World War I when he managed RCA mobile radio stations which accompanied the Allied Armies in Europe. He will proceed in advance of the staff and equipment to establish headquarters and cooperate with the Military Authorities in setting up RCA facilities.

During World War II, RCA Communications operated three radiotelegraph circuits for troops in the European Theater. Terminals for these circuits were housed in mobile vans which moved forward from Africa to Berlin with the Army headquarters to which they were attached.

RCA operated the only direct radiotelegraph circuit between San Francisco and Seoul from 1945 to 1948. In November 1948, the Seoul facilities were turned over to the Korean Government and the direct circuit was operated jointly by RCA and the Korean Telegraph Administration.

Sarnoff Receives Degree for Leadership in Radio and Television

Brig. General David Sarnoff, Chairman of the Board, Radio Corporation of America, has been awarded the honorary degree of Doctor of Humane Letters by the University of Louisville for his leadership in the fields of television and radio. In ceremonies held at the University on September 26, he was cited by Dr. John W. Taylor, president of the university, for his part in building the public affairs and education activities of the National Broadcasting Company, "which has led in the dissemination of informed and enlightened opinion in all fields of knowledge."

Gen. Sarnoff told the students at the year's first student convocation that "there is no more challenging time to be alive than today. However sweet may be security, it is not so sweet as adventure, the adventure of making useful the in-

struments of radio and television."

Following is the citation accompanying the degree awarded to Gen. Sarnoff:

"Brigadier General Sarnoff illuminates this century and our culture. An immigrant from overseas, he rose from messenger boy to the chairmanship of one of the largest American corporations; a technologist of vision, he predicted the development of radio broadcasting in 1915, of television as a service to the public in 1923. For his vision of television as a social force, and for the steadfastness of his leadership in bringing this science and art to perfection, the Television Broadcasters Association in 1944 called him 'The Father of American Television.'

"But his achievements do not stop here. In 1938, he presented to President Roosevelt the original

concept of 'The Voice of America.'

"A man with a sense of obligation to the culture of the nation and of the world, he organized the NBC Symphony Orchestra and persuaded Maestro Toscanini to conduct it. General Sarnoff made it possible for people everywhere to hear the great music produced by the Metropolitan Opera Association. He has sponsored and supported the department of Public Affairs at the National Broadcasting Company, which has led in the dissemination of informed and enlightened opinion in all fields of knowledge, and which has, most recently, introduced a national plan for college education by radio. Of this, the NBC Theater is an integral part. The University of Louisville recognizes and commends his services to the culture of the world by conferring upon him the degree of Doctor of Humane Letters."

TV and Radio in Education

(Continued from page 26)

Now take the matter of crime programs, about which we hear so much. In homes where children, apparently, have no regular bedtime, and where no adult takes the trouble to help them select suitable viewing or listening fare, it is quite possible that some children can see more crime and violence than is good for them. I trust you will not misconstrue what I am about to say. I am not, I assure you, recommending that all children should be exposed to crime programs. Indeed, I am persuaded, personally, that only an apathetic parent would allow an oversensitive child to include any or many crime programs in his diet, or a normal one to gorge himself on them. I do say, however, that healthy minded children are not likely to be warped or scarred by them. I think most of them are able to distinguish between the world of fiction and the world of fact, and that they are quite able to enjoy a vicarious adventure without adopting the morality of the principals.

My fourth reason for optimism is based on my belief in the ingenuity of American teachers. I believe they will help their students develop discrimination; will find many ways of turning the many educational materials prepared by the new media to good account in their classrooms; will find a place for the study of radio and television in their classrooms.

An Optimist About "Lively Arts"

Finally, I am an optimist about the lively arts and their impact on society because of the enlightened self-interest of the broadcaster. You know, in spite of all you may have heard or read, broadcasters are people too. They live in houses, and have children who watch television, and have individual consciences, and belong to churches, and serve on school boards. They worry about the state of the Union, and the high cost of living, and the ominous threat of "the cold war". They feel the responsibilities of

their profession keenly. They realize they are entrusted with the attentiveness of the young listener and viewer for long periods of time; realize too that the young audience is one of the most enthusiastic and loyal they have.

Radio to Continue as Vital Force

(Continued from page 24)

will actually be 23 per cent larger than the number of radio homes in 1940.

Listening and Viewing Divided

In presenting these figures, McConnell pointed out that they do not take into account indications of a trend toward more radio listening in television homes. With multiple sets in the home, some members of the family listen to their personal radios while the television set is on in the living room.

Radio today is the most massive and comprehensive medium of communication the world has ever known, McConnell pointed out. In the United States it reaches virtually everybody, hour after hour, day after day, week after week, he said. Over 40,000,000 American families in this country have radio sets in their homes and they comprise 95 per cent of the population, thus making radio bigger than all newspapers combined and seven times as big as television, he explained. People listen in fabulous numbers, he continued, with an average evening audience of 35,000,000, and spend more time with radio than with any other recreation.

Radio has been growing faster than the American population and faster than any other medium, McConnell added. In the past four years the increase in the number of radio families has been twice the circulation increase of all newspapers and the four leading weekly

And, in the end, the lively arts will go where we go. They will speak in our accents—not yours or mine alone, but in a comprehensive American tongue. They will show us our own faces and forms, in our many gestures and attitudes. They will lead where we will follow. I am an optimist about their influence on our children primarily because I am an optimist about Americans.

magazines combined, and has been twice as large as the increase in television families, he pointed out.

"With an expanding economy, with radio retaining its basic values, with opportunities for even greater development of its present resources—I do not think we have to fear for the outlook of sound broadcasting," he reassured his audience. "It is favorable in the extreme and some of the greatest chapters in its history are yet to be written."

International Division Moves to Radio City

New York headquarters of the RCA International Division, Radio Corporation of America, were moved from 745 Fifth Avenue to the RCA Building in Radio City, on September 18. Executive offices of Meade Brunet, a Vice President of RCA and Managing Director of the RCA International Division, are located on the 12th floor of the RCA Building. Also on that floor are Office Services, Radio and Appliance Sales, Record Sales and RCA Tube Department representatives. On the 4th floor of the RCA Building are the Personnel Department, Market Analysis, Engineering Products, Theatre and Sound Sales and office files.

The Division, formed in 1945, supervises foreign sales and other activities of RCA and its subsidiaries outside of the United States.

Relation of Scientific Research to War Preparedness

(Continued from page 29)

and continued by its successor OSRD, with its tremendous record of success, in the face of failures in totalitarian countries, carries a precept that we must never forget. This is the need for non-partisan, unbiased control of our scientific activities.

Our wartime program was administered by civilians and had a civilian head, who reported directly to the President. A good many of the projects were, of course, requested by the military, or were directed along lines of military application.

But military leadership, we have found, is sometimes resistant to change, to innovations in materiel or in logistics. In the OSRD, for example, there were scientists who were not content to work only on projects requested by the Armed Forces, whose imaginations ranged the fields of global warfare, to find occasionally what seemed fantastic and "hare-brained" applications to the trained and orderly military mind.

Such was the case, if I might cite an example, with the amphibious "Duck" vehicle, which was developed by the OSRD against the strong opposition of some members of the Armed Forces, and which later played an important part in winning the war.

Sound Principle Established

And so, during the war, a wise and sound principle was established, and is still in force — the research people must be given a free hand to decide what basic research work shall or shall not be undertaken at the schools and universities and by industry. Of course, the Armed Forces do and should direct specific activities through the award of special research contracts.

Carrying this thought a little farther, it is clear in my mind that research and development work must be competitive. One thing we have learned from the defeat of the Nazis and the Japanese, and the failures of the Russians, is that

scientific progress cannot be legislated or achieved by dictum, nor can it follow a party line.

Between the two World Wars, though we had a tremendous accumulation of knowledge, this concept of the relationship between research and national security received almost no tangible recognition. Fortunately, when Hitler came into power, he went our apathy one better. Here let me quote Dr. Bush's excellent book, "Modern Arms and Free Men", in which he says of Hitler:

"He proceeded to destroy the great structure of German science. He did so by eliminating those scientists who did not fit into his distorted racial or political concepts and by regimenting the remainder. The fundamental scientist can do little of practical nature alone, but he is an essential link in a chain, and this fact Hitler did not understand. It is fortunate for the world that dictators are very likely to be obtuse, and beyond influence or conversion, when it comes to the subtle ways in which science, engineering, and industry are interlinked to produce more than obvious

progress in any field, and especially in the art of war."

That strange distortion of the human ego which Dr. Bush talks about may account for some of the silly things we have been hearing from totalitarian countries in the name of science — the claims of the Russians, for example, of inventing almost everything we have today, the distortions of an established biologic law in the field of genetics to prove a fallacious party line premise that environmental factors influence heredity.

In conclusion, I merely want to make the observation that insofar as adopting the right attitudes about Scientific Research, our government, our schools and universities, and our industrial companies are doing their bit toward insuring our nation's sincere desire for lasting world peace. It seems to me — again from the limited viewpoint of scientific research — that for the first time in our history we recognize the fact that we are all — government, industry, and university — in the same boat, and even more important we see that we can buck the troubled tides only by pulling on our oars with teamwork coordination. This we are accomplishing; this I feel confident we shall continue to practice with ever-increasing efficiency and effectiveness.

DR. ELMER W. ENGSTROM (LEFT), VICE PRESIDENT IN CHARGE OF RESEARCH, RCA LABORATORIES DIVISION, RECEIVES THE OUTSTANDING ACHIEVEMENT MEDAL OF THE UNIVERSITY OF MINNESOTA FROM J. L. MORRILL, UNIVERSITY PRESIDENT.



Injunction Sought by RCA-NBC on FCC Color Television Order

Complaint Declares Irreparable Injury will be Caused to Public, Manufacturers and Broadcasters by Standardizing on Incompatible System — FCC Order Called Illegal, Arbitrary and Capricious.

A TEMPORARY injunction to restrain the Federal Communications Commission immediately from enforcing its order for the adoption of incompatible color television standards, pending a hearing for a permanent injunction, was sought in Federal Court on October 17, 1950, by the Radio Corporation of America, National Broadcasting Company and RCA Victor Distributing Corporation, a wholly-owned subsidiary of RCA.

In a complaint filed in United States District Court in Chicago, RCA, NBC and the RCA Victor Distributing Corporation declared that the FCC order of October 10 adopting the color television method promoted by the Columbia Broadcasting System will result in irreparable injury and damage to the public, which has more than two billion dollars invested in television sets, to the nation's television broadcasters with their huge investments, and to the television manufacturing and distributing industry.

The complaint charged that the Order is contrary to the public interest, is arbitrary and capricious, exceeds the legal authority of the Commission and is not supported by the evidence.

"The effect of the Order," said the complaint, "is to authorize the commercial broadcasting of color programs upon CBS standards to the exclusion of the commercial broadcasting of color programs on any other color television standards. Thus, commercial broadcasting in accordance with the RCA system is prohibited, although it, unlike the CBS system, is compatible and can be received on existing receivers without modification and without degradation of picture quality, and which can be broadcast by all television broadcasters without dilution of their audience.

"Although the Commission has no jurisdiction over television set manufacturers, the Commission sought to require that such manufacturers agree with the Commission to build all their black-and-white television receivers according to specifications laid down by the Commission. These specifications required extensive alterations in present production model receivers. The Commission stated to the television set manufacturers that if they did not agree so to build their sets the Commission would forthwith and finally adopt the CBS color system.

"The Order adopting the incompatible CBS color system impairs the advantages of compatibility now possessed by the RCA system. If the Order standardizing upon the CBS color system remains in effect and receivers capable of operating on those standards are sold, the existence of those receivers in the hands of the public will operate as a deterrent to the adoption of the RCA system by the Commission at some future date."

Injury to the public, broadcasters and manufacturers, as a result of the FCC order, was emphasized in the complaint.

"Ten years having elapsed since the adoption of commercial television standards during which the public has invested approximately two billion dollars in television receivers," the complaint stated, "the Commission cannot consistently with its obligation to protect the public interest adopt a color system which is incompatible with the black-and-white system on which more than 30,000,000 of the public depend for their television service.

"The broadcasting of television programs on the CBS standards will deprive broadcasters of the television audience that has been grad-

ually built up over a period of four years, to the irreparable injury of the television broadcast service, and will deprive the existing television audience of a part of the television broadcast service, to the irreparable injury of the public interest."

Declaring that the Order cannot be sustained, the Court was informed that the Commission's staff engineer, who took the most active role throughout the hearing on behalf of the Commission's technical staff and who is in charge of the Commission's laboratory which tested the various color systems, invented a device usable only in the CBS system and applied for a patent thereon.

"On disclosure of this fact," the complaint asserted, "objection by RCA was overruled and the staff engineer continued in the proceedings as theretofore.

"On information and belief the Commission relied on this staff engineer's advice because the majority of the Commission have no engineering training and the decision of the Commission is stated to be based entirely upon engineering considerations.

"Although the engineer foreswore any financial interest in his device he did have professional prestige and reputation at stake which could be furthered only if the CBS system were adopted. On information and belief he advised the Commission in the absence of the parties and participated in the formulation and preparation of its Reports and the Order herein complained of."

The complaint pointed out that RCA and NBC have a present investment of approximately \$100,000,000 in television. It was not until 1941, however, that the Commission first set standards for commercial operation of black-and-