

RADIO AGE

RESEARCH • MANUFACTURING • COMMUNICATIONS • BROADCASTING • TELEVISION



OCTOBER 1955

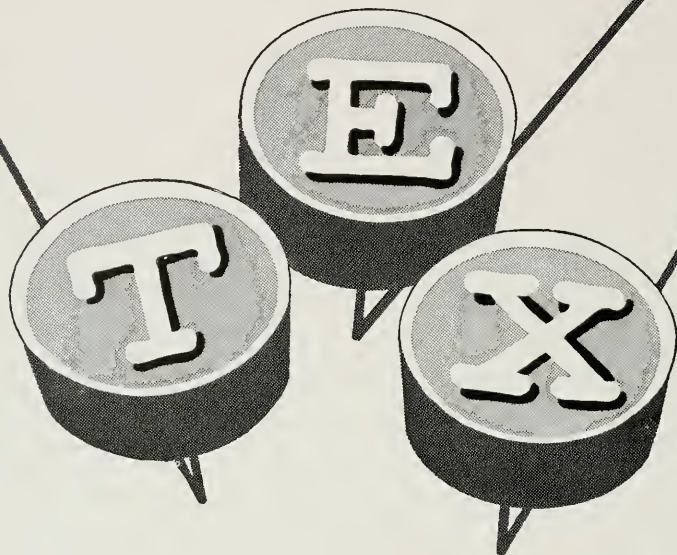


FOOTBALL ON COLOR TV

RCA COMMUNICATIONS, INC.

announces a significant development in its

Overseas Teleprinter Exchange Service



Effective immediately, RCA's Overseas Teleprinter Exchange Service, (TEX), is available to Bell System Teletypewriter Exchange Service (TWX) customers in the Metropolitan New York and Northern New Jersey areas.

These TWX customers can now place TEX calls on a customer-to-customer basis with more than 25,000 teleprinter users abroad by calling RCA at New York. During the next few months, TEX will be made available to every TWX customer in the United States.

Pioneered and developed by RCA Communications, Inc. in 1950, trans-Atlantic TEX service has grown from a single circuit with Holland to a network which now reaches 17 countries in Europe, Africa, and Latin America. TEX communication is two-way, and both parties, at the conclusion of a call, have a printed record of everything communicated.

RCA Communications, Inc. is proud to add this latest development in Overseas Teleprinter Exchange Service to the long list of radio, television, and electronic "firsts" which have been conceived and perfected by Radio Corporation of America.

RCA COMMUNICATIONS, INC.

66 Broad St., New York 4, N. Y.

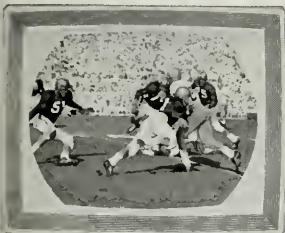
A Service of



Radio Age

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BROADCASTING • TELEVISION

OCTOBER 1955



COVER

Major college football games are being seen on color TV this season as part of the expanded NBC color schedule. (Story on Page 7).

NOTICE

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

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

Printed in U.S.A.

VOLUME 14 NUMBER 4

CONTENTS

	Page
The Moral Crisis of Our Age	3
Color Television for Medicine	5
RCA, NBC Accelerate Color TV Drive	7
Hundred Year Association Honors General Sarnoff	9
In Defense of a Continent	10
Parties Urged to Make Issue of Pay-TV	13
Two RCA Activities Join a New Corporation	14
More Recordings by the Boston Symphony	15
A Visit to the "RCA Hall of Progress"	16
The Need for Civil Defense Planning	18
Electronics and High-Speed Flight	19
RCA Equipment Withstands Atomic Blast	20
RCA's "Weather Eye" is Shown in Action	21
Electronic Horizons: A Revolution in Materials	22
Underwater TV for Fishery Research	24
RCA's Pocket-Size Two-Way Radio	25
Shoran Helps the Mapmakers	26
Evaluating Children's TV Programs	27
Prehistory at Princeton	29
Electronic Merchandising by NBC	30
RCA Transistor Radios	31
News in Brief	32



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

DAVID SARNOFF, *Chairman of the Board*
JOHN Q. CANNON, *Secretary*

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



RCA's new 3-Vidicon color TV camera covers an operation in Philadelphia. (See Page 5).

The Moral Crisis of Our Age

True Progress and Real Security Found in Principles of Universal Morality, Sarnoff Says in Accepting Notre Dame Honorary Degree

THE MORAL LAW has become the law of survival, Brig. General David Sarnoff, Chairman of the Board of RCA, declared in an address on Sept. 30 at the University of Notre Dame, where he received an Honorary Degree of Doctor of Science.

"Many more people now sense the need of a moral compass to steer by, if only because they recognize that today a single blundering act may prove fatal to our civilization, if not to the continuance of the race of man," he said.

General Sarnoff delivered the principal address and received the honorary degree at a special Notre Dame convocation marking the dedication of WNDU-TV, the University's new television station. He was cited as "an American genius of public communications" whose "contributions to the twentieth century wonders of radio and television have put our country and the world immeasurably into his debt." Rev. Theodore M. Hesburgh, C.S.C., Notre Dame president, conferred the degree at exercises in the University Drill Hall attended by more than 3,000 persons.

"In a simpler past, people and nations could afford to treat 'good will toward men' as an adornment of existence — desirable but not imperative," General Sarnoff said. "The penalties for failure to adhere to this ideal were harsh but within tolerable limits. There was, at worst, always a second chance. Today, the realization grows upon many of us that the ideal has ceased to be a luxury and has become an absolute necessity. Today, in a literal sense never before so apparent, the moral law has become the law of survival."

Says Crisis of Our Time is Moral

Stressing that the crisis of our time "is not political, or economic, but moral," General Sarnoff declared:

"The problems with which nations are so concerned — problems of boundaries, governments, trade, reduction of armaments — are, in the last analysis, symptoms rather than causes. Temporary solutions and delaying expedients may be found, but they cannot be dependable or enduring as long as the moral ailments from which the problems derive remain and fester.

"Most of these problems, of course, are related to the great struggle now under way between the Sovietized and the relatively free worlds. Outwardly that

struggle involves issues of power and territory and contrasting economic systems. But under the surface it is a deep-reaching contest between our Judeo-Christian civilization and a Godless way of life and thought.

"It is not the Communist economic theories or the Soviet political theories which threaten us. These we regard as false, but they do not engage our emotions. Our fears are engendered, in the final analysis, by the essential immorality of the Soviet system — by its open renunciation of truth, justice, kindness and other values we cherish. Our compassion is aroused for the victims of systematized brutality and the suppression of simple human rights."

Cites Kremlin's Denial of God

"It is the Kremlin's denial of God in words and in terrifying actions, that we recognize as the real menace. The great Russian writer and spiritual leader, Leo Tolstoy, once said that he feared the rise of 'the savage with the telephone.' He meant, of course, the moral savage armed with the tools of modern Science. Unhappily his prophetic image has turned into grim reality in his own country and the countries under its iron heel.

"To us, human life is sacred and inviolable. To the Communists, the individual is a cipher; people are so much brick and mortar for the construction of their soulless Utopia. They demolish a human community as nonchalantly as if it were an ant hill.

"That, I believe, is why the Church has been fighting Communism, courageously and consistently, refusing to compromise on essentials in the name of expedience. It is not an accident that totalitarian states, whether uniformed in Black, or Brown, or Red, find themselves in stubborn conflict with Religion. If the issues between them were merely political or economic, some modus vivendi might be found. But the overriding issue is always moral — the value of human rights, the sacredness of the individual soul — and therefore not subject to compromise in formulas of coexistence. Yes, the crisis of our time is fundamentally moral."

Without minimizing the need for military strength and an alert civil defense, General Sarnoff said that "the only real protection remaining is the spirit of man. Consequently we cannot afford to compromise with moral principles." Continuing, he said:

"But who can best alert and guide humanity under the new conditions we face? I do not think that the scientist — concerned with physical forces, and the politician — dealing with men as he finds them, are adequate for this task. The challenge must be met primarily by Religion, which has the greatest responsibility and the finest opportunity to advance the good cause of Peace on Earth.

Says Man is His Brother's Keeper

"Man must be awakened to the fact that, as never before, he is his brother's keeper. The human race must be made aware that unethical conduct now amounts to race suicide — that man's true progress and real security are to be found in the principles of universal morality.

"Science is coming close to providing a universal storehouse of plenty; but that will avail us nothing unless Religion leads mankind to practice the principles of universal morality.

"The final test of Science is not whether its accomplishments add to our comfort, knowledge and power, but whether it adds to our dignity as men, our sense of truth and beauty. It is a test Science cannot pass alone and unaided. I dare to suggest that the principle burden rests on Religion — to show to all men and institutions

the way to life based on a foundation of moral principles."

"To provide a peaceful and happy life on earth for all God's children, Science alone is not enough. Man's yearnings require the satisfactions he receives from Religion. Today, both Religion and Science have vital roles to play. They must play them together in a common effort. The University of Notre Dame with her record of splendid achievements stands as an inspiring symbol of that partnership."

Congratulates University on New TV Station

Congratulating Notre Dame on its "vision and initiative" in establishing its own television station, General Sarnoff said:

"Television on the campus is the modern counterpart of the blackboard and textbook. In your Convocation Program, I note Father Hesburgh's statement that 'a university can no more ignore television today than universities of the past could have ignored the discovery of printing.' I am impressed with the cogency and aptness of this comparison. We are too prone to make technological instruments the scapegoats for the sins of those who wield them. The products of modern Science are not in themselves good or bad; it is the way they are used that determines their value."



Brig. General David Sarnoff, center, receives honorary Doctor of Science degree from the Rev. Theodore M. Hesburgh, C.S.C., left, President of Notre Dame, at special convocation marking dedication of WNDU-TV, the University's new television station. At right is the Rev. Edmund P. Joyce, C.S.C., Executive Vice-President of the University.



Under the eye of the new RCA color TV camera for medical use, an operation is performed at Veterans Administration Hospital in Philadelphia for viewing by International College of Surgeons.

Color Television for Medicine

COLOR TELEVISION, expanding into a great new medium of mass communication and entertainment, is assuming added importance today as a vital new tool for medical science.

Two recent developments have emphasized the growing interest in compatible color TV as a means for transmitting on-the-spot information from the operating room and the pathological laboratory for diagnosis, consultation, and medical training:

—The nation's first installation of compatible color TV for hospital use was announced jointly on September 8 by the Walter Reed Army Medical Center, Washington, D. C., and RCA.

—More than 1,000 American and Canadian surgeons, meeting in Philadelphia, witnessed on September 12 a major operation televised from the operating room of a nearby hospital by means of a new color television camera designed by RCA specifically for medical use.

First Demonstration of New Camera

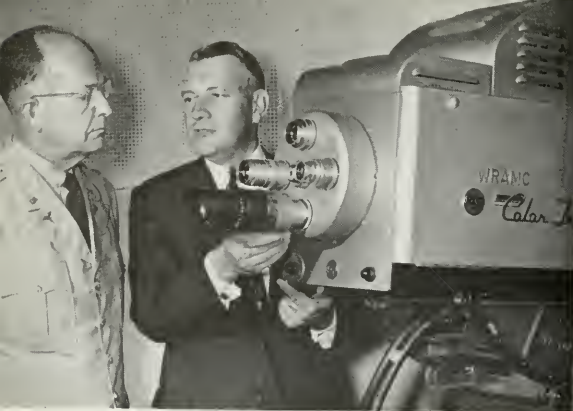
The Philadelphia demonstration, highlighting the opening session of the 20th Annual Congress of the United States and Canadian sections of the International College of Surgeons, was the first demonstration in action of the compact, 3-Vidicon color camera developed by scientists of the RCA Laboratories for televising

surgical operations. Under the "eye" of the new camera, Dr. W. G. Nichols, chief surgeon of the Veterans Administration Hospital in Philadelphia, removed an internal growth from a 65-year-old patient. The televised image was transmitted by a closed circuit to Philadelphia's Convention Hall, where it appeared on a 15 x 20 foot theater-size color television screen and on standard 21-inch RCA Victor color TV sets for viewing by one of the largest professional audiences ever to witness such an event simultaneously.

Two studio-type color cameras also were employed during the operation. One provided wide-range roving views of activities in the operating room, including Dr. Nichols' explanation of the surgery to be performed, a brief discussion of x-rays by Dr. George Wohl, Chief Radiologist, and assistance by Dr. Anthony Pietroluongo, Chief Pathologist, in a biopsy. The other camera, employed with a Bausch & Lomb Speed Matic Micro-projector, flashed views of a tissue specimen to the audience of surgeons.

Goldsmith Foresees "Super-Clinic of Future"

As a prelude to the demonstration, the surgeons heard a discussion by Dr. Alfred N. Goldsmith, New York television and electronics consultant, on the growing importance of color television as a medical tool. By



W. Walter Watts, Executive Vice-President, Electronic Products, of RCA, discusses operation of RCA color TV camera with Maj. General Leonard D. Heaton, Commanding General, Walter Reed Army Medical Center, where RCA will install compatible color television system for hospital use.

means of color television, Dr. Goldsmith said, widely separated hospitals may be interconnected and combined into "the super-clinic of the future."

Furthermore, he said, "any medium which permits round-table discussions, with sight and sound contacts, between as many groups as desired, and wherever located, is a highly important educational agency. It may well lead to a basically expanded type of educational institution. This 'University of the World' could have its lecture rooms and speakers' platforms all over the earth. It could tie together scientists, doctors, teachers, demonstrators and students into one vast and integrated audience. This is indeed something new under the sun, which will be a potent force for the welfare and health of humanity."

The surgeons heard a description of the new RCA equipment from Theodore A. Smith, Vice-President and General Manager of the RCA Engineering Products Division, who emphasized that the compatibility of the system permits transmission of medical information over commercial TV relay facilities directly from the operating room or laboratory to doctors and scientists throughout the country.

Details of Vidicon Camera

The new camera, mounted directly over the operating table, employs three Vidicon pickup tubes similar to the type widely used in RCA's industrial television system—one each for the red, green and blue primary colors of color TV. Use of the small pickup tubes has permitted design of a color camera approximately the same size and weight as standard black-and-white TV studio cameras. Associated with the camera in a compact

chain are packaged units for camera control, monitoring and power supply. The entire assembly, including equipment to feed signals into standard home color sets without alteration, weighs about 300 pounds.

The compact medical system was designed and built by scientists at RCA's David Sarnoff Research Center in Princeton, N. J., working under the direction of Dr. Vladimir K. Zworykin, Honorary Vice-President of RCA and Technical Consultant to RCA Laboratories.

Announcement of the plans for a color television installation at the Walter Reed Army Medical Center in Washington preceded and perhaps added emphasis to the Philadelphia demonstration for American and Canadian surgeons. The plans, involving a \$425,800 contract, were announced by Maj. General Leonard D. Heaton, Commanding General of the Walter Reed center, and W. W. Watts, Executive Vice-President, Electronic Products, of RCA.

To be completed early next year, the comprehensive installation will provide three complete color television systems for use by the Armed Forces Institute of Pathology, the Walter Reed Army Hospital, and the Army Medical Service Graduate School. The system will be operated by the Army Signal Corps.

"The compatible color television system will be the first such installation in the Washington area, and the largest and most modern TV studio in the military services," General Heaton said. "It will be available to other Defense Department agencies in the event of national emergencies. Ultimately, the system will be expanded to connect other Governmental hospitals and military medical installations into a medical network for exchange of information and services."

The installation, he added, will include three separate and complete color TV broadcast studios which can be operated independently, or joined for operation as a combined network. Each will be equipped for closed-circuit operation and for direct transmission to commercial TV network lines.

Mr. Watts disclosed that the installations also will include thirty RCA Victor 21-inch color TV receivers, which will be distributed among the three locations for viewing the pictures transmitted from the three broadcast studios. The transmitted pictures, he said, can be fed to a central control at the AFIP building for distribution over an RCA Antenaplex system to all 30 receivers.

Major equipment involved in the total installation includes RCA's latest studio color TV camera; three of the new 3-Vidicon cameras designed specifically for medical use; 30 21-inch color TV receivers; an Antenaplex distribution system; three monitrons, which serve as low-power closed-circuit transmitters; and associated audio, video, intercommunication, and test equipment.



Howdy Doody, shown with Buffalo Bob Smith and Heidi Doody, stars in new daytime color series.

RCA, NBC Accelerate Color TV Drive

EXPANSION of color television service is being accelerated by RCA and the National Broadcasting Company with important new developments in broadcast programming and in the production and merchandising of color television sets.

The major current advances in the color campaign are these:

— Expansion of NBC's color broadcasting schedule to nearly five times as many hours of color as were broadcast last season, including, for the first time, regular daytime color programs.

— Completion of arrangements by RCA to purchase an additional 285,000 square feet of building space at Lancaster, Pa., for accelerated production of color television picture tubes.

— Inauguration on September 18 of the most extensive advertising drive so far launched by the RCA Victor Television Division to promote its 21-inch color television receivers.

NBC Color Programming

Discussing the expansion of the NBC color schedule, Robert W. Sarnoff, Executive Vice-President of NBC, described it as a fulfillment of NBC's role in a two-pronged color TV campaign by NBC and its parent organization, RCA.

"RCA and NBC are pledged to make color television a truly mass medium as rapidly as possible," he said. "We expect the new NBC color schedule to be a powerful force in that direction."

As examples of the increase in color telecasts, he cited these comparisons:

In October, 1955, NBC will broadcast 37 hours of live studio color programs, in contrast with a total of 7 hours in October, 1954;

For November, 1955, the total will be 41 hours, as against 8½ hours in November, 1954;

In December, 1955, there will be 38 hours of color as against 9 hours in December, 1954.

These figures refer only to live studio color programming and do not include outside pickups such as those for the World Series and football games, and proposed mobile unit coverage for such programs as "Wide Wide World," "Today," "Home," and "Tonight," he said.

The expanded color schedule includes a number of major sports events, and special programs such as the "Spectaculars," a multi-million dollar motion picture and great dramas, in addition to a number of programs to be broadcast in color on a regular basis.

Besides the Davis Cup tennis matches, the World Series, and the Miami-Georgia Tech football game already broadcast, the color coverage of sports events will include the Notre Dame-Michigan State game on October 15; Iowa-Michigan on October 29, and Army-Navy on November 26.

Daytime Color Schedule

The innovation of regular daytime color presentations started on August 1 when 15-minute color segments were introduced on a daily basis on the popular "Home" program. This was followed on September 12 by the conversion to color of "Howdy Doody," which is now being presented from 5:30 to 6 p.m., New York time, Monday through Friday, from NBC's new color studio 3-K in Radio City, New York.

A third step will be taken on October 31 with introduction of "Matinee," an hour-long mid-afternoon color program to be presented from 3 to 4 p.m., New York time. Originating from NBC's Color City in Burbank, Calif., "Matinee" will consist of live dramatic shows produced in Hollywood by Al McCleery and presented as a "national theatre."

Referring to the start of daytime color programming, Mr. Sarnoff said: "We believe that daytime programs will increase customer traffic in dealer showrooms and generate even greater consumer interest."

The array of new color programming also includes these highlights:

1. Milton Berle has become the first leading television star to be presented in color on a regular basis, opening on September 27 with the first of his series of 13 evening color shows originating at Color City in Burbank;

2. "Color Spread," a new Sunday night Spectacular

series presented approximately one Sunday in four, opened on September 11 with "The Skin of Our Teeth," starring Helen Hayes and Mary Martin. Coming attractions in this series are a variety show starring Maurice Chevalier, and a pre-theatrical premiere of the new British color film, "The Constant Husband," starring Rex Harrison;

3. The Sunday afternoon "Hallmark Hall of Fame" series, featuring Maurice Evans, will open in color on October 23 with "Alice in Wonderland," following on November 20 with "The Devil's Disciple." Mr. Evans will produce the series and will star from time to time in its presentations.

"Babes in Toyland" and "Peter Pan"

4. The Max Liebman Spectaculars, inaugurated in color last season, will be continued in a series of Saturday night programs which includes a repetition of last year's successful presentation of "Babes in Toyland."

5. Producers' Showcase, an outstanding feature of last season, is continuing with a color presentation every fourth Monday from 8 to 9:30 p.m. As a part of the series, a repeat performance by Mary Martin in the memorable production of "Peter Pan" has been scheduled for next January 9.

6. On-the-spot color programming from all parts of the nation will be furnished by the NBC color mobile unit for portions of several shows, including the unique "Wide Wide World" as well as "Today," "Home," "Tonight," and "Howdy Doody."

To facilitate these extensive productions, NBC is further expanding its color facilities, already unmatched in the industry. The expansion includes opening of the new color studio 3-K in Radio City, installation of color equipment in the "Home" studio in New York, and acquisition of the Ziegfeld Theatre in New York as a color studio.

Expanding Picture Tube Production

RCA's plans for expansion of plant space in Lancaster, Pa., for color picture tube production were announced on September 14 by D. Y. Smith, Vice-President and General Manager, RCA Tube Division. Purchase of the additional 285,000 feet of building space provides RCA with more than 1,000,000 square feet of space at Lancaster, where all color picture production has been concentrated.

"This move marks another major step in RCA's program for stepped-up production of color picture

Helen Hayes, right, and Mary Martin starred in a two-hour color telecast of "The Skin of Our Teeth."



tubes," Mr. Smith said. "It is geared to meet the constantly mounting demand which will result from increased color television programming and the production of greater numbers of color TV receivers."

The property to be acquired consists of a group of buildings formerly occupied by Stehli & Company, Inc. It is located on a 14-acre tract near the present Lancaster plant of the Tube Division. RCA will take possession of the new facilities "as soon as possible," Mr. Smith said, adding that "immediate steps will then be taken to equip the new buildings for the efficient handling of color kinescopes and other electron tubes manufactured by RCA at Lancaster."

The new advertising drive by the RCA Victor Television Division was described by J. M. Williams, Manager, Advertising and Sales Promotion, as designed "to integrate with the mounting public interest and excitement being generated by the vastly increased number of hours of color programming to be telecast by NBC as well as other networks and local stations."



Opening NBC's color season was "The King and Mrs. Candle," starring Joan Greenwood and Cyril Ritchard.

Hundred Year Association Honors General Sarnoff

THE 1955 GOLD MEDAL of the Hundred Year Association of New York was presented on Sept. 29 to Brig. General David Sarnoff in recognition of his work as "pioneer, founder and leader in electronic communication."

The presentation was made by Mayor Robert F. Wagner of New York at the Association's annual dinner at the Waldorf-Astoria Hotel, attended by civic and business leaders. The citation accompanying the medal said that General Sarnoff's "accomplishments as a civic leader, patron of the arts, and head of the Radio Corporation of America make him the embodiment of the ideal of equal opportunity at work in a free society."

Among the tributes read at the dinner was one from President Eisenhower, written the day before he was stricken with a heart attack at the Summer White House in Denver. In a letter to Howard S. Cullman, Chairman of the dinner committee, the President said:

"Please extend my congratulations to General David Sarnoff and my greetings to the members of the Hundred Year Association who honor him September twenty-ninth. Through his brilliant accomplishments in the field of communications and his devoted and enlightened services to his country, he has contributed much, in the course of a distinguished career, to the welfare of his fellow men and to the cause of freedom and peace in the world.

"With all of you I am delighted to join in tribute to him and in warm best wishes for his continued achievement and happiness in the years to come."

In accepting the Gold Medal Award, General Sarnoff said that "dramatic as the advances in the past century have been, they are certain to be dwarfed by far-reaching changes to come."

"In this great land of ours science has flourished under freedom," he said. "It has been one of the conspicuous dimensions of freedom. Its victories will therefore be empty unless we safeguard our heritage of liberty, unless we protect at every step our freedom to think, to research, to invent and to develop. Precisely because change in the physical world is so rapid and tempestuous, the unchanging values that make man 'only a little lower than the angels' must be cherished and defended."

In another ceremony on Sept. 14, General Sarnoff received the "Hands of Applause" award of the Sales Executives Club of New York "for outstanding salesmanship and public service." The presentation was made at a luncheon of the club, at which a feature was the projection on a screen of a group of photographs especially chosen by *Life* magazine to portray "The David Sarnoff Story," with a commentary on General Sarnoff's career of fifty years in the electronics industry.

In Defense of a Continent



Domes housing electronic equipment stand against winter sky at an RCAF radar station.

by J. L. McMurray

Vice-President, Technical Operations,

RCA Victor Company, Ltd.

ACROSS A VAST northern territory stretching almost three thousand miles from east to west, military and electronics experts of the United States and Canada are building the most comprehensive defense system in history.

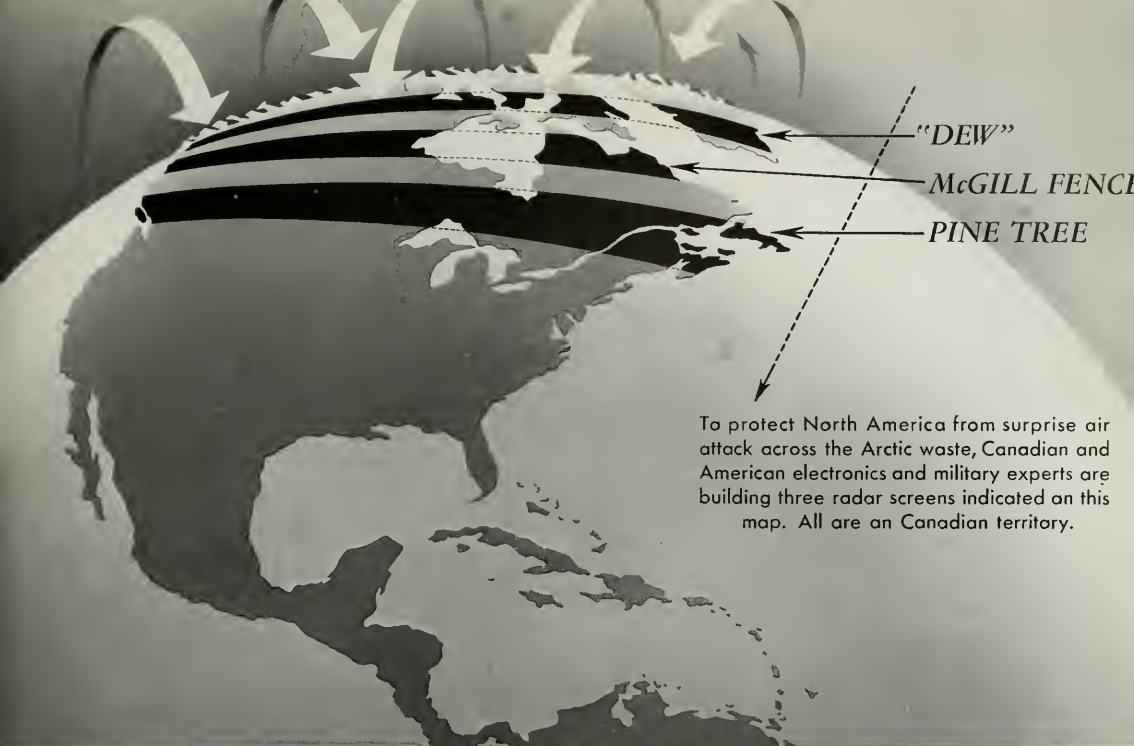
Unlike the Chinese Wall of ancient history, or the Maginot and Siegfried Lines which proved almost completely ineffectual in World War II, this North American defense system offers no physical obstruction to potential invaders. Ranging across the cold, barren and rugged territories of the Canadian North, it consists of an elaborate series of early warning radar stations which would flash back to defense headquarters the reports of an approaching enemy. Thanks to such early warning, defense units would be alerted, and defending planes would be in the air to meet the aerial invaders before

they reached targets of industrial and strategic importance.

Defense preparations in this era of terrible weapons, swift communications, and surprise attack have become highly scientific, extremely costly, and continental rather than purely national in scope. Hence the United States and Canada are working as close partners in the protection of the continent which they share. And on both sides of the border, RCA is providing intricate equipment, scientific development and electronic know-how to the armed forces.

Costs and Effort are Shared

In the over-all radar project, involving three defense lines, the costs, design and development of equipment and the manning of the warning stations are being shared by the two countries on a mutually agreed basis. Among the factors involved in the sharing are the relative sizes, populations and wealth of the two nations, plus the location on Canadian territory of a defense system also essential to the protection of the United States.



"DEW"

McGILL FENCE

PINE TREE

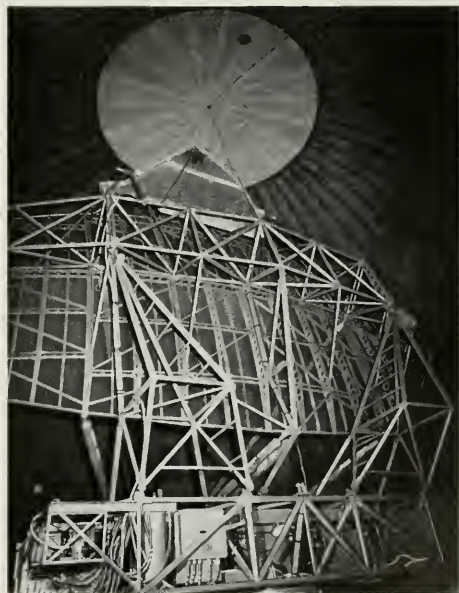
To protect North America from surprise air attack across the Arctic waste, Canadian and American electronics and military experts are building three radar screens indicated on this map. All are on Canadian territory.

Radar belts indicated on the map, above, consist of stations equipped with latest electronic gear. Shown at right is antenna which detects and tracks approaching aircraft: it is housed within a dome composed of rubber material.

RCA Victor Company, Limited, RCA's Canadian subsidiary, is actively involved in development of two of the three northern defense lines.

The first of these, called "Pinetree," is the closest to the Canadian-United States border. It is located relatively close to the thickly-populated strip of Canada adjacent to the United States—although in the vast distances of Canada, "relatively close" is still measured in hundreds of miles.

RCA Victor is one of the main equipment suppliers on the "Pinetree" project. One of the radar units at each station in the line carries the RCA Victor label, and RCA transmitters handle the greater part of the air-ground communications load. Construction of many of the "Pinetree" stations was carried out by RCA Victor engineers whose technical skills and familiarity with conditions in the Canadian North contributed substantially to the building of the line.



RCA microwave radio relay equipment is also used on the important "Pinetree" trunk communication system. And on the western portion of "Pinetree," hundreds of miles of communications facilities are provided by the North-West Telephone Company on a lease basis, with an integral part of the service provided by RCA relay equipment designed and manufactured by the Canadian company.

Far to the north, in and near the Canadian Arctic regions, the United States is building the DEW line, North America's first line of defense against approaching aircraft. This is an exclusively U. S. project, but approximately midway between DEW and "Pinetree," near the fifty-fifth parallel, work is progressing on the third line—the "Mid-Canada," commonly known as the "McGill Fence."

The equipment being installed on the "Mid-Canada" line involves new concepts of radar defense, and the RCA Victor Company has been associated with the engineering and production of this equipment since inception of the project. Working with scientists of the Canadian Defense Research Board and the Eaton Electronics Laboratory of McGill University in Montreal, RCA Victor engineers produced the first experimental and prototype equipment, and installed and operated extensive experimental systems both in the populated areas of Canada and in the far north.

RCA Scientists on Loan

Following these test operations, in which the value of the new system had been thoroughly proven, RCA Victor engineers began active participation in the overall planning of the "Mid-Canada." One form of this participation has been the loan of RCA Victor scientists to various government organizations associated with the project.

While a major part of RCA Canadian defense activities are concerned with the transcontinental early warning system, RCA also is helping to equip the Royal Canadian Air Force squadrons which depend upon the warning stations for any word of an invading force. RCA radar equipment used by RCAF auxiliary squadrons is helping to train new airmen, and the No. 1 Air Division of the RCAF now operating in Europe depends upon RCA Victor mobile microwave communications equipment for communication lines vital to its operation.

Basically, the North American continental defense system is dependent upon electronics rather than manpower. As the leading Canadian company in this field, RCA Victor has become a major part of the defense system upon which the safety of the United States as well as Canada may ultimately depend.



On a plotting table in surveillance room at an RCAF radar station, paths of unknown planes are noted.



On a plan position indicator scope, a member of the staff at one of the radar stations maintains watch.

Nesting on a lakeshore are living quarters for RCAF personnel who staff a radar station on one of the lines.



Parties Urged to Make Issue of Pay-TV

A RECOMMENDATION that free-television versus "fee-TV" be made an issue by candidates in the 1956 Presidential election was presented by Brig. General David Sarnoff in an address before the Advertising Club of Washington, in Washington, D.C., on Sept. 20.

"We hear a good deal these days, and are likely to hear more, about the relative merits of free-TV and fee-TV," he declared. "I was among those, a generation ago, who fought the self-same fight when broadcasting was a fledgling effort. So I naturally have strong convictions in the matter.

"It does seem to me, however, that Radio and Television Week offers an appropriate occasion to underline the importance of the subject — and the self-evident fact that, when all is said and done, it is the American people who should constitute the judge and jury. The ultimate decision, for good or ill, will have a direct impact upon *their* everyday life, *their* economy, *their* culture.

"I do not think I am exaggerating when I suggest that the issue is as important to our entire citizenry as was, for example, prohibition in its time. I feel justified in proposing therefore that it be submitted to the ultimate suffrage of public opinion — a suffrage based not on guesswork, slogans or prejudices, but on wider knowledge and understanding of all the facts.

"How can that knowledge and understanding, and a sense of the seriousness of the problem, be achieved? Well, we are approaching a Presidential election year, which is traditionally the time when questions of genuine concern to our whole population are thrown into the hopper of popular discussion.

Suggests Declaration by Candidates

"I recommend in all seriousness that the issue between free and paid television be considered by those who draft the programs of the major political parties; and that candidates for public office be encouraged to study the problem and declare themselves to the electorate. That seems to be the American way, the effective way, to educate the country on the subject in a broad democratic spirit. If this issue receives the forthright attention it deserves, the voters in our land will have the opportunity to decide the question for themselves."

Declaring that change is a natural and basic element in the radio-television industry, General Sarnoff asserted that the "big change" in television is the addition of color, which he said is certain to exert great impact on

the American home and the nation's economy. He added:

"We are now witnessing the beginning of the breakthrough of color television. And I believe that by the end of 1956, it will be a major factor in the industry.

"Virtually every product with which you of the advertising fraternity are concerned will increasingly be recognized and sold by its distinctive color combinations. The human eye, after all, has been created to behold, appreciate and discriminate colors in every phase of life. Color is to vision what melody is to sound.

"The alert broadcaster and sponsor is therefore embracing color to keep abreast of progress and to take fullest advantage of what television has to offer. It seems to me that the broadcaster who is in a position to add color to his programs and fails to do so is handicapped in the race for business. The sponsor who adopts a waiting attitude will lose markets to competitors who go all out for color."

General Sarnoff, suggesting that the observance of Radio and Television Week was a convenient time for those in the industry to take stock of achievements and of the direction in which industry is moving, continued:

"In scarcely more than a generation, a new industry that gears into or affects many other industries, has come into being and has flourished. Consider a few telltale figures:

"The electronics industry, of which radio and television are today the predominant elements, has 2,550 manufacturers and 3,730 broadcasters.

"The number of wholesale distributors, retail dealers and service shops, exceeds 150,000.

"The electronics industry now employs directly 1,600,000 people. Adding those who serve it indirectly brings the total to more than 3,000,000.

"Sales are now running at the rate of 11 billion dollars a year, making electronics the thirteenth largest industry in our country.

"Even more dramatic than the expansion of the industry has been its rapid rate of change. There have been so many 'revolutions' in this field that revolution may be set down as its natural condition. Consider one revealing fact:

"The Radio Corporation of America is geared to a billion dollars of business in the present year. Of this total, fully 80 percent will be products and services not on the market only ten years ago! Many of them, in fact, were little more than gleams in the eyes of our imaginative leaders back in 1945."

Two RCA Activities Join a New Corporation

RCA's stove and air conditioning departments have become part of a new corporation established in September by agreement among RCA, the Whirlpool Corporation and the Seeger Refrigerator Company. The new organization, known as the Whirlpool-Seeger Corporation, will manufacture and market major home appliances, including home laundry equipment, refrigerators, stoves and air conditioners, bearing the brand name "RCA-Whirlpool."

Details of the new association were worked out in early summer by the three companies and were approved subsequently by Whirlpool and Seeger stockholders. In a letter to Whirlpool stockholders in July, Elisha Gray, President of the Whirlpool Corporation, stated that the new company would have total assets of approximately \$130,000,000, and a net worth of about \$85,000,000, and that it would own and operate the businesses carried on by Seeger and Whirlpool, plus the stove and air conditioning divisions of RCA.

The Seeger Refrigerator Company has for many years manufactured the "Coldspot" refrigerators and freezers sold by Sears, Roebuck and Company. The Whirlpool Corporation has manufactured the "Kenmore" home laundry equipment sold by Sears, and since World War II has manufactured and sold home laundry equipment under the "Whirlpool" trademark through dealers and distributors. RCA's gas and electric stoves have been manufactured and sold under the trademark "RCA Estate," while its room air conditioners have been sold with the trademark "RCA."

Explains Reason for Merger

In a subsequent letter to Whirlpool stockholders prior to a special meeting held in September at which the merger was approved, Mr. Gray explained that "there are compelling economic reasons which justify the proposed merger."

"Trends in the appliance industry clearly indicate that success depends upon aggressive research, low cost manufacturing and comprehensive distribution," he said. "All of these requirements are best realized, in our opinion, through the larger volume and the broader lines which the merged company can offer."

After citing experience of the past fifteen years, during which, Mr. Gray wrote, only 8 out of 25 single or limited line manufacturers offering laundry equipment had survived as independents, he added:

"We believe that the proposed merger will put the

new company in a far stronger position to realize the economies of manufacture and distribution and to maintain a favorable competitive relationship to the larger companies which have had such a marked success over the past 15 years."

Sears, Roebuck, a stockholder in both Whirlpool and Seeger, continues as such in the new company. At the same time, RCA has a stock interest in the new company, but the total holdings of both RCA and Sears, amount to less than 50 percent of the total outstanding stock. By agreement between RCA and Sears, the latter said, the common stock owned by each in excess of 20 percent is to be voted by the President of Whirlpool-Seeger. The officers of the new corporation include Walter G. Seeger as Chairman of the Board and Mr. Gray as President and chief executive.

Mr. Gray explained that the balance of the new company's management personnel would be selected principally from the merging businesses, and that both Sears and RCA would have minority representation on the Board of Directors. Frank M. Folsom, President of RCA, and Charles M. Odorizzi, Executive Vice-President, Corporate Staff, RCA, are members of the Board of Directors of the new company.

Stock Arrangements

According to the statement to Whirlpool stockholders prior to the September meeting it was expected that the new corporation would, upon the merger becoming effective, have outstanding 5,792,816 shares of common stock with a par value of \$5 per share, and 211,122 shares of 4¼ percent cumulative convertible preferred stock with a par value of \$80 per share.

To Whirlpool stockholders, 3,086,024 shares of the common stock are being issued on a share for share basis.

To Seeger stockholders go 1,548,229 shares of common stock and 211,122 shares of preferred stock of Whirlpool-Seeger. These are being issued in the ratio of 1⅜ shares of common stock and 3/16 share of preferred stock for each outstanding share of Seeger common stock.

To RCA go 1,158,563 shares of Whirlpool-Seeger common stock in exchange for cash, the RCA stove, and air conditioning businesses, and an agreement covering use of the trademark "RCA" in combination with "Whirlpool" on products of the new company.

More Recordings by the Boston Symphony

THE BOSTON SYMPHONY ORCHESTRA, which established a major musical precedent in 1916 by becoming the first symphony orchestra in the nation to make phonograph records, renewed its 40-year recording association with RCA Victor Records with the signing of a long-term contract in mid-August at the Berkshire Music Festival in Tanglewood, near Lenox, Massachusetts.

The ceremonial signing, which took place during the course of "Tanglewood on Parade" festivities, extends an exclusive recording association involving both the Boston Symphony, under its conductor Charles Munch, and the Boston Pops Orchestra, conducted by Arthur Fiedler.

In a related ceremony several days later, Frank M. Folsom, President of RCA, presented a silver baton to Mr. Fiedler to commemorate Mr. Fiedler's twentieth year of recording with the Boston Pops Orchestra for RCA Victor. The presentation was made during Mr. Fiedler's first annual appearance of the 1955 season at the Boston Esplanade Concerts, held on the banks of the Charles River in Boston.

The Boston Symphony Orchestra held the first recording session under its new contract on August 15 and 16 at Symphony Hall, Boston. Conducting one session on the eve of his departure for a European holiday prior to the opening of the orchestra's fall season was Mr. Munch, with Pierre Monteux, guest conductor, conducting the second session.

Orchestra Founded in 1881

The Boston Symphony Orchestra, perhaps the most active in the country today, was founded in 1881 by Henry L. Higginson, Boston financier. By meeting all deficits out of his own pocket, Mr. Higginson founded the first permanent orchestra in the United States that was assured adequate financial support for achievement of the highest standard of excellence.

From 1881 until his death in 1919, Mr. Higginson built the orchestra with a watchful eye, engaging a series of conductors who brought it to a state of perfection that became a model for other symphony organizations. By 1918, he had exhausted his own financial resources, and after his death the following year the orchestra passed from its status as a privately owned organization to that of a public trust. Since Mr. Higginson's death, the tradition of perfection that he established has been

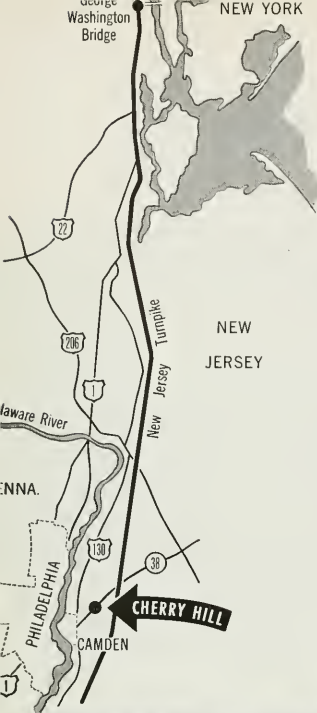


Left to right, at signing of new contract between Boston Symphony and RCA Victor, are Frank M. Folsom, President of RCA; Charles Munch conductor of the Boston Symphony, and Arthur Fiedler, conductor of the Boston Pops Orchestra.

carried on by conductors Pierre Monteux (1919-1924), Serge Koussevitsky (1924-1949), and Charles Munch, the present musical director.

To its annual fall and winter schedule of approximately 100 concerts per season, the orchestra adds a two-month series of Boston Pops concerts in Symphony Hall each spring under the direction of Mr. Fiedler, and an annual series of open air concerts on the Esplanade of the Charles River.

The Boston Symphony began its recording sessions in 1916 for the Victor Talking Machine Company, subsequently RCA Victor. The new contract was signed at Tanglewood by Henry B. Cabor, President of the Board of Trustees of the Boston Symphony; Thomas D. Perry, Jr., Manager, and Mr. Munch, the Music Director, and by Lawrence W. Kanaga, Vice President and Operations Manager, RCA Victor Records. The signing was witnessed by Mr. Folsom and by members of the Board of Trustees of the Boston Symphony.



A Visit to the RCA HALL OF PROGRESS

The milestones of electronic communication, from the earliest talking machines, radios and television sets to the fine instruments of today, form an impressive historical exhibit for the public at the "RCA Hall of Progress" in RCA's new center at Cherry Hill, N. J., six miles east of Camden, as shown on map at left. Highlights of the Exhibit are shown on these pages.

- 1 Visitors pause at entrance to the exhibition, located on the entrance floor of the administration building at the Cherry Hill center.
- 2 This 1916 statement of David Sarnoff heralded the establishment and rapid growth of radio broadcast service to the public in the '20's.
- 3 Early receivers and a replica of Marconi's historic trans-Atlantic set introduce a visitor to the story of radio and its earliest role.
- 4 Forerunner of today's RCA Victor high fidelity instruments was the 1895 hand-operated Berliner "Gram-o-phone" being demonstrated here.
- 5 This first automatic record changer in the RCA Victor line of 1927-28 was a major step forward in phonograph development.
- 6 The story of television is told in a succession of RCA sets including the pre-war projection model and the famed 630TS at right in this photo.



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The Need for Civil Defense Planning

WITH the advent of nuclear warfare, civil defense is as important as military defense, it was stated in a memorandum on "Civil Defense Planning," submitted by Brig. General David Sarnoff and presented by Governor Averell Harriman of New York to the Governors' Conference in Chicago during the summer.

The memorandum emphasized that civil defense and military defense are so intermeshed that it is no longer easy to define where one ends and the other begins. In it, General Sarnoff recommended that the President appoint a Temporary Commission to study the entire field of civil defense, and he outlined the purposes of such a commission as follows:

1. To formulate the basic requirements of a comprehensive, national non-military defense program which will match in actual and potential post-attack effectiveness our diplomatic and military programs.
2. To define a basis for integrating such a non-military defense program with our military program, both before and after attack; this will involve particularly the two crucial problems of manpower use and effective civil government in a damaged economy, as well as a host of related problems and conflicts.
3. To recommend an adequate organization structure in the Federal Government capable of coordinating and directing such a program.

4. To specify the changes and adjustments in legislation, appropriations, and Federal-state relations, which will be necessary to carry out the program.

"It appears vitally necessary to develop a *single national plan* under a *single national organization* with the requisite responsibility and authority," the memorandum stated. "A national plan of civil defense can pay no more attention to state lines than a falling bomb does. . . ."

"But that does not imply that the national government must do all the work and carry all the burden. Essential tasks will have to be shouldered by the states, counties, municipalities, as elements in regional and national entities. Nevertheless, during the emergency, local action must remain under centralized direction and not subject to weakening or diversion by local considerations. . . ."

"Breakdown in the rear — in terms of transportation, communications, production, manpower, food and medical supplies, business and credit, civil government — would quickly paralyze the combat forces. And a breakdown of such proportions could be imposed upon a nation in a few massive blows, unless it is thoroughly prepared to absorb immense damage and to carry on notwithstanding. Today the penalty for failure in civil defense, no less than on the military side, is defeat."

Honored by SMPTE

Dr. E. W. Engstrom, Executive Vice-President, Research and Engineering, of RCA, and Dr. Harry F. Olson, Director of the Acoustical and Electromechanical Research Laboratory, RCA Laboratories, were honored by the Society of Motion Picture and Television Engineers on October 4 for their contributions to the motion picture and television arts.

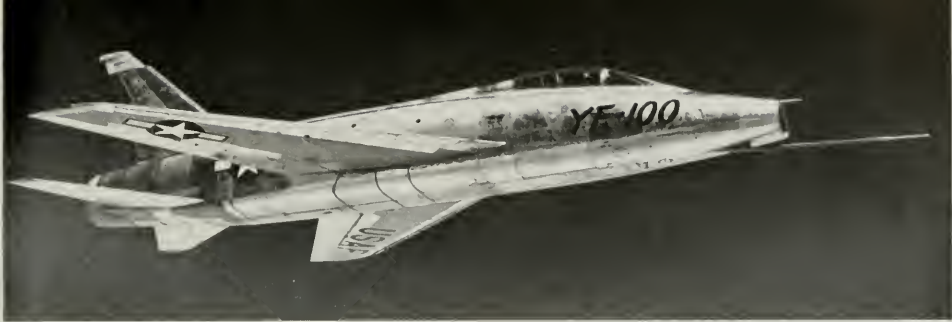
Dr. Engstrom received the society's Progress Medal Award, presented to "a candidate who by his inventions, research or development has contributed in a significant manner to the advancement of motion picture technology."

To Dr. Olson, the SMPTE presented the Samuel L. Warner Memorial Award for 1955. The award is made to "a candidate who has done outstanding work in the field of sound motion picture engineering and in the development of new and improved methods or apparatus designed for sound motion pictures."

New TEX Service

THE TRANSATLANTIC Teleprinter Exchange Service (TEX) of RCA Communications, which now provides two-way communication by teleprinter for subscribers in New York and Washington and 17 countries of Europe and Africa, will be connected at RCA operating centers to the Bell System TWX network in the United States by means of perforated tape, according to a recent announcement by Thompson H. Mitchell, President of RCA Communications.

The extended service, resulting from arrangements between RCA Communications and the American Telephone and Telegraph Company, initially will make it possible for TEX subscribers in Europe and Africa to communicate by teleprinter with TWX subscribers served by Bell System exchanges in the Metropolitan New York and Northern New Jersey areas, Mr. Mitchell said. Extension of the service throughout the United States is planned "for the near future," he added.



Typical of today's swift fighters is the North American F-100, shown in this U. S. Air Force photo.

Electronics and High-Speed Flight

THE INCREASING dependence of military aviation upon electronic controls to solve the problems of high-speed flight was underlined in special conferences of top-ranking military, government and industry leaders held in August and September under the joint sponsorship of the U. S. Air Force and RCA.

At the initial two-day conference, held in Philadelphia, designers, manufacturers and users of military electronics participated in discussion of advanced ideas and techniques for designing greater operating reliability into increasingly complex equipment. The second conference was held in September at Wright-Patterson Air Force Base, Dayton, Ohio. The keynote of the conferences was stated by Maj. General Thomas P. Gerrity, Assistant for Production Programming, Deputy Chief of Staff for Materiel, U.S.A.F., who told the group in Philadelphia:

"There is no aspect of operation and control of modern aircraft that does not depend in large measure on electronics. . . .

"Of necessity, because of the speed and altitude at which our aircraft now operate, we have substituted electronic equipment for human direction wherever possible—for navigation, fire control, bombing, detection, and evasion. While the substitution of electronics for human control has given us the high performance required of our aircraft, it also has greatly increased our dependence on equipment for the success of our missions. At the same time, it has imposed a heavy responsibility and obligation on the electronics industry to develop and produce equipment of the highest degree of reliability.

"Our dependence upon electronic controls will increase. If we are to solve the problems of high-speed flight which now confront us, the need for reliability will become even more urgent. Now is the time to

take a bold approach, to exploit new techniques in component development. We must set our sights on electronic aids that will continue to operate without failure at speeds of Mach 3 and above. (Mach 3 is three times the speed of sound at sea level, or about 2,000 miles per hour).

"I am confident that the electronics industry will find a solution to the urgent problem of combining high performance and reliability in the electronic equipment which we must have. Further, I feel that we in the Air Force, jointly with the Radio Corporation of America, have gained some very valuable experience over the past few years which will be helpful to industry in the solution of this problem."

Attending the conference were, in addition to top-ranking officers of all the military services, officials of the Department of Defense, and executives and engineers of the nation's principal electronic equipment and parts manufacturers, aircraft companies, and commercial airlines.

The first day's sessions were devoted primarily to discussions of numerous phases of equipment reliability, based on results obtained by three RCA efforts which have made important contributions to advancing reliability in military equipment. These are (1) establishment of an internal reliability organization devoted exclusively to the research and development of advanced reliability procedures; (2) development of procedures which make it possible for engineers to predict in the laboratory the reliability performance of new equipment in design or development, and (3) development of factory tests which enable engineers to determine the reliability performance of equipment under field conditions.

RCA Equipment Withstands Atomic Blast

RADIO BROADCAST and two-way mobile equipment built by RCA has withstood an atomic blast at a range of less than a mile and emerged in full operating condition, with only minor surface damage.

Official details on the effect of an atomic blast on commercial communications equipment, tested last spring at the Atomic Test Site on the Nevada desert, were cleared for release during the summer by authorities in Washington. The test was held under auspices of the Federal Civil Defense Administration, and included participation of member companies of the Radio-Electronics-Television Manufacturers Association.

RCA provided a standard commercial 250-watt radio transmitter and associated equipment for a fully operative AM broadcasting station, a complete mobile radio base station operating in the 25-to-50 megacycle range, and two mobile radio units installed in automobiles. All of the equipment was housed less than a mile from blast center, with the exception of one two-way radio located 10,500 feet away.

While the buildings and automobiles containing the equipment suffered partial-to-complete destruction, the transmitter, mobile station and two-way radios remained completely operative, suffering only surface damage caused by flying glass and debris. The blast had virtually no effect on the antenna tower of the AM station, although it snapped a smaller one erected for the mobile radio station.



Through window of building housing RCA broadcast equipment atomic tower is seen less than a mile away.

The 250-watt transmitter, housed in a building which was heavily damaged, was itself unscathed, although a power break occurred when power lines connected to an outside gasoline generator were snapped by falling telegraph poles. The broken lines were repaired in less than 15 minutes, and it was emphasized by RCA officials that the power failure in this specific case would have been obviated by underground wiring.

House Wrecked, Equipment Operative

The blast demolished the house in which the RCA mobile radio station was installed, hurling the station equipment from the second floor to the top of a pile of debris at ground level. Inspection teams arriving later on the scene found, however, that the equipment was operative.

The radio-equipped automobile closest to blast center, parked outside the transmitter building, was reported to have been badly wrecked. Its two-way radio, however, suffered only minor scratches and dents. The second car, parked 10,500 feet from blast center, suffered only slight damage, and its two-way radio was untouched.

The purpose of the test was to determine whether commercial electronic communications equipment would remain operative under detonation conditions, or, if failures developed, to determine the nature and extent of the damage, and the time and effort required to return the equipment to service.



Photos taken before (left) and after (below) atomic blast show that RCA transmitter and associated equipment emerged with only minor damage.



RCA's "Weather Eye" Is Shown in Action

RCA'S "WEATHER EYE" airborne weather radar system, which enables pilots to see and avoid storm centers that lie miles ahead in their paths, was demonstrated in action recently by United Air Lines, which is installing the equipment in its entire fleet of planes in a \$4,000,000 program.

Newsmen invited to New York's LaGuardia Airport were taken aloft in United's executive plane, the *Mainliner O'Connor*, to see the new RCA equipment in operation. In flights well beyond the New York area, they were shown at first hand how the system not only detects storms and turbulent air, but also provides the pilot with a picture of such distinctive terrain features as streams, mountains and shorelines.

The weather-detection system, developed by RCA and put into commercial production following extensive field tests, has been ordered by a number of American commercial airlines. In addition, it was announced in September that the equipment is to be installed within the next several months on DC-7C aircraft to be put into service next year by the British Overseas Airways Corporation and by Swissair, the airline of Switzerland.

A specific system for weather detection and reconnaissance, the RCA "weather eye" equipment differs substantially from military airborne radar, also being built by RCA, which is designed primarily for terrain mapping. Compact and light, the weather radar equipment weighs less than 125 pounds, compared with 185 pounds for military units now in use.

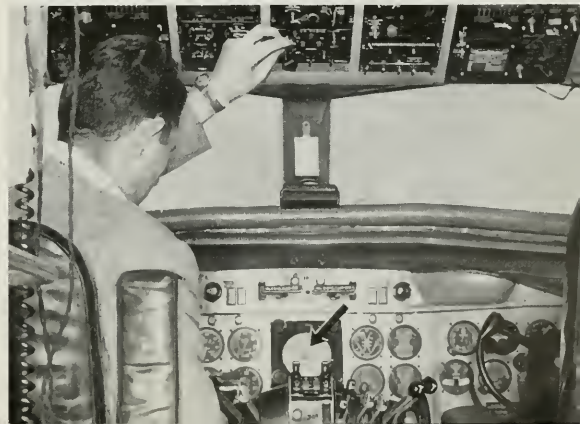
Its contribution to airline passenger comfort and safety is emphasized by an incident which occurred during evaluation tests by United Air Lines of the C-band (5.5 megacycle) equipment in 1953, when the system was still in the experimental stage. According to the United account, the DC-3 test plane, flying out of Denver, flew between cells of a cloudburst so violent that it inundated railroad tracks, washed out highway bridges, and flooded entire ranching communities. The Air Force weather station at Lowry Field, Denver, measured 3.10 inches of rainfall in 50 minutes. The RCA C-band radar, effectively penetrating the cloudburst, enabled the pilot to follow a smooth corridor.



RCA weather radar is housed in nose of this UAL Convair executive plane.



Nose of UAL Convair has been extended 28½ inches to house antenna and gear mechanism of RCA weather radar. Below, engineer checks radar installation in plane cockpit. Arrow indicates radar scope.



Electronic Horizons: A Revolution in Materials

ELECTRONIC SCIENCE, transformed by a revolution in the materials with which it works, is developing new techniques that will re-shape industry, promote greater prosperity, and increase individual well-being, according to Dr. E. W. Engstrom, Executive Vice-President, Research and Engineering, of RCA.

In an address on August 26 at the All-Industry Luncheon of the Western Electronics Show and Conference in San Francisco, Dr. Engstrom said:

"While obsolescence is overtaking the methods and the means upon which we have built our products and services in the past, our horizon is being expanded beyond any limits we may discern today. With an ever-increasing flow of new materials and a wealth of research and engineering skills, the electronic science that was confined, in the past, largely to the field of communications is today penetrating into all areas of our technology.

"The results of this invasion already are becoming evident in the changes wrought by electronics in the factory, the office, and the home. But these changes, radical as they may appear, give only a faint indication of the astonishing developments now brought within our reach by recent and continuing scientific discovery in the area of new materials. Tomorrow's systems, based on achievements in the laboratory today, promise to re-shape many of our industrial processes and business methods. They promise to carry our national economy to even higher levels. These trends, together with the perfection of many new electronic systems for the home, promise above all to increase our enjoyment and well-being as individuals."

Electron Action in Solid Materials

Describing the revolution in materials as a result of research based on controlled action of electrons in solid materials as opposed to the vacuum of the electron tube, Dr. Engstrom said:

"Today we have learned how to exercise this control with ever greater precision over the three basic types of electron action to perform the conducting, insulating and magnetic functions essential to all electronic circuits. At the same time, we have found both challenge and promise in the achievement of hitherto unfamiliar effects."

Dr. Engstrom described the progress of research in developing new or improved materials of greater efficiency in controlling the flow of current and creating magnetic fields, adding:



Dr. E. W. Engstrom.

"The revolution in materials is far more, however, than a process of discovering more efficient substitutes for the materials and techniques we have used in the past. Our sights are fixed not so much on the improvement of existing systems—although this is an inevitable result—but rather upon the creation of new systems and techniques to perform entirely new tasks.

"Here, a promising development relates to materials capable of interchanging light and electrical energy. In this area, we have for some time worked with photoconductors. Here the conductivity is influenced by light. With cathodoluminescence, we have worked with materials which emit visible light under electron bombardment. As we have improved these materials, our research has penetrated more deeply into the nature and potential use of the newer, more challenging phenomenon known as electroluminescence.

"Electroluminescent materials, placed directly between two electrodes, emit visible light under the influence of an electric current. Materials with this property do not exist in nature; they have been created entirely within our research laboratories through the greater understanding brought about by our earlier discoveries in the solid-state field. In some respects, we may consider them as symbolic of the advances which we may anticipate from today's research in materials."

Electroluminescent materials, Dr. Engstrom said, point the way to radical changes in television receivers.

"It appears now that our bulky picture tube, in which electron gun and phosphor screen are segregated at either end, will give way, in the future, to a thin layer of electroluminescent material within which the same functions are performed," he said. "This development, together with the miniaturization of other elements in our receiving circuits, will give us mural television. Its form will be that of a thin screen decorating a wall, and controlled remotely from a small box beside the viewer elsewhere in the room."

Among other developments resulting from the discovery of new materials, Dr. Engstrom emphasized the transistor and the electronic memory unit. In the transistor, he said, the ability to control electron action within small amounts of solid materials has resulted in a "novel and significant means of achieving control over a wide range of important electronic functions in devices that are tiny, rugged and simple." He added:

"The trend here, spurred largely by transistor development, is toward the creation of miniature electronic devices. Such devices are more economical of power, materials and space than their counterparts of the past and present. This trend has been aided by the parallel development of ferromagnetic materials which furnish small and efficient coupling transformers and antennas,

and of new dielectric materials for tiny condensers that may be used in transistorized circuits. Today's prototype of the pocket portable radio, incorporating these devices, heralds an era of personal and mass radio communication."

Summarizing the change brought about by new materials, Dr. Engstrom said that the simplicity and compactness that may now be achieved in electronic devices lead to two major results—"increased markets for present types of equipment because of decreased size and complexity, and new markets for newly conceived apparatus which were never before economically feasible."

Concluding, he said:

"So far, we have responded with enthusiasm to the challenge. In the areas of communications theory and systems engineering we have been taking full advantage of the opportunities offered by new materials. The pace has been swift, but there is every indication that its swiftness will increase, and that our progress today will breed further progress tomorrow. Clearly the organization which makes the best and fullest use of these materials will be in the forefront of progress. To an industry and to a research fraternity with a tradition of pioneering, this is a challenge we face with confidence regarding the achievements which will be ours."

Fifty Color TV Sets For New York Hotel

Fifty 21-inch RCA Victor color television receivers were installed during September in guest rooms at the Hotel Governor Clinton in New York in the nation's first substantial hotel installation of color TV. The hotel, which already has 700 RCA Victor 21-inch black-and-white sets in use, has placed the new color sets in various rooms and suites as part of the regular furnishings, at no extra charge to guests.

Signing of the contract for the installation is shown in the photograph at right. Here Leo A. Fields (second from left) President of the Hotel Governor Clinton, uses one of the new color sets as a desk for the contract signing. Looking on (left to right) are Bertram and Irwin Fields, executives of the hotel; Frank M. Folsom, President of RCA, and Arnold and Jay Wells, of Wells Television, Inc., which arranged for the installation as a representative of RCA in the hotel television field.



Underwater TV for Fishery Research

RCA'S INDUSTRIAL television system, which has provided a useful extension of human sight in many industrial, commercial and research operations, has now gone under water on a novel research assignment.

Working beneath the coastal waters around Florida, the closed-circuit system is helping the U. S. Fish and Wildlife Service, Department of the Interior, to observe and test the performance of experimental fishery methods and equipment under actual oceanic conditions. The work represents the first practical demonstration in this country of underwater television as a research tool for experimental fishery operations, and gives promise of a wide range of uses in marine biology and explorations.

Details of the operation were recently disclosed jointly by Theodore A. Smith, Vice-President and General Manager of RCA's Engineering Products Division, and Reidar F. Sand, Chief of the Fish and Wildlife Service's Gear Research and Development Program. Most recently, according to Mr. Sand, the Service has been employing closed-circuit television in connection with development of a midwater trawling net and in a remote study of shrimp in their natural habitat.

"Operation Fisheye"

The underwater TV experiments were initiated with "Operation Fisheye," conducted recently in the Gulf Stream off the east Florida coast, it was disclosed by Mr. Smith. A standard RCA ITV closed-circuit television system provided remote observations of experimental fishery gear towed at depths of more than 60 feet. The gear was illuminated only by natural sunlight, and the views produced on a TV monitor aboard



Reidar F. Sand, of U. S. Fish and Wildlife Service, readies diving bell which houses RCA TV camera used to observe fishery gear under water.

the U. S. research vessel *Pompano* were sufficiently clear and sharp for photographing by both still and motion picture cameras.

"Research in the field of fishery methods and equipment has been hampered by the limited access to direct observations of fishing gear in operation," Mr. Sand explained. "Advances in the design and construction of nets, trawls and other devices have resulted largely from trial and error, scanty information obtained from work with models, or information supplied by divers working with underwater film cameras.

"The advent of underwater TV research in other fields, indicating the possibilities of closed-circuit TV as a means for securing direct observation of fishing gear and methods, led to the assignment of such a project to the Service's Exploratory and Gear Development Station at Coral Gables, Florida."

Inquisitive fish are televised as they inspect experimental shrimp trap on ocean bottom. Photo was taken from screen of monitor.



In underwater operations, the RCA ITV camera is housed inside a watertight steel cylinder devised by technicians of the Fish and Wildlife Service. The cylinder is mounted in a submersible free-flooded, ball-type "diving bell." Atop the bell, and connected to it by a gear train and yoke assembly, is a watertight electrically driven power unit which permits remote control of the TV camera's scanning action—360 degrees around, and 90 degrees in elevation. What the camera "sees" is projected over a flexible multiconductor cable to a remote control TV monitor aboard the *Pompano*.

System Eliminates Risks

Mr. Sand pointed out that such a system can conceivably be operated at much greater depths than a diver can withstand, and for much longer periods of time. In addition, a television system eliminates any risks which

may be incurred when a diver operates an ordinary underwater film camera.

"The value of underwater television as an aid to investigations in marine biology has been demonstrated in these operations," Mr. Sand said. "In addition to gear research in the commercial fisheries, it may prove to be of assistance in the delineation and harvesting of clam, oyster and scallop beds. Closer views might also be obtained of bottom formations, bottom-type fish, and fish in their natural habitat. At the present time, these may be located only with difficulty by depth-sounding equipment.

"Furthermore, underwater television offers possibilities of direct monitoring of water temperatures, current flows, turbidity, and other oceanographic data related to the fisheries."

RCA's Pocket-Size Two-Way Radio

THE SMALLEST two-way FM radio ever built is now being tested by the U. S. Army Signal Corps and the Department of Defense as a possible communications device for squads and other small tactical military groups in the field. Developed experimentally by RCA's Engineering Products Division, the transistorized instrument is tiny enough to be carried in a shirt pocket, yet powerful enough for two-way communication over a quarter-mile range.

Announcement of the new development was made recently by Theodore A. Smith, Vice-President and General Manager of the Engineering Products Division, who disclosed that a quantity of the tiny transceivers had been purchased by the Signal Corps for testing by the Operations Research Office, Department of Defense, at Fort Carson, Colorado.

Uses Twelve Transistors

Mr. Smith disclosed these details of the unique instrument:

Built around twelve transistors and a single electron tube, the pocket-size transceiver is a new design approach to two-way portable radio equipment. The ultra-miniature unit was made possible by the use of transistors and new electronic circuitry which present at the same time advantages of high stability, dependable performance, long battery life, and ruggedness. In addition,

he said, the equipment is readily adaptable to fully automatic operation.

The transceiver incorporates two simple controls for two-way communication—a push-to-talk button, and a combination of on-off and volume-control switch. No tuning or adjustment is required, and the built-in microphone-earphone provides clearly audible reception when it is held several inches from the ear.

The receiving unit itself is small enough to store in a vest pocket. Produced as an independent unit for one-way communication, it could be used to link a platoon or squad leader with individual soldiers. The RCA transistorized transceiver weighs only 15 ounces and is about the size of a small tobacco tin.

Smallest portable two-way FM radio ever built is shown in Signal Corps field tests in Colorado. Tiny unit is strapped to soldier's helmet.





Shoran Helps the Mapmakers

SHORAN, the high-precision position-finding radar system developed by RCA during World War II and used for precision bombing and reconnaissance mapping as well as air navigation, is providing peacetime "seven league boots" for one of the most extensive land-mapping projects ever undertaken.

In only four summers, Shoran is making possible a geodetic and photographic grid survey of more than 500,000 square miles of the Canadian Far North—a project which would require decades with usual mapping techniques, according to officials of the aerial survey organization handling the project.

The Shoran equipment is being used by Canadian Aero Service Limited, of Ottawa, and its affiliate, Spartan Air Services, Limited, for the Army Survey Establishment of the Canadian Department of National Defense. Covering a largely unmapped area on both sides of the Arctic Circle, the territory is bounded on the southeast by Hudson Bay, on the north by the Northwest Passage, and on the west by the Mackenzie River.

Shoran operates this way: a plane equipped with Shoran transmits radio signals to each of two land-based Shoran stations, which receive and immediately relay the signals back to the plane. Automatic, electronic measurement of the time required for the signals to make the round trip permits computation of the plane's exact position in relation to the two fixed stations.

Six Land-Based Stations Used

According to Thomas M. O'Malley, President of Canadian Aero Service, Limited, the two organizations engaged in the survey are using six land-based Shoran field stations which are moved progressively as each unmapped section is geodetically and photographically surveyed. Two airborne Shoran units, he said, are at work in the survey aircraft.

The Canadian survey, now in its fourth year, is employing RCA Shoran because "it is the only long-range measuring device which provides the speed, accuracy and detail essential for completion of so extensive a project," Mr. O'Malley said.

"The position-finding electronic aid is enabling Canadian Aero and Spartan mapping crews to measure,

with unprecedented accuracy, many geographic points 200 to 300 miles apart," he added. "The aerial measurements are made in a fraction of the time required to measure points only several miles apart with conventional ground surveys."

Canadian Aero Service is part of the largest commercial aerial mapping and geophysical organization in the world—Aero Service Corporation, of Philadelphia. Mr. O'Malley said that use had been made of Shoran by Aero Service in the aerial photomapping of large areas in Liberia, where dense forest cover would make conventional ground surveys slow and costly.

It was pointed out that Aero Service already has carried out a survey of 85,000 square miles in the Bahamas for five major oil companies—a project involving an airborne magnetometer survey of an area 90 percent of which was covered by water and lacked adequate landmarks. Without Shoran, the RCA officials said, the survey would have been impossible: with Shoran, the oil reconnaissance survey was performed in less than a year.

This is one of six RCA Shoran ground stations used by Canadian Aero Service Ltd. in survey covering vast area of Canada's Far North.





Evaluating Children's TV Programs

by George Frey
Vice-President in Charge of
NBC Television Network Sales

THE FIRST MAJOR effort by a broadcasting network to obtain expert evaluation of its children's programming has resulted in a series of recommendations by the newly-created Children's Program Review Committee of the National Broadcasting Company.

The report, in part commendatory and in part critical, was made by the three members of the committee, all nationally known authorities—Mrs. Douglas Horton, a member of the Boards of Directors of RCA and NBC and former president of Wellesley College and wartime director of the WAVES; Dr. Frances Horwich, producer-star of NBC-TV's award-winning "Ding Dong School" and one of the country's leading specialists on primary education; and Dr. Robert M. Goldenson, psychologist, educator and author. The committee was created as part of our over-all NBC effort to increase the educational value of children's television.

At NBC we are deeply conscious of our position as broadcasters and our responsibilities in relation to social problems of the day. It is for this reason that the Children's Program Review Committee was created by NBC, and it is for this reason that we welcome the group's first report.

The report will be distributed to the producers of every children's and family-type program seen on NBC-TV and to the program directors of all NBC-owned stations. They will be asked to study the committee recommendations and give us their comments. We will then sit down with the committee to review the course of action to be taken. Out of this, we feel, will come a realistic program that will result in even higher standards of TV for the nation's children.

The committee had special praise for the policy of enlightenment through exposure.

"The maintenance of Program Analysis with its Responsibility Reports seems to us strong evidence of the sincerity of the company in carrying out this phase of its policy," the report said. "A comparison of the programs offered in March, 1955, with those offered in December, 1953, indicates that NBC has doubled the amount of 'integrated enlightenment' in this short time."

Use of Code is Commended

The committee likewise commended the broadcasters' code as adopted by NBC.

"We are impressed by the efforts of the company and all its representatives to interpret and apply the code carefully. Not only are we impressed by the Continuity Acceptance reports, but we note with real satisfaction the efforts of the producers and the performers in existing shows, to adapt their programs to conform to the code and to a wide range of public expectation."

The committee also praised NBC for appointing a Supervisor of Children's Programs.

In its critical sections the report called attention to such points as over-excitement, bad grammar, poor pronunciation, name calling, overdone slapstick, crudeness, action tending to frighten children, exploitation of children on shows, over-emphasis on money, misuse of commercials, insufficient enlightenment, and stereotypes in plot and character.

Commenting on this last point, the report noted: "There are too many stereotypes (Indians and others) in some of the older Western movies. The hero and the villain as symbols of all-good and all-bad tend to suggest black and white distinctions and misrepresent ordinary experience. We also question the emphasis on an unconquerable hero who takes all responsibility, and sometimes the law itself, into his own hands."



Dr. Frances Horwich



Dr. Robert M. Goldenson



Mrs. Douglas Horton

Such concerns as these, the committee said, call for general correction. To this end and to effect other improvements, the committee submitted the following recommendations:

1. The code might be amended to include positive emphasis on the company's intent to provide not only entertainment in its children's programs but such public service as the fostering of proper language, correct grammar, and a better understanding of the world.
2. Special attention might well be given to teenagers, who are apt to prefer family or adult shows but who seem to be neglected as compared with younger children.
3. The hour of 5 to 6 p.m. on weekdays and Saturday mornings might well be geared to the 6-12 year-old groups, since the willingness of older children to listen at those hours would help to keep the younger children interested and, in general, contribute to family harmony.
4. Exploitation of children might be avoided by such standards as these:

Any children used in commercials should be professional actors and actresses;

Children may take part in some games and skits and the like but they should be selected before air time and instructed as to what will be expected of them;

A child may be used on a show to "participate for the viewer" in receiving explanations or asking questions;

If audience shots of children are used, they should be simply shots of children as interested spectators, with no participation;

In no case should ad lib remarks be definitely elicited in order to make entertainment for adults.

5. Western programs might be used as vehicles for a positive program of enlightenment by including nature lore and folklore. The time now allocated to Westerns on some of the NBC-owned stations might be devoted to other types of adventure programs in order to achieve a better balance.

6. Children's programming as a whole should be better balanced to do fuller justice to the wide range of interests among young people.

7. When commercials are incorporated into children's shows and when performers are used to sponsor any commercial item, the commercial should conform to all the standards desirable for children's programs.

8. There should be less repetition of popular personalities and such popular features as cartoons and slapstick, if public reaction against them is to be avoided.

9. Sensitive areas of social behavior should be discussed with experts in the specialized fields, preferably by script writers. Advice to children by entertainers should be cleared with the Supervisor of Children's Programs.

10. NBC should follow up its recent innovations in program patterns with "an equally distinguished schedule of programming plans for children." Such a plan should be well-rounded, balanced, and properly supervised, and would require company organization toward long-range planning.

11. If the committee's recommendations could be distributed to producers of children's and family-type programs they might be of help in strengthening the position of people who would like to offer the public the best kind of programming.

12. The company might encourage a full-scale professional study of the effects of television, especially on children.



Archaeological diggings at the David Sarnoff Research Center in Princeton are examined by G. D. Nelson, left, Director of Laboratory Services, and Dr. Irving Wolff, foreground Vice-President, Research, while Dr. D. H. Ewing, left background, Administrative Director of RCA Laboratories, Research, removal of a pottery fragment by Dr. Donald Hartle, in charge of the project.

Prehistory at Princeton

RCA Laboratories, which normally specializes in looking ahead to the electronic future, glanced the other way recently just long enough to assist in the discovery of relics left by Indian hunters over a span of perhaps 3,000 years.

The relics have been excavated from a site on the property of the David Sarnoff Research Center in Princeton, N.J. Under the joint sponsorship of RCA Laboratories, the Archeological Society of New Jersey, and the New Jersey State Museum in Trenton, exploration of the site was carried out during the summer. The project was under supervision of Dr. Dorothy Cross, head of the Anthropology Division of Hunter College, New York, and the field work was conducted by Dr. Donald D. Hartle, archeologist on the Hunter College teaching staff.

The fruits of the search include more than 1,000 early artifacts, ranging through various types of pottery, spearheads, arrowheads, knives and grinding and hammering stones. According to expert analysis, they indicate that the site was used at different times as a camp, providing an unwritten history of the Indians who occupied the area in several eras starting with the Archaic Period (about 3,000 B.C. to 100 A.D.).

According to officials of the New Jersey State Museum, the RCA site has long been known by local collectors and was recorded during a state archeological

survey in 1940. Its importance became evident on a larger scale early this summer when the Museum dug several test-pit excavations. Among the discoveries were fragments of pottery tempered with steatite (soapstone), the earliest type of clay vessel manufactured by Indians of New Jersey, and a crude, crescent-shaped knife chipped out of shale. In addition, some later type tools and pottery indicated that the site had been inhabited at later times.

At this point, the State Museum discussed with RCA Laboratories the possibility of joint sponsorship in order to undertake excavation on a larger scale. RCA agreed, and, through the assistance of Dr. Douglas H. Ewing, Administrative Director of RCA Laboratories, the excavations were started by Dr. Hartle and continued through August.

Excavation of this sort is a precise and delicate operation. Digging is done in five-foot squares and in three-inch levels, down to a depth of 30 inches. With this depth control, the chronology of various types of artifacts can be determined according to their depth, since the earlier types are located farther down than the more recent ones. After dirt is removed, it is screened to catch small objects that might otherwise be overlooked. During the summer digging, 4,000 cubic feet of dirt were removed at the RCA site by this method.



NBC's Merchandising Department reviews program material with clients with the help of a rear-screen projector on which kinescope recordings or TV films are shown.

Electronic Merchandising by NBC

by Thomas McAvity
*Vice-President in Charge,
NBC Television Network*

ELECTRONICS is now being used to increase its advertising power in a novel merchandising program conducted by the National Broadcasting Company as a special service for television and radio sponsors.

The instrument is our Merchandising Department, whose function is to extend the selling power of television and radio advertising through the entire chain of product distribution, from the wholesale level to the retail store. It does this by a variety of techniques designed to call the widest attention on the part of wholesalers and retailers to broadcast advertising campaigns.

Today, keeping pace with trends toward increased self-service, keener competition among brands, and the growing value of shelf space for products in retail and wholesale markets, the department has adapted to its uses such electronic aids as closed-circuit television and kinescope recordings, or TV films.

The NBC Merchandising Department was established early in 1952 and was organized from the start on a nation-wide basis. The department consists of a New York headquarters and 12 merchandising districts covering more than 50 major markets across the nation. Manager of the department is Murray Heilweil, who has had long and varied experience in all phases of advertising and business. Assigned to each district is an NBC

Merchandising Supervisor, a man with wide experience in advertising, merchandising and sales.

In addition to this organization, the department is backed by our entire network, which provides a group of local operations of a kind available to no other advertising medium. Our affiliated stations add local power to a campaign with mailings, bulletins, on-the-air promotions and other assistance.

The Merchandising Department plans each campaign to fit the needs and meet the objectives of the individual sponsor. The campaign is developed in a meeting of the advertiser, the agency and the NBC merchandising staff. Complete and detailed instructions are then sent out to the NBC District Supervisors and in specific instances to the NBC affiliated stations carrying the sponsor's program.

As the campaign gets underway, our merchandising supervisors work closely with the advertisers' own sales staff, especially in the demonstration of electronic merchandising techniques. The supervisors also make contact with the merchandising staffs of NBC affiliated stations to coordinate the basic campaign with station activities and thus achieve the greatest possible local impact. They make personal calls on key wholesalers and jobbers to stimulate their interest and to gain preferred attention to the product at the point of sale. At the consumer level, they arrange promotions for all network programs, with special emphasis on daytime shows in which local sponsors may participate.

The department's use of kinescopes and closed-circuit telecasts has added a new feature to the techniques of merchandising. The staff is equipped with portable rear-screen projectors for showing kinescopes at advertiser sales meetings, to dealers and distributors, and at the point of sale itself in stores and supermarkets. With these projectors, the advertiser, NBC executives, and most important, the stars themselves are brought on the screen to talk about the advertising campaign and the part which each dealer and distributor can play in it.

The same effectiveness has been achieved with closed-circuit telecasts. Star Kist Tuna Company, a client on "Today," "Home," and "Tonight," recently gathered 2600 of its own sales representatives, as well as brokers and representatives of the country's leading food chains, in 50 television studios across the country to view a closed-circuit color telecast. Both the client and the brokers agreed that the show had an enthusiastic response from their customers, and that hence they themselves were given a flying start in the over-all campaign.

Emphasis on New Techniques

The department is constantly testing and developing new ideas, methods and services. Under the "Department Store of the Week" plan, 43 leading stores across the country related their efforts with NBC's "Home" show during a 14-month period with newspaper ads, special window features and interior store displays. Twelve NBC advertisers signed up for the NBC "Star Value Parade" promotion, which was joined by 48 grocery chains and supermarket groups representing 3,493 stores and which used more than 350,000 pieces of special display material. Other equally successful promotions include the "Christmas Shopping Festival," the "Father's Day Promotion" and the "Home Food Promotion."

In 1954, NBC's Merchandising Supervisors covered more than 1,000,000 miles, made over 15,000 personal calls on wholesalers, retailers and affiliated stations, and arranged for the distribution of more than 10,000,000 pieces of point-of-sale material. This year, with requests from advertisers running 40 per cent over 1954, accomplishments of the Merchandising Department will be correspondingly greater.

The sponsors who have used the NBC service range in size from the Aluminum Co. of America to the Appian Way Pizza Pie Co. Their enthusiasm has been summed up by an executive of American Home Foods, Inc., who wrote us:

"We have received glowing reports from our men in the field and I consider it an outstanding job and evidence of the far-sightedness of NBC to permit the latitude to do this for a sponsor."



RCA Transistor Radios

RCA'S POCKET-SIZE all-transistor radio and a larger transistorized portable comparing in size with the present RCA Victor "Personal" portable radio will make their commercial debut before the end of the year, according to plans announced recently by the RCA Victor Radio and "Victrola" Division.

The miniature portable, with six transistors, is housed in a plastic case measuring only $5\frac{1}{2}$ inches wide, $3\frac{1}{4}$ inches high, and $1\frac{1}{2}$ inches thick, making it suitable for carrying in a pocket or a handbag. The larger set, roughly twice as large, has seven transistors and is housed in a case of leather covered wood with aluminum trim.

Announcing plans to show the two sets to distributors during the autumn, James M. Toney, General Manager of the division, stated that the larger of the two portables will have a battery life "approximately four times that of the finest conventional portable with electron tubes." The miniature set also will have much longer battery life than ordinary portable radios, he added.

"Both radios will feature circuits especially designed for use with transistors, which tests indicate will deliver better all-around performance than any other transistor radio now on the market, and even superior to most conventional portables," he said. "In addition, these radios will have greater reliability and greater resistance to shock."

RCA news in brief



Salute from the Photographers

The Photographers Association of America honored RCA in August with a citation commending RCA "for outstanding research in the newest of photographic fields, television, and its relation to the more established branches of photography; and for significant contributions to the development of photographic equipment." RCA was the only representative of the television industry to be honored by the award, made for the first time by the Association to 26 individuals, publications and organizations.

Calling All Trucks . . .

Seven of the country's major ready-mix cement companies have acquired RCA two-way radio systems to link mixing plants with delivery trucks. Supplied by RCA's Engineering Products Division, the Carfone and Fleetone equipment will enable the station-equipped plants to maintain continuous control of truck fleets, promising reduction in operating costs, speedier customer service, and more efficient use of rolling stock. Largest of the installations has been made for Materials Service Company, Chicago, which is acquiring 167 Carfone mobile radios and eight base stations. The other companies are located in Cincinnati, Dayton, and Lakewood, Ohio; Indianapolis, Ind.; Seattle, Wash., and Johnson City, N. Y.

Candelabra

Two Dallas, Tex., television stations are being outfitted by RCA with a unique "candelabra" TV antenna which will permit them to share antenna site and tower while achieving the maximum height allowable under aeronautical regulations. Described by A. R. Hopkins, Manager, Broadcast Equipment Marketing, of RCA's Engineering Products Division, as "a radical approach to TV antenna design," the candelabra arrangement towers 1521 feet above the surrounding territory, making it the second tallest man-made structure in the world—the tallest being the 1572-foot tower installation erected for an RCA antenna in Oklahoma City. The cooperating Dallas stations are WFAA and KRDL.



Cap and Gown

Diplomas were awarded to 226 graduates of RCA Institutes, Inc., at commencement exercises in New York on August 12. The graduates included students from Argentina, Columbia, Venezuela, England, Israel, Transjordan, Greece and the British West Indies, and more than 60 percent of the class were veterans of World War II and the Korean War. The diplomas marked successful completion of courses of study in radio and television broadcasting, radio, and television servicing, advanced technology, and radiotelegraph operating.



Ernie

The combat television telecast from Fort Meade, Md., last summer won an "Ernie" award from The Airborne Association recently as "an outstanding contribution to national security by a telecast." The award, presented in Washington, is given by the association to honor the memory of Ernie Pyle, who was killed ten years ago while covering the fighting in the Pacific area. The program which won the award was presented by NBC in color on Aug. 11, 1954, during field exercises at Fort Meade demonstrating the use of television in warfare to give commanders a front-line view of operations.

Microwave Manual

A new 226-page service manual on wave propagation and other aspects of very-high frequency and microwave radio relay systems has just been published by the Government Service Department of the RCA Service Company, Inc., for the benefit of electronics engineers, technicians and students. Entitled "Point-to-Point Radio Relay Systems—44MC to 13000 MC," the manual was published originally under contract for the Air Force, which has now approved reprinting the commercial sale. Copies are available from the Government Service Department, RCA Service Company, Inc., Camden, N.J., at \$2 each, postpaid, or, for training purposes in quantities of 10 or more, at \$1.80 each, postpaid.

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COMPUTERS
GUIDED MISSILE ELECTRONICS
AVIATION ELECTRONICS
ELECTRON TUBES

FIELDS OF ENGINEERING ACTIVITY	TYPE OF DEGREE AND YEARS OF EXPERIENCE PREFERRED											
	Electrical Engineers			Mechanical Engineers			Physical Science			Chemistry Ceramics Glass Technology Metallurgy		
	1-2	2-3	4+	1-2	2-3	4+	1-2	2-3	4+	1-2	2-3	4+
SYSTEMS <i>(Integration of theory, equipments and environment to create and optimize major electronic concepts.)</i>												
AIRBORNE FIRE CONTROL			W			M				W		
DIGITAL DATA HANDLING DEVICES			M			C				M		
MISSILE AND RADAR			C			M				C		
INERTIAL NAVIGATION			M			X				M		
COMMUNICATIONS			M			M				C		
			C			I				I		
DESIGN • DEVELOPMENT												
KINESCOPES (B & W and COLOR), OSCILLOSCOPES —Electron Optics—Instrumental Analysis—Solid States (Phosphors, High Temperature Phenomena, Photosensitive Materials and Glass to Metal Sealing)	L	L	L	L	L	L	L	L	L	L	L	L
RECEIVING TUBES —Tube Design—Test and Application Engineering—Chemical and Physical Development—Methods and Process Engineering—Advanced Development	H	H	H			H	H			H	H	
SEMI-CONDUCTORS —Transistors—Semi-Conductor Devices—Materials	H	H	H					H	H	H		
MICROWAVE TUBES —Tube Development and Manufacture (Traveling Wave—Backward Wave)			H	H		H	H			H	H	
GAS, POWER AND PHOTO TUBES —Photosensitive Devices—Glass to Metal Sealing	L	L	L	L	L	L	L	L	L	L	L	L
AVIATION ELECTRONICS —Radar—Computers—Servo Mechanisms—Shock and Vibration—Circuitry—Remote Control—Heat Transfer—Sub-Miniaturization—Automatic Flight—Design for Automation—Transistorization	M	M	M	M	M	M	M	M	M	M	M	M
	X	X	X	C	C	C	X	X	X	C	C	C
COMPUTERS —Systems—Advanced Development—Circuitry—Assembly Design—Mechanisms—Programming	C	C	C	M	C	C	M	C	C	M	C	
	X	X	X	X	X	X	X	X	X	X	X	
RADAR —Circuitry—Antenna Design—Servo Systems—Gear Trains—Intricate Mechanisms—Fire Control	M	M	M	M	M	M	M	M	M	M	M	M
	C	C	C	C	C	C	C	C	C	C	C	C
	X	X	X	X	X	X	X	X	X	X	X	X
COMMUNICATIONS —Microwave—Aviation—Specialized Military Systems	C	C	C			C	C			C	C	
RADIO SYSTEMS —HF-VHF—Microwave—Propagation Analysis—Telephone, Telegraph Terminal Equipment			I	I		I	I			I	I	
MISSILE GUIDANCE —Systems Planning and Design—Radar—Fire Control—Shock Problems—Servo Mechanisms	M	M	M	M	M	M	M	M	M	M	M	M
COMPONENTS —Transformers—Coils—TV Deflection Yokes (Color or Monochrome)—Resistors	C	Z	Z	C	Z	Z	C	Z	Z	C	C	Z
	C	C	C	C	C	C	C	C	C	C	C	C
MACHINE DESIGN Mechanical and Electrical—Automatic or Semi-Automatic Machines			L	L		L	L			L	L	
						H	H					

Location Code: C—Camden, N.J. H—Harrison, N.J. I—International Div. L—Lancaster, Pa. M—Moorestown, N.J. W—Waltham, Mass. X—Los Angeles, Calif. Z—Findlay, Ohio

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A Great One-Hour Play

Every Day

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For the first time in television history—a great full-hour dramatic show every day! The new NBC MATINEE THEATER will bring you 260 different, full-hour plays a year. Every weekday afternoon, Monday through Friday, you can now enjoy serious dramas and comedies, originals and adaptations of books, revivals of classics and repeat performances of outstanding TV plays—a daily hour of fine dramatic entertainment that measures up to the highest standards of the best nighttime television series.

It's by far the biggest theatrical enterprise of all time, involving five separate production teams, scores of writers and hundreds of Hollywood's most accomplished actors. Supervising the production is Albert McCleery, who has produced such distinguished programs as *Cameo Theatre* and *Hallmark Hall of Fame*. For the most part, the NBC MATINEE THEATER shows will be done *live*—with all the immediacy and excitement of a "first night" event. And most of them will be presented in full color, as well as in black-and-white.

For absorbing, worthwhile entertainment, all year long, you have reservations every weekday at 3:00 p.m., New York Time, for great, full-hour plays on the new NBC MATINEE THEATER.

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