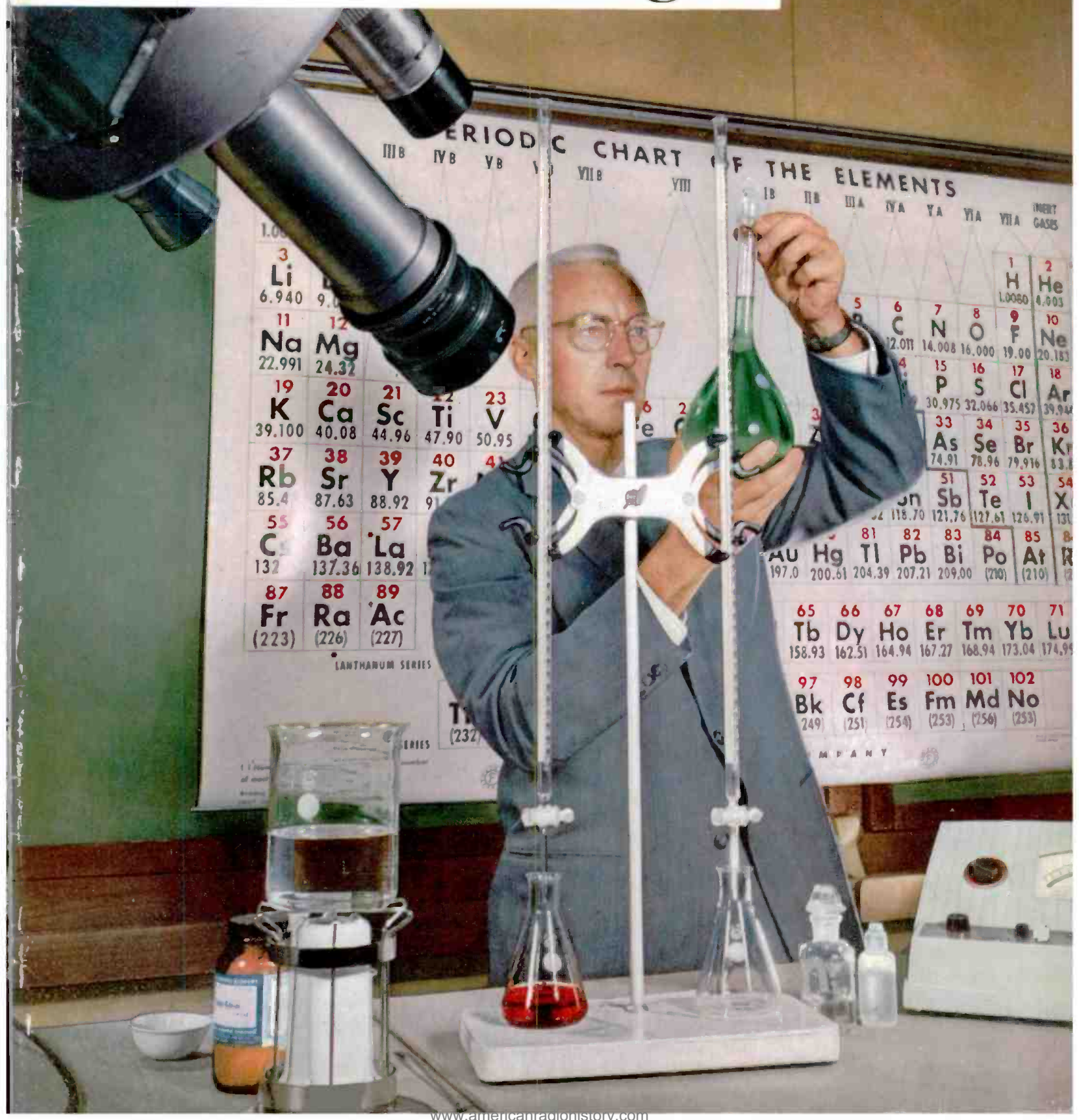




Electronic Age

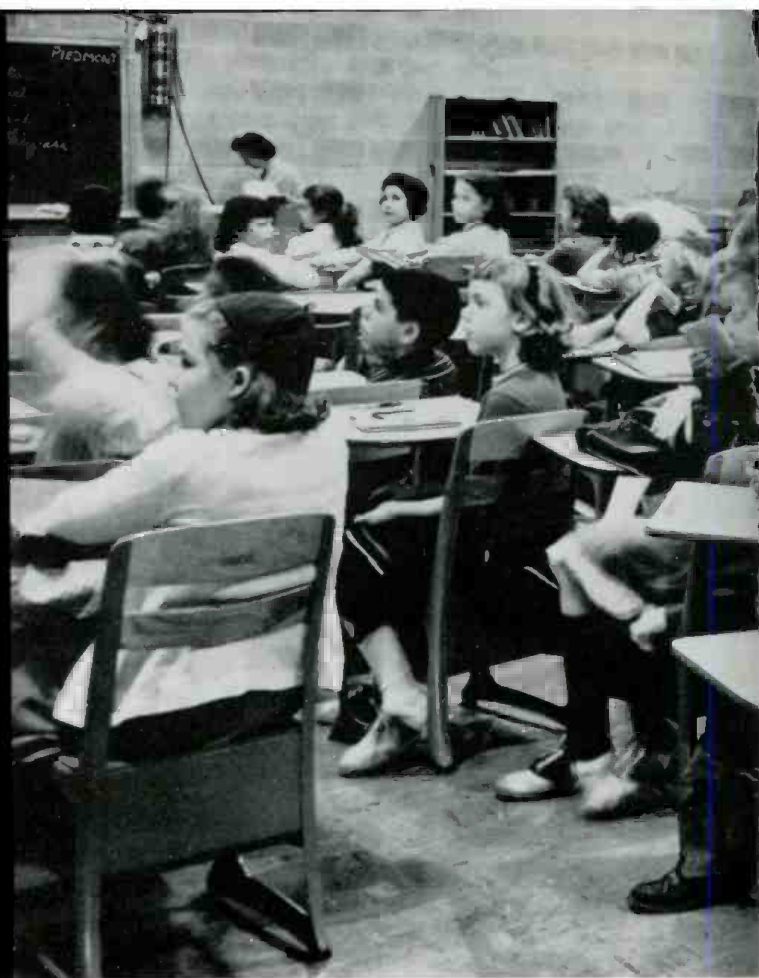
AUTUMN/1959



*Educational TV
is providing dramatic answers
to the shortage
of teachers and facilities*



"Continental Classroom's" Professor John F. Baxter.



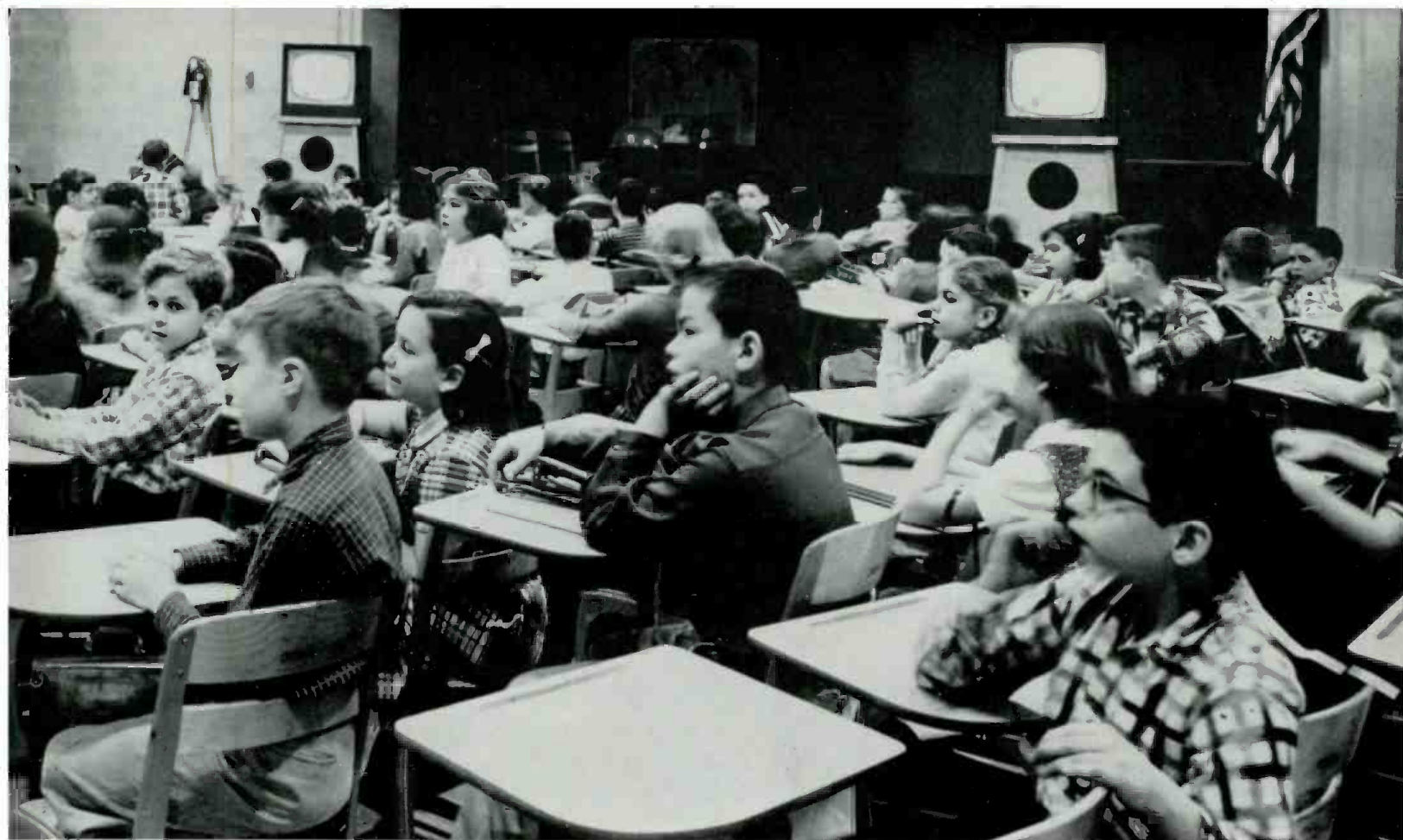
Three schools in Jefferson County, Kentucky, are piping closed-

TELEVISION and the CRISIS in our CLASSROOMS

ON THE COLOR TELEVISION SCREEN, Chemistry Professor John F. Baxter put a few drops of a pale fluid into each of two small beakers of distilled water. He explained that the purpose of his experiment was to illustrate gaseous diffusion — a spontaneous process in which one gas is liberated in another. To one beaker, he added ammonia. The pale fluid turned pink. Slowly, the vaporizing ammonia was absorbed by the water in the other beaker, and its fluid also turned pink. Across the nation, an estimated 500,000 early-rising students of NBC's "Continental Classroom" noted the experiment in their workbooks.

In a television studio just off tree-lined Washington Square in downtown Manhattan, Professor Harvey Zorbaugh held up a scale model of an earth satellite, then moved over to a table containing a replica of a Shakespearean theatre, and finally to another table holding a sleek cutaway model of an atomic submarine. As he described these typical "props" of the TV teacher, a dozen graduate students at New York University's RCA-sponsored Center for Instructional Television listened intently and jotted down notes.

The early-rising viewers before their home television screens and the graduate students at N. Y. U. are participants in two of the latest exciting experiments in educational television, the most far-reaching development on the classroom scene today.



circuit television instruction to classrooms. Local broadcasting station engineers have given valuable technical aid to educators.

Scarcely six years old, educational TV has burgeoned almost as rapidly as its commercial counterpart. Well over a million elementary and secondary school pupils and college students are now getting at least part of their formal instruction over television. Practically every course in the curriculum—from Arithmetic to Zoology and from Milton to Marriage—is being taught somewhere via TV. Educators are hailing television as an indispensable tool that can bring about a massive upgrading of our educational standards and help overcome the present critical shortages of teachers and classrooms.

A comprehensive, nation-wide survey just completed by the Radio Corporation of America shows sharply increasing activity in all forms of educational TV. This is the picture in brief:

There are forty-four non-commercial educational stations in operation and a dozen more are under construction.

There are some 300 closed-circuit installations in schools and colleges throughout the country.

Closed-circuit television is being used for instruction and training at twenty-one military bases.

The commercial stations and networks are offering an ever-increasing fare of educational and cultural programs, many of them for college credit.

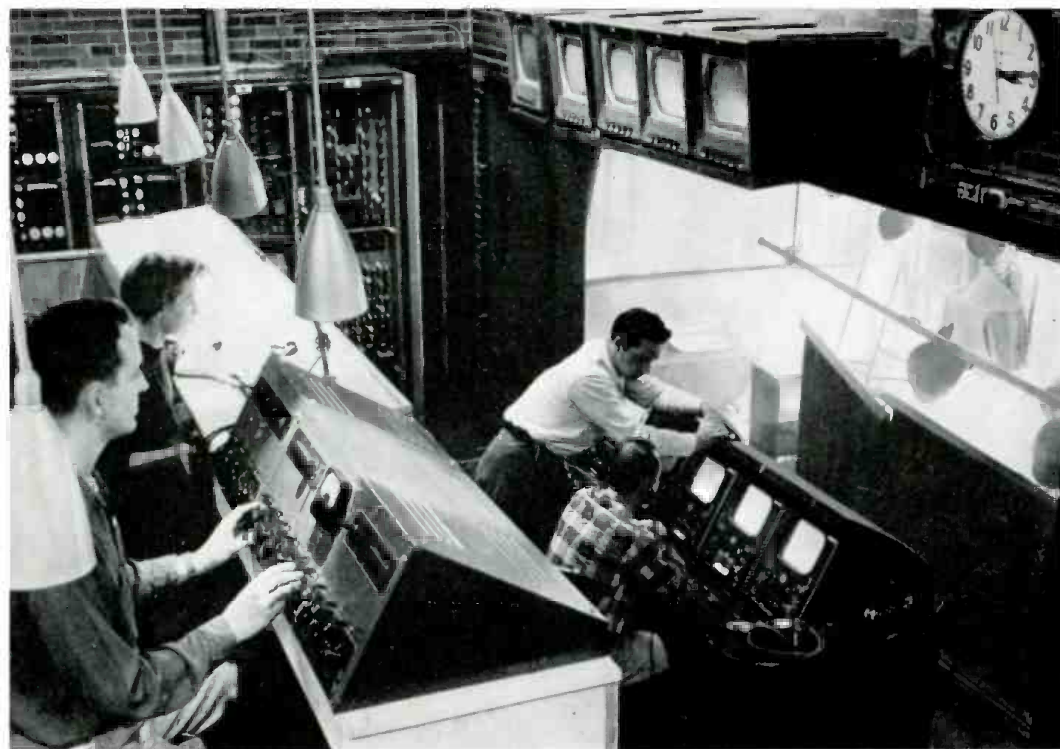
Educational television stations—specially licensed

by the Federal Communications Commission, and supported by state and local governments, business, civic and professional groups, and foundations—are now operating in every section of the United States. Many of them are RCA-equipped.

They have a potential listening audience of 70,000,000—more than 50 per cent larger than the nation's total public and private school enrollment. Surveys show that around 15,000,000 persons watch ETV stations on a fairly regular basis. They take the courses seriously too. In Chicago, for instance, 6,500 viewers sent in a half dollar each for study guides in a beginner's course in German. In Denver, 5,600 paid one dollar apiece for Spanish language guides.

The ETV stations broadcast more than 1,000 hours a week of informative and cultural programs for the home and school. Some of them are on the air from early morning until late at night. Their programming includes story-telling, music and drawing for pre-school youngsters, courses in the basic subjects for broadcast into classrooms, and adult-education programs such as Dr. Frank Baxter's series on Shakespeare, Dr. Edward Teller on Atomic Energy, and Dr. Benjamin Spock on Child Care.

The steady growth of ETV stations is paralleled by the increase in closed-circuit hook-ups in which lessons are piped by coaxial cable from one classroom



RCA-equipped television teaching center at the State University of Iowa uses three studio cameras plus audio and video control equipment. Students rotate assignments in the control room (left) which overlooks studio area. To meet problem of rising enrollment the university has built one of largest educational TV centers in the country. Studio facilities (below) are comparable to a professional broadcasting station.

or studio to a group of classrooms or several schools.

The largest closed-circuit television experiment is being conducted at Hagerstown, Maryland. There, 16,000 students, in thirty-six schools scattered over an area of 462 square miles, are getting part of their instruction via television.

On the college level, the most widely known project is at Penn State University which has a campus-wide network of six separate closed-circuit systems.

Already, a few closed-circuit installations are using color television. Largest of these is at the Army's Walter Reed Medical Center in Washington. Walter Reed uses a three-channel system, each with its own studio and control center, to pipe lectures and demonstrations not only to the various buildings in the huge center but to other points in the Washington area and even to medical conferences in New York. Ceiling-mounted cameras in an operating room provide more comprehensive views for students than they could get in an operating amphitheatre.

Because of their need for getting results quickly, the Armed Forces have been in the forefront in using new educational tools and techniques including television. The world's largest military closed-circuit educational TV system is now in operation at the U.S. Army Signal School at Fort Monmouth, New Jersey. The seven-channel system uses RCA television cameras for both live and film programming. A total of 468 receivers bring instruction courses and other training material to a student body of 6,000 men. Thirty-five TV receivers are situated in the base hospital so patients can keep pace with their classmates while recovering from illness.

An increasing number of educational and cultural



programs are being carried by commercial television stations and networks. An outstanding example is "Continental Classroom," now in its second year on NBC in the 6-to-7 a.m. time slot. This first college-level instruction ever offered on a national network is accredited by more than 300 colleges and universities from coast to coast. Its 500,000 viewers make it the world's largest classroom.

Designed primarily to help high school science teachers, the courses in Atomic Age Physics and Modern Chemistry have made early-risers out of housewives and G.I.'s, priests and prisoners, engineers and the physically handicapped. San Quentin Penitentiary makes the courses available to qualified inmates.

Professor Baxter, whose Modern Chemistry course is being televised in full color, is head of the General

Chemistry Division at the University of Florida. Professor Harvey E. White, who teaches the Atomic Age Physics course, is on the faculty of the University of California. Guest lecturers, including Nobel Prize winners, appear to discuss their specialties.

THE RESULTS SO FAR

How effective has television proved itself as a teaching tool?

While many TV experiments have not been under way long enough to have produced definitive results, there is wide agreement among educators on the following points:

1. *Most educational television experiments have grades as good as, or better than, conventional classroom instruction.* A nation-wide survey by The Ford Foundation, involving more than 100 public school systems, showed that TV students did better in sixty-eight out of 110 different kinds of comparisons. At Washington University in St. Louis, 46 per cent of the television students taking freshman mathematics earned A or B grades, as compared with 30 per cent of the non-TV students.

2. *Pupils themselves tend to prefer TV teaching.* Among the most frequently cited reasons are that there are fewer distractions, that the novelty of television makes the class more interesting, and that the teachers seem better prepared. At Hagerstown, 58 per cent of the pupils indicated that they thought they learned more in a classroom with television than without it, and 68 per cent said they found the televised lessons more interesting. One student described his reaction this way: "In class, the teacher talks to us. On television, she talks to me."

3. *Television can extend the influence of the most talented teachers.* On "Continental Classroom," Dr. White teaches as many students as it would take a conventional instructor, lecturing to five regular classes a day, 1,300 years to teach. Not long ago, fifth-graders in the Pittsburgh public and parochial schools had a memorable experience of seeing and hearing the poet Robert Frost read some of his verse. With television, the pupil in the rural school can get as expert instruction as the pupil in New York or Chicago. By bringing outstanding teaching to the attention of many classroom teachers, TV can also be a boon in improving the training of teachers themselves.

4. *Television can help a teacher cover subject material far more rapidly than can be done in conventional instruction.* An experiment with a literature course at New York University showed that three times as much material could be covered in a televised lecture because of the teachers' better preparation and the absence of interruptions. Tenth-grade geometry

students at Hagerstown were fully one month ahead of classes of previous years after the first six months of instruction. In some cities the teacher time saved through the use of television in large classes has made it possible to offer far more personalized instruction for both the slow learners and the gifted pupils.

5. *Television can bring about substantial savings in education.* At Penn State, a careful cost analysis for four specific courses disclosed that television teaching had saved as much as \$38,000. Put another way, the unit cost per student-credit for these four courses was \$2.72 for television teaching, against \$4.80 for conventional instruction. At Miami University, it was found that televised instruction could "break even" when 220 students were taught simultaneously. The Southern Regional Education Board's plan for a sixteen-state network, connecting 309 colleges and universities, contemplates an eventual cost of instruction per student semester hour of \$2.80, compared with present costs in some of the larger institutions in the South of \$12 to \$18.

CENTER FOR INSTRUCTIONAL TELEVISION

In these and other ways, the experiments with educational television have amply confirmed TV's ability to broaden the nation's educational horizons.

As The Ford Foundation and The Fund for the Advancement of Education, two sponsors of teaching by TV, explained in a recent report:

"Today the question is no longer *whether* television can play an important role in education. That question has been answered in the affirmative. . . . The question that now needs fuller exploration is *what kind* of a role television can play most effectively."

In an effort to explore this vital question, the Radio Corporation of America is collaborating with New York University on a Center for Instructional Television which began operation in September.

The first of its kind in the United States, the new Center has two sections — one concerned primarily with studio teaching and the other with the classroom use of televised presentations. The Center's program includes teacher-training, apprenticeships, workshops, consulting services, and research. RCA has provided \$100,000 in funds and equipment.

"The primary aim of RCA in supporting the Center," said RCA President John L. Burns, "is to benefit all education. The Center will bring together the best ideas of professional educators, responsible laymen in the education movement, broadcasters and experts in the graphic arts. Electronics can go a long way toward helping to raise today's educational standards and meet tomorrow's staggering needs if we are willing to take bold action." ■

BEST SHOW IN *Moscow*



Soviet Premier Khrushchev and Vice President Nixon watch playback of their informal debate at color TV studio at Moscow fair. RCA President John L. Burns (far right) had 16½-minute videotape of the exchange flown to United States for nationwide telecast.

Color TV display draws huge crowds at American National Exhibition

NEARLY THREE MILLION RUSSIANS who visited the American National Exhibition in Moscow had one word for the color television exhibit — “*velikolepno*” — meaning terrific!

They backed their enthusiasm with ballots in the automatic voting machine booths. When the Moscow fair closed, the RCA color television display was declared the most popular exhibit with visitors.

They crowded within camera range to gape and

grin at themselves on the TV monitors. They stared in fascination at the live demonstrations of cooking and needle work put on by American companies.

For the women who flocked to the big show at Sokolniki Park there never seemed to be enough programs on make-up, hair-do's, and the latest fashions. When it came to films, which took up approximately half of each day's eight hours of color programming, there was agreement among moppets and

oldsters as to which was the most popular—the animated cartoons.

Color television figured in a historic incident on the first day of the exhibition when Vice President Richard M. Nixon and Premier Nikita Khrushchev walked into the RCA studio and held their now famous informal debate on the merits of their respective systems. This discussion, which had begun privately a short time earlier at the Kremlin, was recorded in color on magnetic tape and played back immediately. Premier Khrushchev watched the rerun with intense interest, laughing at some of his own gestures. The Vice President and the Soviet leader agreed in calling for more exchange of information between their two countries. They also made a pact to broadcast the taped discussion on television in both Russia and the U. S. A. Flown to New York, the debate tape was widely shown on American networks and hailed as one of TV's top news stories.

RCA's six-week-long color TV exhibit also played Cupid to a Muscovite romance. A pretty eighteen-year-old girl named Olga appeared one day and asked to go on the air. She was handed a microphone.

"Sacha, Sacha, where are you?" she cried. "I have looked for you one hour."

When asked whether Sacha, her boy friend, was in the habit of disappearing, she replied: "Yes. He knows I love him and that's why he does these things. He knows I'll always be waiting."

There is no record of whether Sacha turned up.

One of the most popular performers at the color studio was a guitar-strumming cowboy singer named Norman Neureiter, of Baytown, Texas. Norman was one of the seventy-five young Russian-speaking Americans who served as guides at the exhibition. He appeared before the color camera in ten gallon hat, boots, and spurs. Singing in their own language, Texan Neureiter set Russians to humming such Western classics as "Red River Valley," which he translated to "Volga River Valley."

During an informal interview program on the closing day of the fair, a man in the balcony seized the microphone. "This should be permanent," he shouted. "We would like to see more Americans here and more Russians should see what you are showing." Then he melted into the crowd.

Russians are no different from people of other nationalities who see themselves on color TV for the first time, according to Richard Hooper, veteran manager of RCA color TV exhibits around the world.

"The Muscovites," he said, "reacted exactly the same as people in Tokyo or Chicago. The women adjust their hair, and the men grin at themselves and straighten their ties." ■



The Russian people got their first good look at color television at recent American National Exhibition. Above, visitors show interest in mobile color TV camera, and at right Muscovites watch monitor screen inside RCA television studio.



Gold-plated dome at Sokolniki Park symbolized American technology. Color TV exhibit was voted most popular.





Magnetic Memory Core

ELECTRONIC BRAINS...

SMARTER,
SMALLER,
SPEEDIER

Computers are helping
lick the paperwork
problems on Wall Street
and Main Street

WALL STREET, home of the bulls and the bears, is now making way for the "brains" — electronic brains, that is.

In the world's greatest financial market three to four million shares of stock are traded on an average day and time is indeed money! To speed up stock transactions and cut costs, the Radio Corporation of America is now building an Electronic Systems Center to take over much of the paperwork of brokerage firms. Located on the 16th floor of a new building at 45 Wall Street, the center will install equipment before the end of the year. One of the biggest Wall Street brokerage houses has already signed as a customer of the center, and other contracts are being negotiated. The center will back up RCA 501 users elsewhere and provide a realistic means for customers to determine the part electronic data processing may play in their operations.

The new Wall Street Center offers one more proof that electronic computers are growing more useful every day. Computing devices which, together with their input and output gear, comprise the data processing systems as we know them today, were born during World War II to solve urgent engineering problems. They are now increasingly taking over essential peacetime tasks in business, manufacturing, space-age technology and defense. Modern man could hardly hope to do his volume bookkeeping chores or guide the flight of his space vehicles without computers.

The amazing versatility of today's electronic devices is shown by the variety of tasks they are performing.

Computers are helping to design space vehicles and test the flight characteristics of supersonic aircraft.

They are helping the armed forces solve military problems of logistics and strategy, and assisting the weather bureau in long-range forecasting and in plotting the course of hurricanes.

Computers have been taught to play chess, compose music, predict genetic changes in fruit flies, and translate languages.

More prosaic yet equally important is the role of electronic data processing in creating the automated office of tomorrow. Here the computer promises to solve one of the most difficult problems faced by the American business man — how to handle the increasing mass of paperwork which threatens to swamp him.

Even though the nation's office force has doubled in less than 20 years and now numbers more than 9,000,000 people, it still can't keep pace with the torrent of paper. The electronic brain offers a dramatic solution. It promises, in fact, to eliminate the pieces of paper on which records are kept and store them instead in its own magnetic memory for high-speed processing and ready access.

The Wall Street Electronic Systems Center, for example, will use two RCA 501 Data Processing Systems to handle the paperwork involved in the buying and selling of securities. These are new "second generation" computers in which the bulky tubes and wiring of earlier systems have been replaced by transistors, magnetic cores, and compact printed circuits. Each 501, with its input equipment to receive data, its magnetic tape stations for storage, computer for processing, and high-speed printer for producing finished documents, will be able to handle the work of two or three large financial firms or a dozen small ones.

Today a broker in Wall Street receives orders for stock purchases or sales by telephone and teletype from his customers' representatives all over the country. A large firm makes several thousand trades a day for 50,000 or more active customers. Teletyped orders are handled by clerks who pluck them from a moving belt and telephone the order to the floor of the Stock Exchange. When the trade is completed the trade price and the broker representing the other party to the transaction are noted. The slips are then carried to the "figuration section," a room full of clattering office machines where punched cards are prepared as source documents to indicate the customer's account number, shares bought or sold, price, broker's commission, taxes, and postage. From these cards ledger sheets are printed totaling each day's sales, a confirmation notice is printed and sent to the customer, and monthly

statements are made up for customers. The cards are stored in large bins holding 250,000 records each.

The present process takes time, space and money. Such "back office" operations cost the broker 25 cents or more of every dollar he earns in commissions. The Electronic Systems Center, on the other hand, will provide a back office which a number of brokers can share. Their costs will be reduced in many cases, while processing will be four times as fast.

Plans call for the RCA center to be connected by direct confidential wire to the broker client, so that a clerk in the broker's office can operate a machine which will punch out a tape at the center. The punched paper tape will carry coded information on each transaction. From the tape the 501 computer will figure the trade, make accuracy checks, and issue information on tape for printed confirmations to be mailed directly to the customer or sent back by wire to the broker's office.

The computer will store all trade information, as well as provide magnetic tapes for printing daily ledger sheets, daily statements of commissions, and weekly statements of all active accounts. These will be printed on electronic printers in the individual brokerage house. Customer statements will be produced at the end of the month or at any desired interval.

By taking over the voluminous, repetitive aspects of his bookkeeping and accounting chores, the Electronic Systems Center will relieve the broker of his

Operator at control console of RCA 501 all-transistor computer receives instructions for handling a data processing assignment.



biggest headache. Today the broker must gear his back office operation to the average Wall Street business day when three to four million shares are traded. When a ten-million-share day hits the market the broker is swamped. All over the financial district lights burn late and the clerical staff works overtime. Exhaustion leads to costly mistakes.

The 501 computer system, on the other hand, has a built-in capacity to handle multi-million-share days without tiring its electronic circuitry. Moreover, within the next five to ten years financial experts foresee ten-million-share days as average rather than extraordinary, because of the growth of new companies, new listings, and widening share ownership.

The next few years will also see electronic data processing applied to many types of business far from Wall Street. There will be processing centers in hundreds of American cities.

Describing this new method of solving the paperwork problem, RCA President John L. Burns says:

"Up to now, full-scale electronic data processing systems could be justified only by some 3,000 of America's large corporations. The RCA system adds to these potential customers more than 30,000 companies who could profitably use data processing service."

It is probable that the small business man of the future will have a direct line to a computer center, just as he now has a wire to the telephone office. The electronic "service station" will receive his accounts in coded form, keep his books on magnetic tape instead of ledgers, and print out his bills, checks, and tax forms at high speed, double-checked for accuracy.

John E. Johnson, Vice-President and Marketing Manager of the RCA Electronic Data Processing Division, foresees the day when present methods of business accounting will be replaced by electronic systems. Every time a sale is rung up in a large department store, for example, the store's computer center will instantly perform all the necessary bookkeeping entries on magnetic tape and the item sold will be checked off the inventory. Management will know the exact state of business from hour to hour and from day to day. It will no longer be necessary to wait for monthly audits and inventory checks.

In addition to its medium-scale 501 computer, RCA recently introduced two related systems—the 502 for smaller businesses, and the 504 with additional capacity and speed for larger businesses and with the ability to solve complex engineering and scientific computations. In the 504 a new data-handling arithmetic technique doubles the speed of processing.

Another RCA innovation is the new 110 industrial control computer, an offspring of the 501 especially

suited to the automation of manufacturing processes. On plant production lines the 110 will receive reports from detection devices along the lines, act on the information, and signal control stations to take necessary action. It will automatically run many other industrial processes.

At the Navy Department Building in Washington an RCA 501 has been installed to maintain a vast up-to-the-minute inventory of every missile, shell, mine, torpedo, bomb, and bullet from the time it comes off the production line until it's fired off in training.

The Air Force recently leased a 501 Data Processing System to be used at the Air Reserve Center in Denver, Colorado, to keep track of the names, addresses, reserve status, and other essential information on more than half a million Air Force Reservists. The records of these reserve officers and airmen now occupy six miles of shelves. The 501 computer's magnetic memory will store the same records, ready for instant access, in the space required to park a jet fighter.

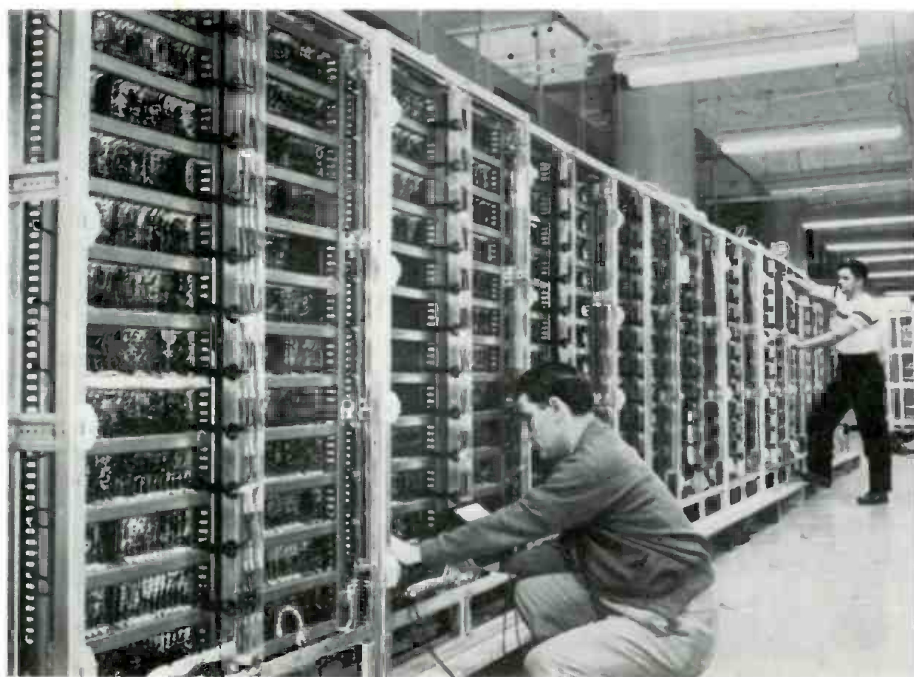
Besides handling such monumental tasks of industrial and office automation, electronic brains are doing essential space-age defense jobs. For example, at Vandenberg Air Force Base, California, the "count down" preparatory to launching the Atlas ICBM has been reduced from a matter of hours to minutes by means of computers. They check each step of the missile's fueling, make certain that all its controls are in operation, set its course and send it on its way.

Transistorized systems such as the 501 already represent marvels of electronic engineering, half as bulky and much faster in operation than equivalent tube systems. Yet the systems of tomorrow will be still smaller, faster, and more versatile. RCA engineers and research scientists are working toward super-miniature circuit elements—including resistor, transistor, and capacitor—which will be packaged a few thousandths to the cubic inch. In experiments at the RCA Laboratories, Princeton, N. J., new components have proved capable of performing computations at speeds of 500 million times a second.

Electronic computers are solving problems which would have been impossible a few years ago. Now they are being designed to recognize visual objects, understand written and spoken instructions, automatically translate Russian into English, and make simple decisions which approximate human thought processes.

With the computer's growing capacity to store vast amounts of information and process it at the speed of light, scientists are predicting that electronic systems will some day be capable of recording all the knowledge in the universe and making it immediately available. They say that the computer may eventually prove to be the most useful tool man ever invented. ■

RCA President John L. Burns, seated at console of new RCA 501 electronic data processing system, examines punched paper tape used to transfer information from its original form to magnetic tape. The 501 is the first all-transistor electronic "brain" system devised for business and government applications. The basic equipment fits into a room fifteen by twenty feet, and brings full-scale data processing within reach of the average company as well as the large corporation. Magnetic tape storage units can retain 9,000,000 characters on a single reel of tape. The high-speed printer turns out reports in plain English at 72,000 characters per minute.

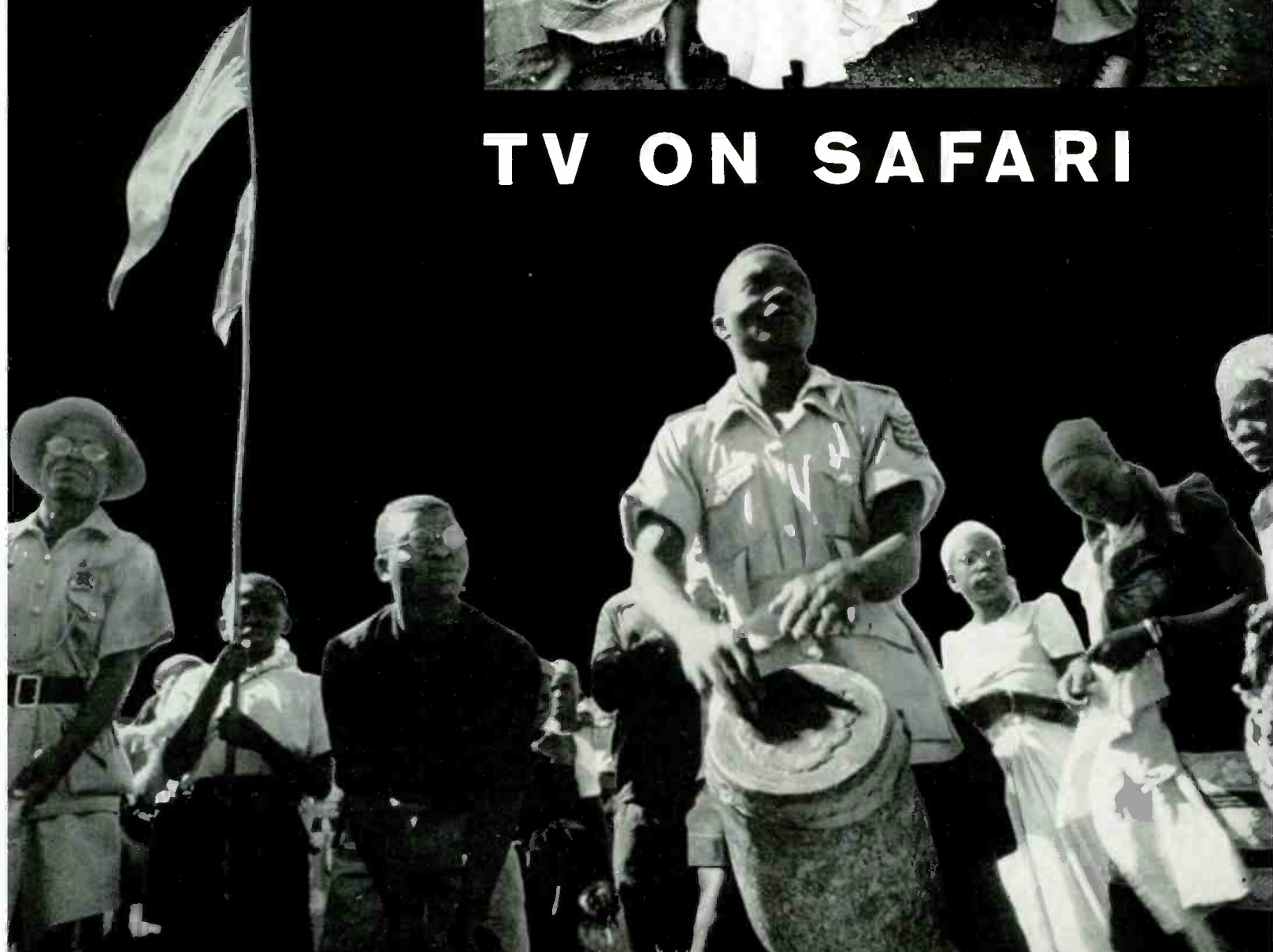


Electronic checkout. Units which form the logic system of the 501 data processing system are checked by technicians at RCA plant in Camden, N. J. Modules composed of small plastic wafers with the electronic components on one side and the connecting wiring printed on the other take up one-fourth the space required by vacuum tube units of the same capacity. Plug-in assemblies are inexpensive, reliable, and easy to install and maintain.

NBC News commentator
Chet Huntley
brings back a vivid
television film report
on "Emerging Africa"



TV ON SAFARI



CHET HUNTLEY recalls one scene — a group of dancers in Nyasaland — that sums up much of what he learned from his travels in Africa. The dancers were dressed in British army uniforms and, instead of the traditional wooden drums and horns, they were beating sawed-off oil drums and blowing British police whistles.

“This was a dance going back perhaps 500 years,” Huntley says. “But the dancers were dressed in the uniforms they had worn as members of the King’s African Rifles in World War II. They were a reminder that during the war African troops traveled in many parts of the world and saw an exciting new kind of life. Now they want that kind of life for themselves and they are determined to get it — by peaceful means if possible, by violence if necessary.”

Huntley headed the NBC News team of director Jack Sughrue, reporter-correspondent Piers Anderton, cameraman John Peters, and soundman Digby Jones,

special projects, is one of the busiest and most widely-traveled of the nation’s commentators. In one recent 12-month period he traveled more than 50,000 miles to gather material in such areas as Israel, France, Lebanon, Germany and Baffin Land.

Besides his special programs, he does a 15-minute telecast with David Brinkley each weekday night on the “Texaco Huntley-Brinkley Report,” a half-hour news telecast every Sunday, and a daily “News-on-the-Hour” broadcast on the NBC Radio Network.

Traveling by road and by air, Huntley found that the exotic Africa of the old movie travelogues is slipping into extinction. Northern and Southern Rhodesia and Nyasaland are well on their way to industrialization, turning out, among other things, about 40 per cent of the world’s copper production. Western influence had even spread to a remote Rhodesian village, where Huntley stopped and tried to coax a group of children to sing a primitive tribal song. After half an hour of



who spent two months in the Federation of the Rhodesias and Nyasaland shooting film for the program, “Too Late for Reason.” The news special, produced by Reuven Frank, was presented on Sunday night, September 13, as the first of two full-hour programs under the general title of “Emerging Africa.” The second special, now in preparation, will focus on the nations of West Africa.

The Huntley safari is but one of a growing number of NBC News expeditions fanning out over the nation and the world to bring events into the American living room with the freshness and actuality that are unique to television. William R. McAndrew, Vice President, NBC News, recently announced that more than 40 special news programs, many of them in peak nighttime viewing periods, would be presented on the NBC Television Network this season.

Chet Huntley, who is engaged in a number of these

pleading, he was rewarded with “This Old Man Came Rolling Home.”

“In Africa we have had a greater impact than we realize,” Huntley says. “Eastern Africans have adopted, not only our ways, but many of our heroes. They are great admirers of Patrick Henry, Thomas Paine, Franklin Roosevelt, Wendell Willkie, Louis Armstrong and a good many others. We found, on the other hand, that few of them have even heard of Marx, Lenin, Stalin or Khrushchev.

“Eastern Africa is seething with unrest, disquiet and a new awareness of politics,” Huntley says. “The Africans demand that they be made equal partners in the management of their countries. The Europeans, on the other hand, insist that the African is not yet ready to manage a sovereign nation in this mid-twentieth century. To this, the African replies that no one can deny him the right to try.” ■

Chet Huntley (above left) goes to the source for special TV news report on African unrest. At left, in scene from film, Nyasaland natives dance.



Gene Kelly, in magnificent Spanish setting, will star in NBC color special recorded on tape for Dec. 10 broadcast.

COLOR TELEVISION'S BIGGEST

More color shows and more color sets add up to a dazzling

MUSICAL SHOWS, dancing, comedy, and variety, Shakespearean dramas, the old West, and the blazing beauty of the South Seas — all are being telecast in color to make 1959-60 the most exciting season of home entertainment in history.

More Americans than ever before are buying color receivers in order to bring the rainbow into the living room. They will be able to look, throughout the season, at color programs every night of the week, plus many weekend hours, for a weekly average of twenty hours. The National Broadcasting Company has scheduled more than 285 hours of color programs for the fourth quarter of 1959 — an increase of forty-eight per cent over the same period last year.

John L. Burns, RCA President, comments that “the full potential of color television is expected to be realized during the next nine months or so because all the factors essential to color TV’s growth are now present in abundance.

“I am convinced that this year — and next — will see the final emergence of color TV as broadcasting’s third and greatest medium of public entertainment and industry profitability.”

NBC’s 1959-60 color schedule includes special shows of all kinds and varying lengths.

“Startime . . . TV’s Finest Hour” is a new Tuesday night series of sixty and ninety minute shows for the Ford Motor Company. The series of 39 programs will



Dinah Shore is NBC Sunday favorite in living color.

In "Moon and Sixpence" Laurence Olivier and Jean Marsh will bring South Sea magic to the color screen.



"Bonanza," first hour-long color TV Western series, is seen on NBC network every Saturday. Main characters are Nevada rancher and his three stalwart sons.

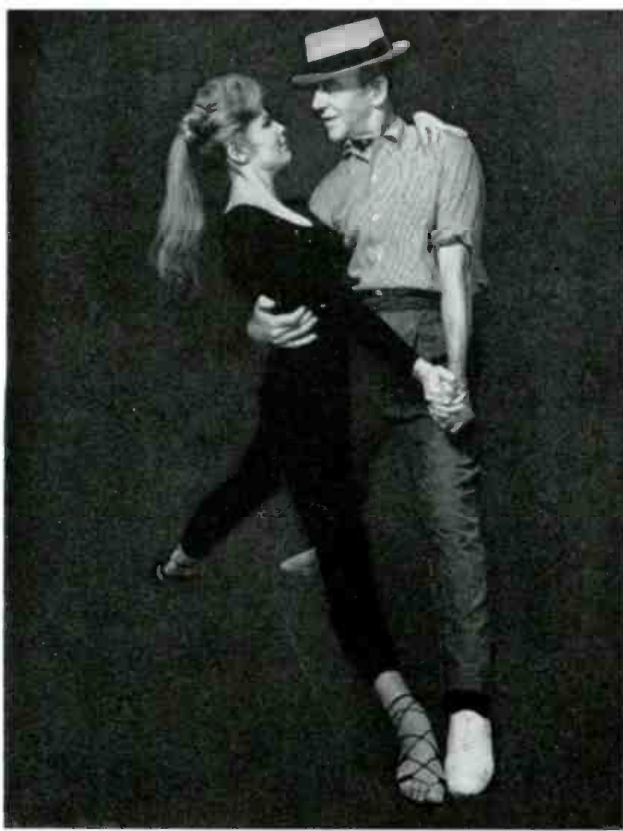


SEASON

kaleidoscope of entertainment



"An Evening with Jimmy Durante" was a recent hit in the big lineup of NBC-TV's Friday night specials. The colorcast brought Jimmy back to television for his first show in three years.



Color TV brings back Fred Astaire and Barrie Chase in one-hour special.

make up the biggest series of specials ever produced for a single television sponsor.

The NBC "Sunday Showcase" brings to the home color screen a series of original dramas written, directed, and performed by some of the best talent in show business. Milton Berle, Lana Turner, Danny Thomas and Peter Lawford recently brought viewers a fast hour of song, dance, and comedy, following an earlier two-part dramatization of the widely read Budd Schulberg novel, "What Makes Sammy Run."

Among other leading actors appearing in Living Color on NBC during the season are such stars as Sir Laurence Olivier, Geraldine Page, Maurice Evans, Julie Harris, Ingrid Bergman, Sir Alec Guinness, Gene Kelly, Fred Astaire, Ethel Merman, Jimmy Durante, Shirley Booth, James Stewart, and Frank Sinatra.

In a series of Friday night color specials, the deft comic technique of Art Carney will enliven dramatic treatments of works by Thornton Wilder, Woolcott Gibbs, James Thurber, and other well-known writers.

"Bonanza," the first hour-long western shown in color, is now being telecast every Saturday night.

Shakespeare's "Tempest" will be colorcast Feb. 3. Ronald Radd, Richard Burton, Tom Poston play Stephano, Caliban, Trinculo.



Established NBC favorites such as Dinah Shore, Perry Como, Steve Allen, Tennessee Ernie, and The Arthur Murray Party will all be seen in color.

On tap also this season is the most extensive sports schedule ever telecast in color. With the aid of a new RCA mobile color unit NBC broadcast the 1959 Davis Cup matches and the 1959 World Series.

Seven regular season college football games and four post-season grid attractions will be presented in color during 1959 and January, 1960.

Other highlights of NBC's most colorful season in history are the colorcasts of four NBC Opera Company presentations, beginning with a two-hour production of Beethoven's "Fidelio" in November, and the colorcasting of six dramatic specials titled "Our American Heritage," dealing with little-known incidents in the careers of great Americans.

The swing to color also reaches into the educational field with the beginning of the new Continental Classroom two-semester college-level course in Modern Chemistry being televised in color Monday through Friday on NBC. The course is the first to be colorcast on a network educational program.

At the same time that the number of color set owners and the hours of color programming are increasing steadily, so are the number of stations in the United States equipped for color TV. Currently there are 350 television stations with facilities for carrying color network shows. A total of 109 stations can transmit color film material, and thirty-nine stations have color cameras for their own local shows.

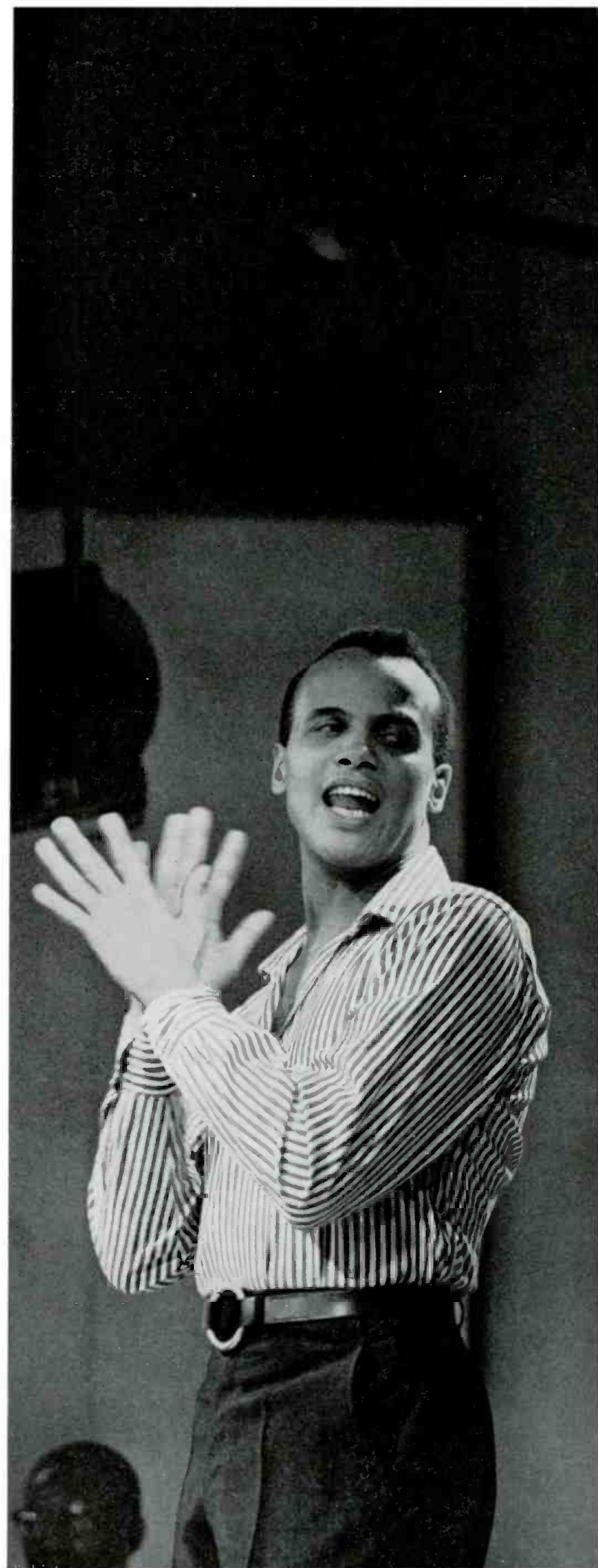
Color merchandising trends are extremely favorable and indicate that factory sales of color sets this year will be about twenty-five per cent above 1958 in numbers of sets sold. Many local promotions are planned, and distributors and dealers are enthusiastic about the quality of the color sets in the new RCA Victor "Newsmaker" television line. Some dealers report that color TV sales equal black-and-white sales in dollar volume.

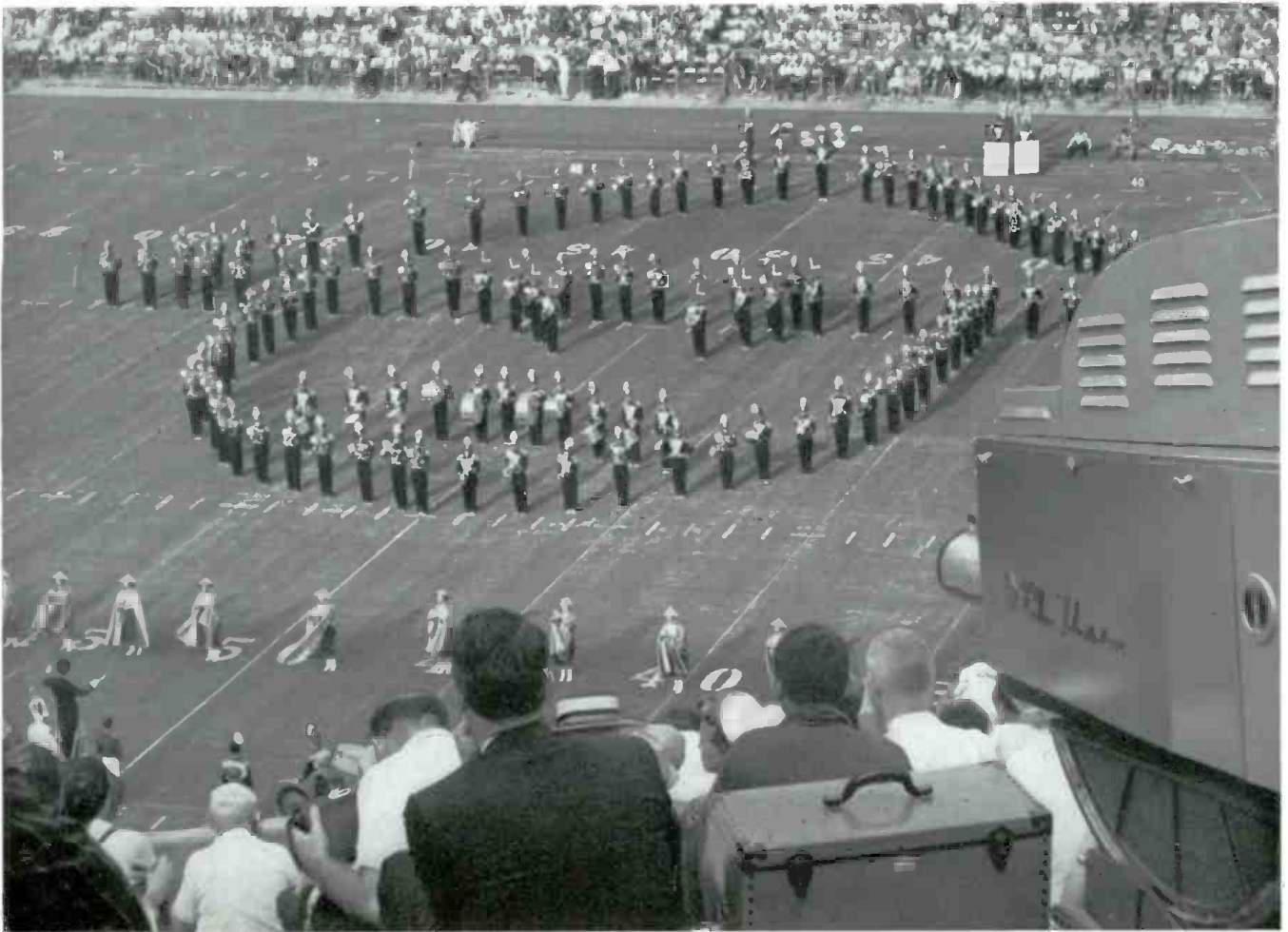
Newspaper critics and columnists are steadily boosting color TV, and a recent survey shows that color set owners are exceptionally well pleased with set performance. Eighty-five per cent of color owners queried said, "the quality of color is excellent — set performance very good" — a higher rate of satisfaction than most products attain.

Today many advertisers — especially automobile manufacturers — insist on sponsoring color programs with color commercials.

Commenting on the outlook for color TV, Mr. Burns recently predicted: "Every new decade has seen one particular product lead the surge and we at RCA believe that color TV will fill that role in the 1960's." ■

Harry Belafonte, RCA Victor recording star, has made appearances on color television in the Steve Allen show and Bell Telephone Hour.





Louisiana State University band performs for the crowd and the color TV audience at LSU-Rice "Game of the Week."

COLOR TV COVERS THE GRIDIRON

From kickoff to final gun, the best seat in the stadium is in front of a color receiver

NOT EVERY FOOTBALL FAN watching "the big game" on Saturdays this fall is sitting in the college stadium. The NBC-TV Network is televising a weekly schedule coast-to-coast to some 30 million viewers.

Seven of the games on the 10-date schedule are being presented in color as well as black and white. NBC Sports Director Tom S. Gallery points out that color television is of special value in football because color—the uniforms, the crowds, the halftime ceremonies—is so important to viewers.

Long before college squads took their first practice licks at the tackling dummy, NBC-TV's staff of sports production experts was hard at work mapping plans for football coverage.

During the summer they surveyed the stadiums, checked press-box facilities, picked camera locations,

arranged for transmission lines and made all the other necessary plans for placing equipment.

The first NBC "Game of the Week" this fall was the Louisiana State-Rice contest on September 19th in Baton Rouge. Producer Perry Smith, Director Harry Coyle, and sportscasters Lindsey Nelson and Red Grange arrived at Tiger Stadium on Wednesday before the game. The rest of the TV crew—20 technicians, two spotters, two program coordinators, and two assistant directors—were already on hand. While the football teams were holding their final practice sessions, the television personnel rehearsed their own signals.

NBC's mobile color unit was driven 1800 miles from Forest Hills, N. Y., where it had covered the National Singles tennis matches. This TV control room on wheels was parked outside the stadium. Nine dif-

Rice halfback Roland Jackson makes advance against LSU in game televised in color by NBC.

ferent communication circuits were brought into the stadium – two video lines, two audio lines, two production lines, and three business phones. The new 16-ton RCA mobile studio kept its occupants pleasantly cool with eight tons of air-conditioning, even though game temperature was 88 degrees.

Four color cameras were used to cover the game – two atop the press box at the 50-yard line and one on each 20-yard line.

While the technicians turned the stadium into an electronic outpost, the announcers, producers, and director viewed films of both teams in previous games and conferred with both coaches. LSU scouted Rice, Rice scouted LSU, and NBC scouted both.

On Friday the entire crew planned which camera would cover kickoffs, punt returns, passes, running plays, conversion attempts, defensive shifts, etc. Then announcers Nelson and Grange briefed the cameramen on the type of play they might expect from the two teams. The NBC crew knew in advance that Louisiana State would unveil a new, deceptive double-wing-T formation. It came as a surprise to Rice and to the TV and stadium viewers, and it was the TV fan who saw the play unfold best of all.

Director Coyle called his signals with the touch of a pro quarterback. As the LSU band assembled on the field for the playing of the national anthem, he cued camera three to the stadium flagpole in the north end zone. From his wide take of the band on camera one, he superimposed camera three's shot of the flag in a majestic elevation, calling to the cameraman: "Give it a studio production . . . beautiful, beautiful! It should sell a thousand color sets!"

When the kickoff came Coyle, sitting in the color mobile unit, watched TV monitors which showed the pictures each of the four cameras was getting at that moment. His job was to decide in a split second which picture to put on the air.

Coyle's cues on the kickoff ran like this:

"Three, get on the Rice kicker . . . stay with him."
"Two, take the LSU safety men . . . get all three of them."

"One, you're wide on both teams . . . that's it!"

LSU's first play from scrimmage gained 12 yards and Rice called time to rest a shaken linesman. Producer Smith, adjusting one of his two inter-coms, cued New York for the first commercial.

As LSU broke from the huddle, Coyle advised camera three, "Zoom in on the quarterback . . . watch him, he's tricky." The Tigers fumbled on the next play and NBC "recovered" immediately for the viewers.

On a fourth down for Rice, deep in LSU territory, Coyle and the crew were fully prepared for a field goal try.

"One, go wide on both teams."

"Three, zoom in on the kicker."

"Take one."

"Take three."

"Two, you stay on the ref."

"Four, your shot is the scoreboard."

"Take three."

"Take four."

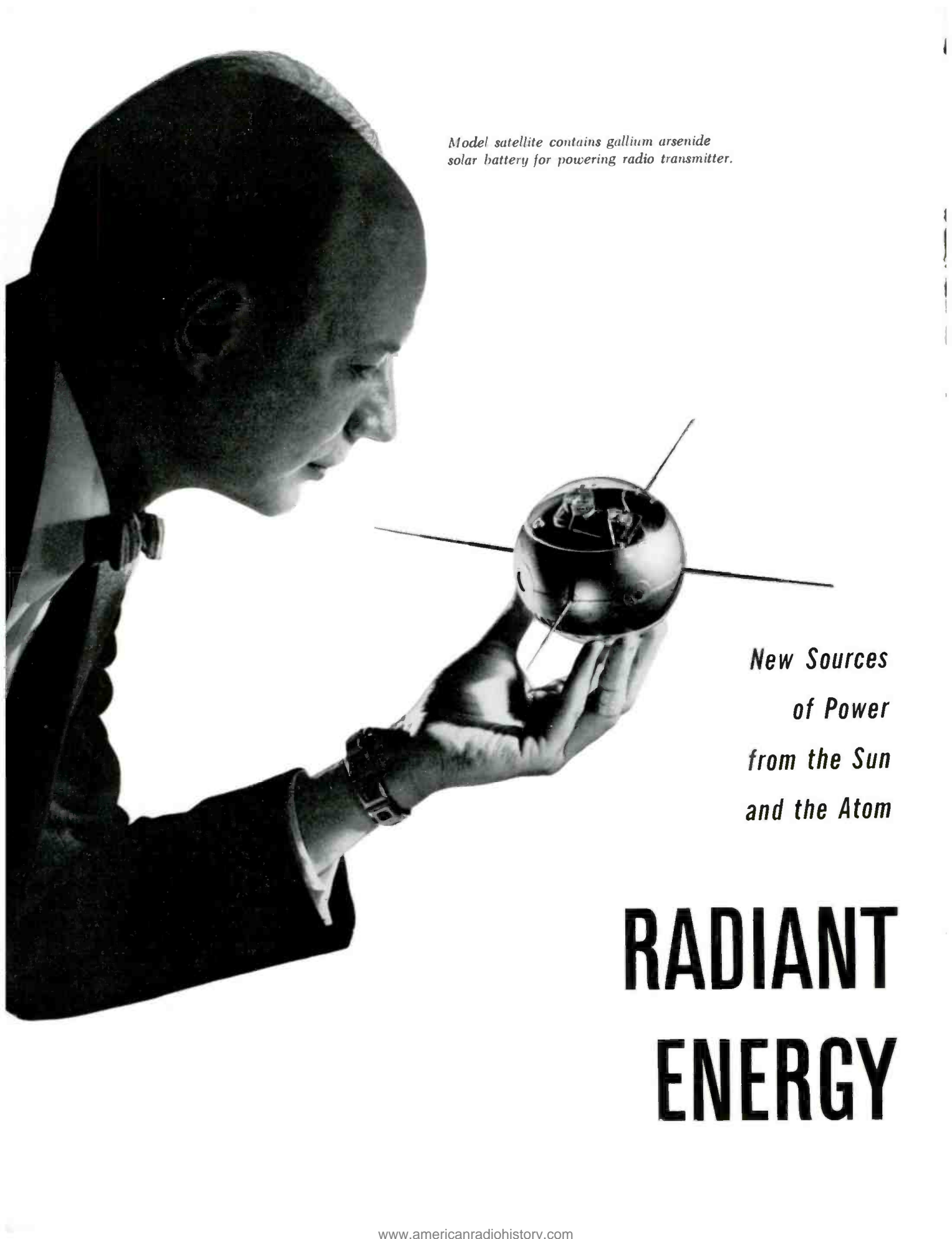
Football fans across the U.S.A. were treated to a perfect kick by Rice.

Halftime brought no rest time for the television team. They worked as hard covering the activities of the bands and cheerleaders as during the game.

When the final whistle blew it was an impressive 26 to 3 victory for LSU, and a victory also for NBC color television. While students and alumni assembled for victory celebrations and post-mortems, the TV crew was still hard at work dismantling installations and coiling three miles of cable.

Thanks to the combined efforts of alert announcers and expert technicians, millions of football fans throughout the country enjoyed one more big game – and all its color – from a 50-yard line seat in front of the television set. ■





*Model satellite contains gallium arsenide
solar battery for powering radio transmitter.*

*New Sources
of Power
from the Sun
and the Atom*

RADIANT ENERGY

ONE OF THE FIRST STRUCTURES to be erected on the moon by space pioneers of tomorrow will probably be a reflecting dish to collect and focus the heat of the sun upon a small, oddly shaped tube from which electric current will flow to power a radio transmitter for communication with the earth.

Similar structures — known as “solar furnaces” — may appear even sooner in the hot, remote desert areas of the earth, where they will serve as automatic electric power sources for radio relays, pumping stations, and other installations.

Tubes or solid cells of electronically active materials will be built into nuclear reactors or chemical combustion chambers. Operating in silence, and without moving parts, they will generate electricity for ship propulsion, electronic communications and controls, and auxiliary electrical machinery.

These are potential end-products of a revolution in electric power production. The new source of power is radiant energy — heat and light — which can be converted directly to useful electrical energy.

Three types of electronic devices exist for performing this remarkable function. One of these, the solar cell, converts light directly to electrical energy. The other two, the thermionic converter and the thermoelectric generator, produce electricity directly from radiated heat. The solar cell is already in use as an energy source in satellites and low-power electronic equipment on the ground. The two heat converters are in experimental stages.

The idea of generating useful electrical energy directly from light or heat energy without intermediate steps has long stirred the scientific imagination, but practical methods of doing the job have become available only within the past few years. The knowledge has resulted from advances in tube technology and solid-state electronics. Practical application of the knowledge has been speeded by the urgent demands of space technology — specifically, by the need for lightweight, portable generators that might draw upon radiant energy from the sun to supply electric power for radio equipment, guidance and control mechanisms, and instrumentation in satellites and space vehicles.

A tiny Vanguard satellite, launched twenty months ago, continues today to beam radio signals earthward from a transmitter powered with electricity generated directly from sunlight. The source is an array of thin flat plates, each measuring about two-thirds of an inch in its longest dimension. This is the device known as the solar cell, or solar battery.

The basis of the solar cell is a layer of silicon whose upper surface is treated to form within the material an electrical junction similar to that em-

ployed in a transistor. When the cell is exposed to sunlight, the light energy causes electrons to move across the junction, starting a flow of electric current. This process, called the photovoltaic effect, has been known for more than a century. It has been raised to useful levels only in recent years by the broad research effort that has given birth to the transistor and other solid-state electronic devices.

Perhaps the leading designer of solar cell arrays today is the Astro-Electronic Products Division of RCA, whose engineers have developed a number of new techniques for use in projected satellites and space probes. On the basis of detailed studies and extensive testing in environments simulating the conditions of outer space, the RCA engineers have devised a variety of arrays made up of multi-cell modules mounted on compact, printed-circuit boards. A typical array of this type, designed for a 27.5-volt system, contains from 70 to 90 individual cells.

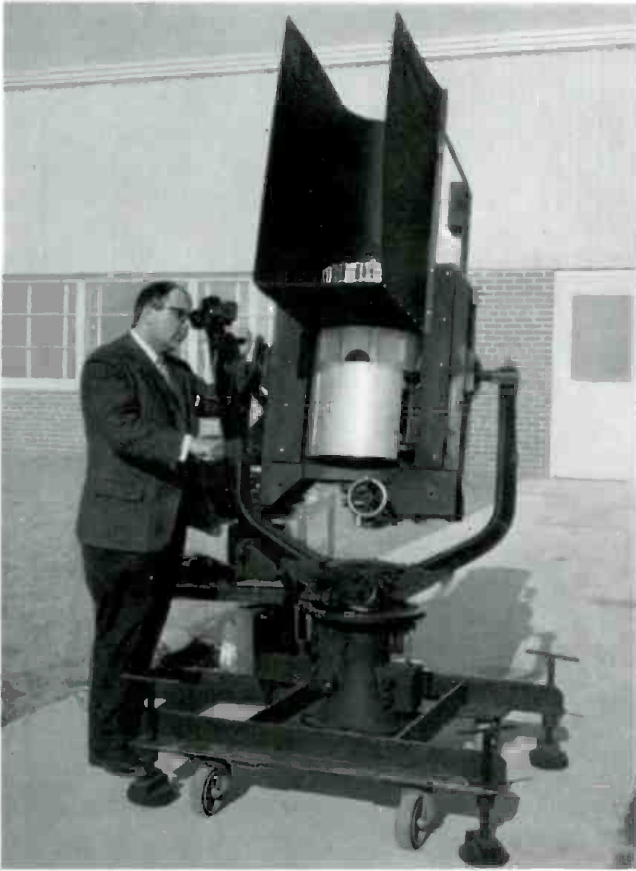
Scientists believe solar cells are likely to provide standard power sources for satellites and space vehicles for some time to come. For larger amounts of power it is likely that the scientists and engineers will turn to the techniques now in development for the direct conversion of heat to electricity. These are



Solar furnace is tested at David Sarnoff Research Center, Princeton.

expected to supply substantial amounts of electric power directly from the heat of solar radiation, nuclear reactors, and burning chemical fuels.

Two promising techniques are now in development. Both can be adapted to a wide range of heat



Test rig tracks the sun and uses solar cells to collect energy.

sources, and both perform entirely by electronic means, without moving parts. One — the thermionic converter — is a type of electron tube. The other — the thermoelectric generator — is a solid-state device employing materials similar to those in transistors.

The thermionic converter, in its basic form, bears a strong family resemblance to the conventional two-element electron tube, or diode. Like the diode, it

consists of a sealed chamber containing a cathode from which electrons are “boiled” by the application of heat, and another electrode to which these electrons flow to produce a current. In conventional diodes, the cathode is heated by applying an electrical voltage. In the thermionic converter the heat comes from an external source — concentrated solar radiation, for example, or nuclear fission in the core of an atomic reactor.

Electronics specialists see exciting possibilities in the thermionic converter as a highly efficient power package operating directly from high-temperature heat sources, in the range around 4,000 degrees Fahrenheit. In the laboratories, the principles already have been applied in experimental devices of many shapes and sizes, ranging from a tiny disk about the size of a twenty-five-cent piece to cylindrical glass and metal tubes many times larger. One experimental converter developed by scientists of the Atomic Energy Commission at Los Alamos, N. M., has been built to produce electric power directly from the heat of nuclear fission. At RCA Laboratories, Princeton, N. J., scientists have converted concentrated solar heat directly to several watts of electric power by mounting an experimental glass-tube-converter in a solar furnace resembling a large searchlight.

The thermoelectric generator is a promising modern application of a 125-year-old principle: when two dissimilar metals are joined in a closed circuit, and the junctions are at different temperatures, an electric current will flow.

Major emphasis today is upon the continued improvement of the materials in which the effect occurs. Operating in a temperature range lower than that required by the thermionic converter — from a few hundred up to around 1,000° Fahrenheit — thermoelectric generators composed of small, solid-state metallic junctions lend themselves to arrangement in cylindrical or flat arrays suited to nuclear reactors, boilers, superheated steam pipes, and similar heat sources. Already, a dozen or more experimental devices have been developed, varying widely in size, shape and power output.

The continued swift growth of technology assures a place for all of these techniques, as well as others yet undiscovered. They add up to a great new resource, resulting in large part from a vigorous, large-scale research and development effort by the electronics industry. Much work remains to be done before these energy conversion devices can be put to widespread use. At the end of the road, however, lies a new era of compact, self-contained, and virtually inexhaustible power packages for use everywhere there is a need for electric power. ■

Thermoelectric motor converts heat to electric current at RCA Laboratories.





Video tape recording enabled Dave Garroway to do his "Today" show in Paris and show it in the United States within 48 hours.

Magnetic Magic

Tape recording brings high fidelity music to the home,

new techniques to television, information from missiles and satellites

MILLIONS OF MILES of magnetic tape — plastic ribbon coated with a material chemically akin to ordinary rust — are working wonders for science, industry, and the American home.

When Mr. and Mrs. Citizen arise in the morning to the music of their clock radio, the tunes they hear have most likely been recorded on tape.

If they lift the telephone to get the daily weather prediction, the tape-recorded voice of a young lady will tell them whether to expect rain or shine.

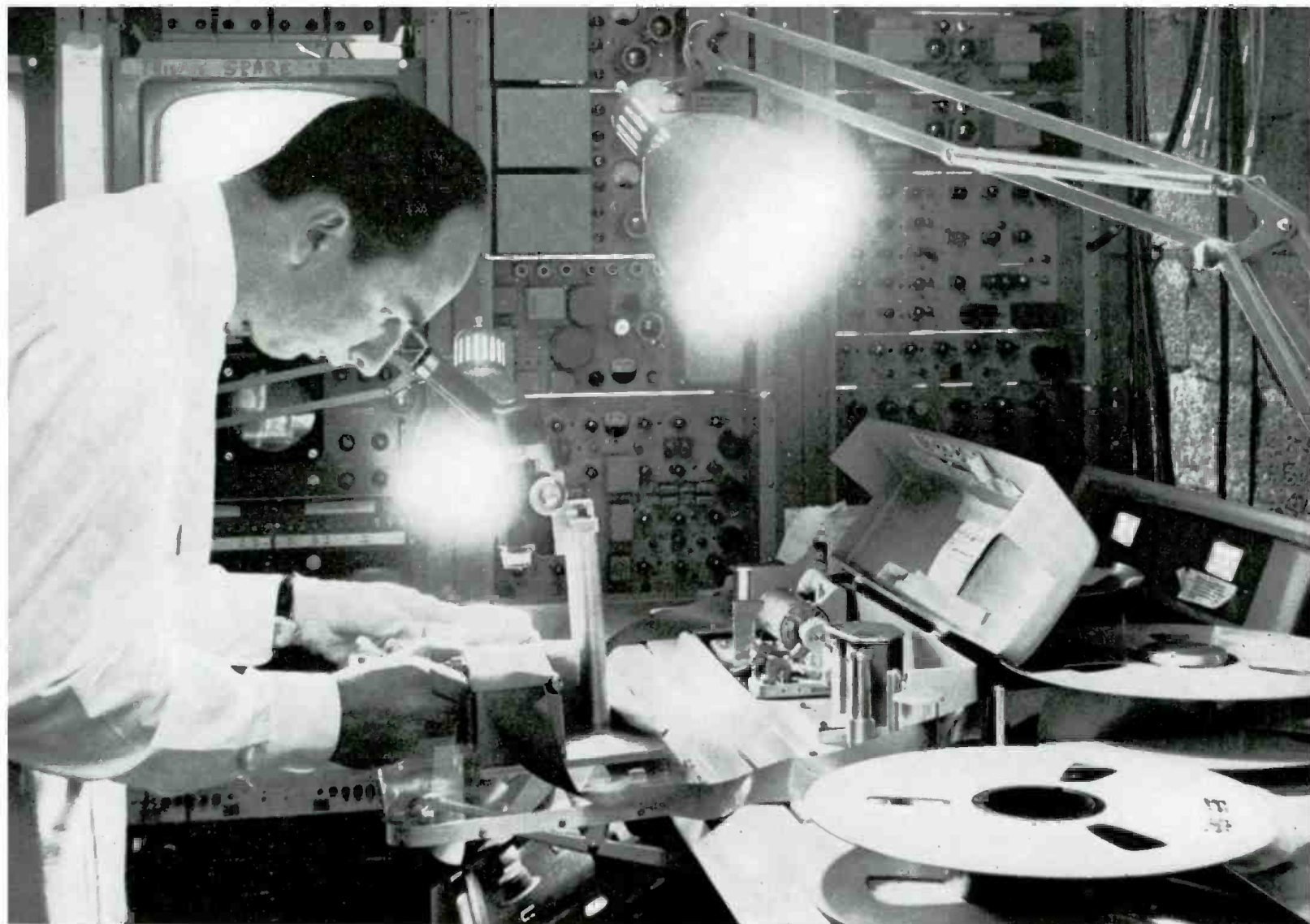
At their office or factory, tape-recording devices of many sizes and shapes will record and play back dictation, make out accounts, store information.

In the evening, the television show the family watches may have been recorded on a reel of tape somewhere on the other side of the world. Yet it will be impossible to detect any difference between the taped picture and an actual live telecast.

Last spring, Dave Garroway stood before a TV camera on the Eiffel Tower in Paris, had his tape-recorded image flown to New York by jet, and appeared on the screen before "Today's" viewers the next morning. Victor Borge was recently taped at a castle



New RCA television tape recorder, with E. C. Tracy and C. H. Colledge, of Broadcast and Television Equipment Division.



NBC television engineer edits video tape show. Microscopic viewer enables him to join tape accurately in splicing operation.

in Denmark, and other NBC television specials are coming this fall from England and France.

This magnetic magic brings history as it happens to the television audience. A notable example occurred last summer at the American National Exhibition in Moscow, when Soviet Premier Khrushchev and Vice President Richard M. Nixon paid a visit to the RCA color television studio (see page 6). A lively impromptu debate took place in front of a color camera, and the scene was recorded on tape. The tape was rushed to the United States by plane that evening, and shown the next day to American viewers.

One of the most advanced TV tape recorders for use in television broadcasting was demonstrated last spring by RCA at the National Association of Broadcasters convention in Chicago. It records pictures electronically in either black-and-white or — with the addition of a single rack of equipment — in full color. The recorder can reproduce anything from a ten-second commercial to a ninety-minute TV musical. It can play back scenes immediately after recording them,

and makes possible a variety of new TV techniques.

In the TV studio, for example, scenes can be taped in any convenient order and then spliced back together in proper dramatic sequence. This cuts down the number of set and costume changes. Stars such as Sir Laurence Olivier and Fred Astaire can tape a television “special” when they have free time, and the show can later be broadcast at the best viewing hour.

Magnetic tape provides a permanent and precise record not only of big events on television, but of words, sounds, radio waves, motion, or anything else that can be translated into electrical impulses.

The tape itself is a tough plastic ribbon, of the same family as nylon and only one-1,000th of an inch thick. It is coated on one side with fine particles of brown iron oxide which can be magnetized — like iron filings — according to any pattern imposed by the “recording head” as the tape moves past it. When the tape is rerun past the “playback head” the magnetic pattern is translated back again into sound, sight, or written words by electronic amplification.

Magnetic tape also provides the most accurate, distortion-free method for recording music. As a result, record companies today use tape machines to make the originals or "masters" of all performances. In stereophonic recording, twin channels are used to carry separate sound from multiple microphones, thus providing the new ultra-realism of three-dimensional "music in the round."

Last year RCA announced a revolutionary advance in tape recording technique with its stereo tape cartridge and tape players. The new system makes tape as simple to handle as disc records, with no threading or rewinding necessary. Four separate sound tracks on the tape carry a full hour of stereophonic music or two hours of monaural music.

Taped radio broadcasts now circle the globe. The Voice of America uses tape to distribute world-wide news and informational programs by short wave. It has been reported that one Voice program — "Music U.S.A." — was retaped from a broadcast in Russia and is being played for dances at Moscow University.

Magnetic tape has also moved into outer space as a part of America's missile and satellite programs. Every missile firing that takes place at Cape Canaveral, Florida, immediately activates a battery of tape recorders on island bases of the 5,000-mile Atlantic Missile Range. Project Mercury's "Big Joe" space capsule, which will eventually carry an American astronaut into orbit, was equipped on its first test with a tape recorder to bring back information on conditions the space passenger will face.

In the field of education, magnetic tape is rapidly becoming as important as the teacher's blackboard. A recent important development is the RCA Language Lab, now being used in a number of high schools and colleges to meet the increasing need for better language training in America. The RCA system, adaptable to classes of varying sizes, provides each student

Steve Allen's show, now appearing Monday evenings on NBC, is recorded on video tape for broadcast in different time zones.



with earphones, microphone, and amplifier which enable him to listen to taped lessons and talk back through the system. The teacher can monitor the lesson and check on individual progress.

A "Hear-See" system of television tape recording, now being developed by RCA, is expected to bring revolutionary advances in education. The system includes a tape player capable of reproducing pictures as well as sound, and a recorder which can tape a program from a telecast. The "hear-see" system will use a growing library of prerecorded programs to bring top-grade instruction to schools throughout the nation. It will also enable home viewers to tape their own programs from the air and build a permanent collection of favorite shows for replaying through their television receivers.

The great potential of magnetic tape is suggested by current developments.

Tape recorders are being used experimentally by doctors to make permanent records of various medical tests. Color TV tape is giving students close-up views of operations performed by leading surgeons. In the future doctors may keep a taped record of each patient's life history for ready aid in diagnosis.

Earth satellites of tomorrow will be equipped with television tape recorders to survey the earth and the heavens and transmit pictures to the ground. For use in such satellite systems, RCA's Astro-Electronic Products division has developed a tape recorder which weighs only eight pounds. Satellites will eventually be part of world-wide communications relay networks, will aid in weather forecasting, and will provide new information about the planets and stars.

The uses of oxide-coated plastic tape are increasing daily and expanding the horizons of human knowledge — from grade-school instruction levels to the limitless reaches of the universe. ■



The Jack Paar Show is taped early in the evening so Jack can watch his own performance at home.



STEVE SHOLES

PICKS THE DISCS THAT MAKE HITS

He finds the TALENT and the

STEVE SHOLES, Manager of Popular A & R for RCA Victor Records, has probably been responsible for making more hit records in the past five years than anyone else in the business.

In the alphabet of the recording business "A" stands for artist, "R" for repertoire. The A & R man is the indispensable link between the artist and the finished phonograph record. The A & R man selects both the performer and his musical selections. His job is to produce records that sell, but he also wants, if possible, artistic as well as commercial successes.

Probably Sholes' greatest and most controversial contribution to the music business has been his discovery of Elvis Presley. In the fall of 1954, Presley, who was then touring as "the Hillbilly Cat," appeared at the Saturday night "Grande Ole Oprey" radio show in Nashville, Tennessee.

Steve, who was in Nashville on a hunt for talent, stopped in for a look at the show. "I was floored!" he says. "Presley made the other artists look so ordinary that I knew we had to get him for Victor."

As everyone knows, Steve Sholes' faith in Elvis Presley paid off quickly and handsomely. Presley has built one of the truly fabulous careers in recording. His latest hit, "A Big Hunk of Love," sold more than a million copies.

The lightning did not strike so fast in the case of Chet Atkins, one of RCA Victor's most successful and popular instrumentalists.

It was on another of Sholes' hunts for new talent that he first heard Chet Atkins. Steve was in Chicago when he heard Chet on a radio show originating from a small station in Springfield, Missouri. "I had never heard a guitar played like that before," Steve says. "Sounded like three guys instead of one. I brought him to Chicago and he's been with us ever since."

At first the public did not see in Atkins what Steve saw. Record after record failed, but Steve nursed Chet along and let his talents develop. It took seven years for Steve Sholes' faith in Chet to pay off,

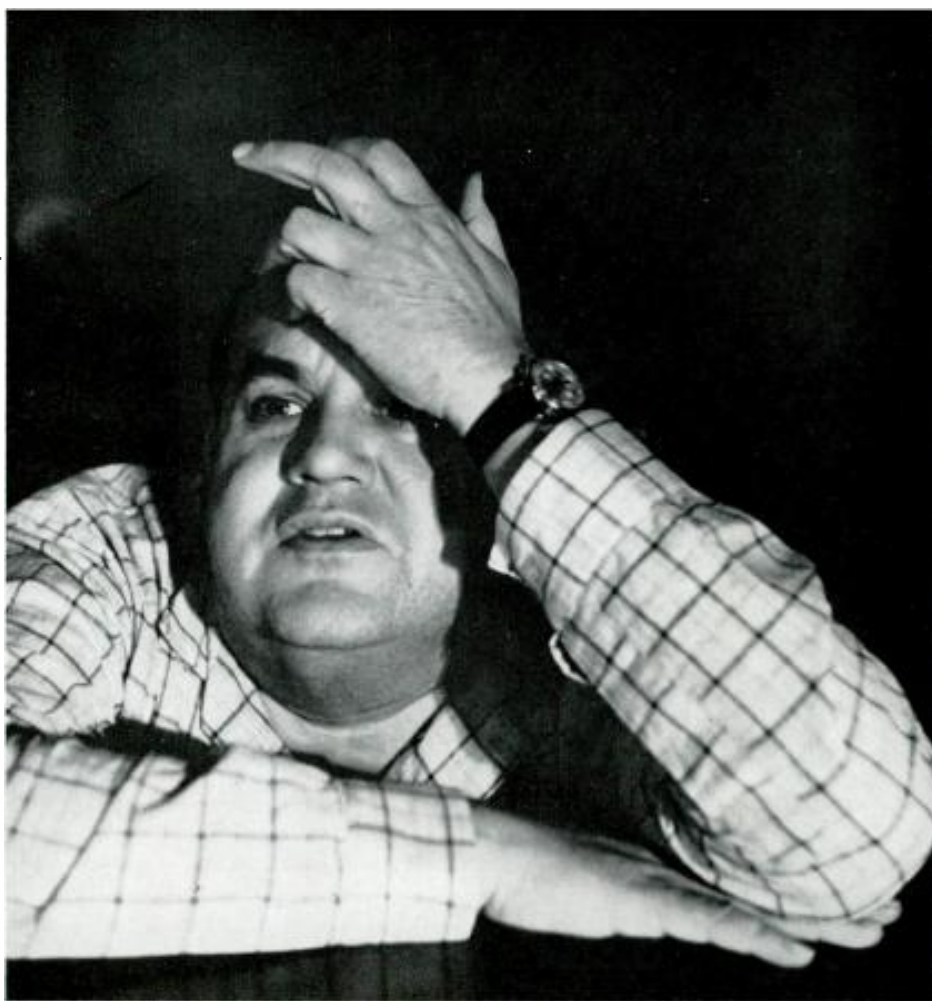


Elvis Presley's latest recording, released after his fifteen months of military service, sold more than a million copies. Chet Atkins (left) and Eddy Arnold (below) were also among Steve Sholes' discoveries.



TUNES

Stephen H. Sholes, manager of Popular Artists and Repertoire for RCA Victor, must make decisions on which depend sales of millions of records. He was the first to recognize Elvis Presley as a potential teenage favorite. His ability to select the right song for the right singer put Eddy Arnold on top. Now that he is in charge of country-western, international, sacred, specialty, and children's records, Steve has little time left for his hobby — model railroading.



but today he is a solid success with his relaxed style.

An A & R man's instinct in selecting repertoire can make or break an artist. Sholes' ability to select the right material is illustrated in the career of Eddy Arnold. Eddy has stated that he owes his success as a singer to Steve Sholes more than to any other individual. When Arnold's sales began to fall, it was Sholes who picked the song that put him back on top: "There's Been A Change In Me."

Steve Sholes originally went to work for RCA as a messenger boy when he finished high school in 1929. Shortly afterward he quit to enroll at Rutgers University, intending to be a lawyer. By the time he was graduated, he had decided the law was not for him. In 1935 he returned to RCA in the Record Division where he handled distributor orders for phonographs.

"We were located in Camden then," Steve recalled. "In those days recording sessions were pressed on wax in the New York studios and then sent to Camden for processing. Out of the several versions made, the best had to be selected and sent back to New York. Someone found I knew a bit about pop music and got me to doing the selecting."

Steve was then asked to go to New York as a permanent A & R man. But the war came and Steve was assigned by the Army to handle the production

of "V-discs" — special phonograph records for soldiers overseas. V-discs were made as a contribution to the war effort and never sold commercially. The famous jam session that Sholes recorded of Louis Armstrong and Jack Teagarden is now a collector's item, as are many V-discs. Anyone owning a copy of the Armstrong-Teagarden record today can sell it for \$200.

Now that the entire popular record field is his to develop, Steve is certain of only one thing — change.

"All things change," he remarked. "Tastes in music change, too. No one can dictate what the public wants, but I try to give it the best of what it wants."

"The best of what the public wants" has brought Steve Sholes his greatest triumphs. In August and September of this year, two RCA Victor records led the best-selling charts: Presley's "A Big Hunk of Love" and "The Three Bells," recorded by the Browns, a former country singing group who are now, under Sholes' guidance, among the leading pop trios.

New teen-age artists, like Johnny Restivo and Neil Sedaka, are making their mark now under Sholes' supervision. Sedaka's first record, "The Diary," is one of the big hits of 1959. Presley, The Browns, Restivo, Sedaka, Eddy Arnold, and Chet Atkins stand as prime examples of Sholes' ability to discover talented youngsters and help them achieve success. ■

Citizen's Radio

RCA's Radio-Phone is the new "party line" of the airwaves

"DARLING, this is Putt-Putt. What's for dinner? The fish just aren't cooperating one bit."

A slight pause, then:

"You have your choice of a steak smothered in onions, if you come home now — or baked beans later, and you can open the can all by yourself."

"Darling, this is Putt-Putt. I'm on my way with the motor wide open."

Similar conversations over the air waves have become common since the Federal Communications Commission last year created a "citizen's band" of radio frequencies for use by the general public.

Prior to establishment of the citizen's band it was virtually impossible for the average farmer, the owner of an outboard boat, and a host of others to realize the benefits of mobile radio communications. The FCC ruling opened the way, and manufacturers of electronic equipment are now providing compact two-way radio sets that can easily be attached to the farmer's tractor or carried in craft that are even as small as canoes.

This new breed of mobile radio gear features not only portability but an appealing price range. Of equal importance is the freedom of conversation allowed. The citizen's band radio is in truth the electronic voice of the people.

The Radio-Phone, a two-way unit developed by the Radio Corporation of America, is typical. Weighing only slightly more than eight pounds and smaller than a breadbox, the Radio-Phone has been enthusiastically received ever since it was announced last December.

It was natural that the Radio-Phone and other types of citizen's band equipment should strike the fancy of the small boat enthusiast. Boat owners on America's lakes and rivers have for years sought a low-cost, easy-to-operate radio system to provide an added safety factor, and for better enjoyment of their chosen hobby.

Communications networks for private boat owners — involving some 150 RCA Radio-Phones — are being placed in service on Lake George, Lake Champlain;

the Thousand Islands area of the St. Lawrence River, the upper reaches of the Hudson River, Oneida Lake and other waterways.

Edward H. Rowe, treasurer of the Marine Trades Association of New York State, who has operated a yacht basin and boat sales-service center at Sabbath Day Point on the northwestern shore of Lake George for the past dozen years, has this to say:

"This is the solution of a problem that has bothered us for years. The best way I can describe it is to cite the case of a cabin cruiser that came in here. The owner had just spotted a disabled boat about four miles south of the point. If he'd had a Radio-Phone, he'd have been able to call me directly to send help. But instead he had to come four miles to tell me about it."

Mr. Rowe plans to install sets at various boatyards in order to obtain almost complete radio coverage of



Lake George. In tests the RCA equipment has proved to have a range of up to 15 miles.

The safety factor is pointed up further by Walter W. Grishnot, who operates a 30-foot sightseeing run-about out of Sabbath Point.

"I take out eight or ten people at a time for a ride around the lake," he said. "Some parts of the lake are not traveled very much and there aren't any houses along the shore. I think it will make the passengers feel a lot easier, in case the motor conks out or in case of a squall, to know we're in immediate touch with shore."

Citizen's band sets will perform vital service on the boats of two veteran Lake George physicians. Despite their enthusiasm for boating, these doctors have been reluctant to stray too far from home port for fear they may miss an urgent medical call. With two-way radio equipment on board, they are free to roam without getting out of touch.

In this year's Atlantic City, N. J., Tuna Tournament a pair of outboard-powered craft took part for the first time in the history of the event. The skippers of these 20-foot craft ventured more than 50 miles from shore and came back with fish through thick fog. Both give much credit to the RCA Radio-Phones they used in order to maintain contact in "pea-soup" conditions.

The farmer as well as the boatsman is realizing benefits from inexpensive two-way radio communication. Tests of the Radio-Phone were recently completed at the New York State University Agricultural and Technical Institute, Cobleskill, N. Y., and on farms in the area.

The participants agreed that the Radio-Phone provides a valuable service between the farmhouse and field — relaying telephone messages and other reports to the farmer and his helpers, and sending back requests for equipment or assistance from field to farmhouse. It was noted that two-way radios are of particular value in emergencies or when the farmer is working in remote areas.

The Agricultural Institute tests all involved two Radio-Phones, one a fixed unit using 110-volt electric current and the other a mobile unit on a car, truck or tractor, drawing its power from the vehicle's 6-volt or 12-volt battery.

On the Philip Schuyler farm, typical of the hilly terrain in the Cobleskill area, a ground plane antenna was erected atop the farmhouse roof. Mr. and Mrs. Schuyler were able to converse over distances up to nine miles.

Tests like these prove that the era of personal radio communications is an electronic reality. The voice of the people is on the air. ■



RCA Radio-Phone is used to direct work on Philadelphia building site.

COURSE IN SURVIVAL

Personnel on vital BMEWS
project learn the secrets of
staying alive in the far north

STRANGE AS IT MAY SEEM, men lost in the arctic are more often killed by carbon monoxide than they are by the cold.

The danger comes from building fires in a shelter without providing a way for the smoke and fumes to escape.

This and many other vital lessons are being learned by RCA personnel assigned to man the Ballistic Missile Early Warning System sites at Thule, Greenland, and Clear, Alaska. Six hours of training in "Arctic Survival" are undertaken at the headquarters of the BMEWS Service Project of RCA Service Company at Riverton, New Jersey. Each man receives an additional eight hours of fire fighting and safety training at his assigned site.

Under a contract with the Air Force, the BMEWS Service Project of the RCA Service Company has responsibility for operating and maintaining the ballistic missile warning sites, now under construction.

The course is offered to everyone going to the arctic sites: vice-presidents, managers, engineers, technicians, administrators and clerks. The BMEWS Service Project teaches principles of survival so that every man scheduled to travel or live in the arctic will know what to do. The course was begun last April and about sixty employees are currently completing it every month.

One of the functions of the course is to correct popular misconceptions which sometimes lead to blunders in the arctic.

For instance, one common misconception is that a man should not allow himself to go to sleep because he will freeze to death. Actually, the course teaches,

one of the first rules of the arctic is not to become exhausted. If a man becomes cold while sleeping, he will awaken — unless he has allowed himself to reach the point of physical exhaustion. If his reaction to cold has been numbed by fatigue, this increases the possibility of freezing to death.

Also, it is popularly thought that in order to stay warm, one should constantly keep moving. However, according to the course, unnecessary exertion tires a man faster and causes perspiration. When arctic clothing is moistened its insulating quality is lost. *The number one rule of the arctic is to keep dry.*

In the event of an airplane crash landing, trainees are taught that one of the most important items to salvage is the aircraft's oil. However, if they wait too long, the oil will freeze in the engine and will then be unobtainable. They are told to open the oil valves immediately and let the oil drain out onto the snow. When the oil has frozen it can be rolled into a mat and used to burn for heat and for signal fires.

There have been numbers of cases where parties of survivors spent painful weeks under adverse arctic conditions, when they might have been rescued in hours if they had been careful to salvage available materials for signaling.

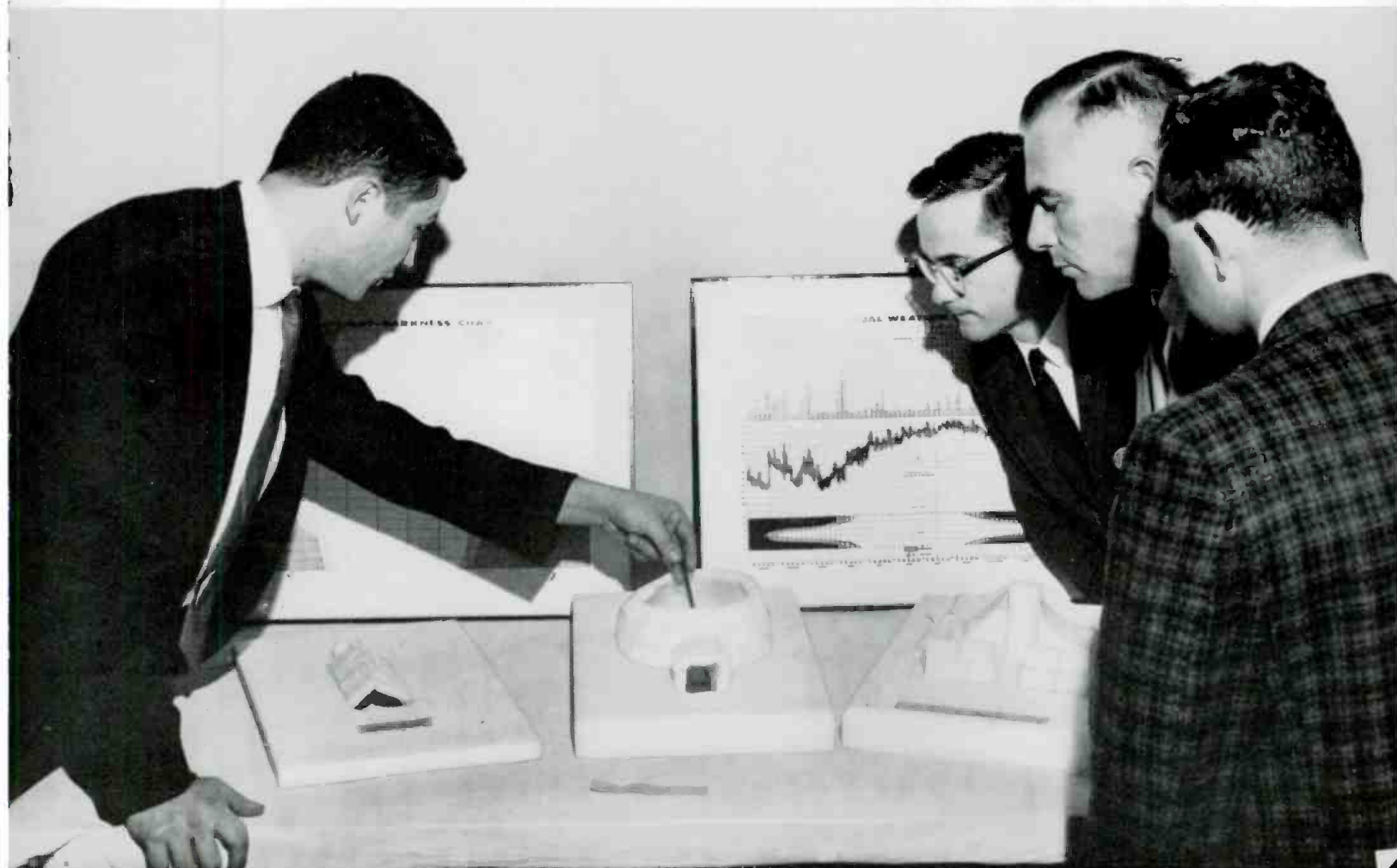
BMEWS personnel are also taught to salvage the airplane's batteries and keep them from freezing, so that they can be used to power the radio. Many times, because of lack of such knowledge, vital equipment is allowed to freeze and deteriorate.

BMEWS personnel are taught how to react if they are caught in a "whiteout," which occurs when there is a low ceiling and light conditions destroy perspective. Men have driven into utility poles during the approach of a whiteout because optical illusion moved the pole. It is possible to be caught 100 yards from a building and not be able to get back. In such cases BMEWS personnel are taught that it is safest to stop moving entirely until the weather clears.

Keeping alive and healthy in the arctic does not require great physical strength or special skills. The course teaches that there are three qualities a man must possess in an emergency: common sense, ingenuity, and discipline under pressure.

So far there has been no occasion for a BMEWS employee to put his survival training to use. But the people who are teaching the course to hundreds of men feel that if one man's life is saved some day through what he learns at Riverton — "we know the course will have been worthwhile." ■

Instructor Herbert Geshwind explains construction of an igloo to students of RCA Service Company survival course.



ELECTRONICALLY SPEAKING

WHO'S LOOKING?

NBC staff engineer Jarrett L. Hathaway has registered some thirty patents in the broadcasting field in the past thirty years. His most recent invention is a system for finding out how many television sets are tuned to which programs at any hour of the day. His method uses a truck with receiving equipment which can detect radiation from home receivers and compare it with radiation from a number of local TV stations. By driving down the street in anybody's home town, the truck can tell who's looking at what.

Mr. Hathaway's detector may provide broadcasters and advertisers with a new scientific method for determining how big an audience they have.

PAPER DOME



Motorists on the New Jersey Turnpike are viewing with curiosity a giant sphere rising 15 stories high on onetime farmland at Moorestown. The building is a prototype of the radome which will house

tracking equipment being built by RCA for the Air Force's Ballistic Missile Early Warning System in the far north. The installation will be used by RCA's Missile and Surface Radar Division to test radar equipment destined for the BMEWS bases. The dome is built of six-sided panels of paper faced with plastic-treated fiberglass.

SNOWBALL SERENADE

Jimmie Driftwood, a former school teacher in Snowball, Arkansas, has become a popular singer of folk songs for RCA Victor Records. When he heard that Soviet Premier Nikita Khrushchev was coming to the United States, genial Jim composed and recorded a country ballad entitled *The Bear Flew Over the Ocean*. According to Jimmie:

"The B'ar flew over the ocean

To see what he could see.

He saw a friendly nation

And all of our people are free."

HAPPY SATELLITES

Scientists of the space age have a wide variety of hobbies to occupy their off-duty hours. Some even write children's books and compose songs — like Ed Serveson, RCA Missile Test Project engineer at Cape Canaveral, Florida. Ed and his wife Marion recently published a book containing two stories entitled *Missy the Missile and Sally the Satellite* (Greenwich Book Publishers, New York). Ed and Marion have also copyrighted a hot rock-and-roll tune called *Rocket Romance*, about a lady mis-

sile's brief flirtation with the rocket that boosts her into orbit.

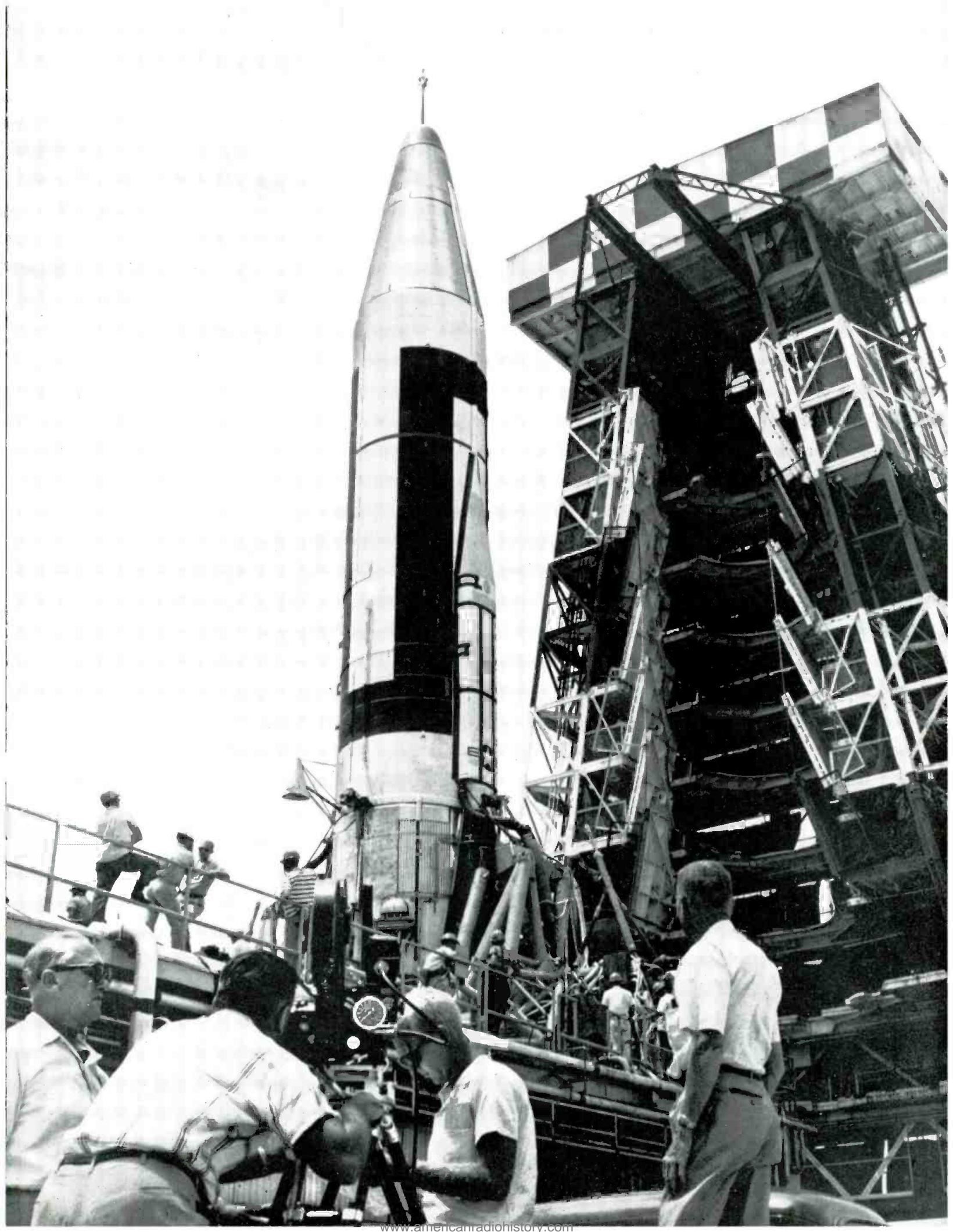
HISTORY-MAKING MIKE



An historic NBC microphone was presented recently to the United States Senate as a symbol of progress in electronic communications. The old cube-shaped RCA mike was used during thousands of broadcasts by famous radio personalities. It was presented to Senator Warren G. Magnuson (above right), Chairman of the Senate Interstate and Foreign Commerce Committee, and Senator John O. Pastore, Chairman of the Communications Sub-Committee, by Julian Goodman (left), Director of NBC News and Public Affairs.

CUTTING THE COUNTDOWN

America's Atlas intercontinental ballistic missile (right) is now readied for launching in a matter of minutes, as a result of RCA's "Automatic Programmed Checkout Equipment." Until development of the electronic system, manual countdowns often required as much as a day. Operational Atlas was successfully fired at Vandenberg Air Force Base, California.



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