SERVICE

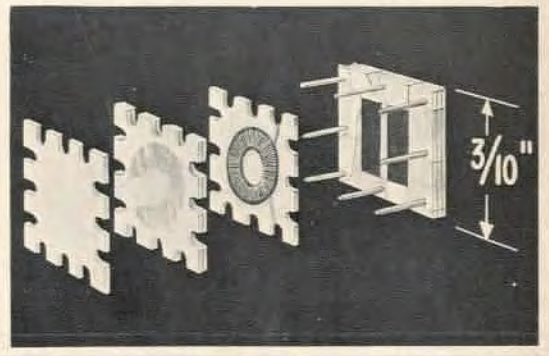
AN RCA FAMILY PUBLICATION

RELIABILITY IN DEFENSE ELECTRONICS

(see page 10)

Air Force Intermediate Range Ballistic Missile THOR *(Official U. S. Air Force Photo)*

Boeing B-52 Stratofortress *(Official Air Force Photo)*



Exploded View, Micro-Module

"World's Most Precise Tracking Radar"

APRIL, 1959

RCA SERVICE COMPANY

RCA SERVICE

Vol 15, No. 8 April 1959

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THE COVER

Our April cover is a salute to the personnel of Service Company's Government Service Department who, for more than 18 years, have provided world-wide technical assistance on complex military electronic equipment and systems to branches of the United States Armed Forces, other governmental agencies, and industry. Theirs is a substantial contribution to the defense of our Nation and the Free World.

SERVICE TALK

As This Issue Goes to Press

Several new and important executive assignments in the RCA Service Company, announced by President D. H. Kunsman, became effective April 15th.

As of that date, G. W. Pfister was appointed to the position of Vice President and Operations Manager, reporting directly to President Kunsman, responsible for Consumer Products Service, Technical Products Service, Government Service, Quality, and Advertising and Sales Promotion.

L. G. Borgeson, former Manager of Consumer Products Field Operations, was appointed Vice President of Consumer Products Service, replacing Mr. Pfister.

Reporting to Mr. Borgeson are R. C. Gray, promoted to the position of Manager, Consumer Products Field Operations, and H. W. Johnson, promoted to Manager of Appliance Service. Mr. Gray was the former Appliance Service Manager; Mr. Johnson was Manager of Consumer Products Field Support Services.

R. N. Baggs, former Service Company Vice President, Sales, has been promoted to Vice President in the new RCA Sales Corporation, a Radio Corporation of America subsidiary.

Full information on the RCA Service Company realignment will be carried in the forthcoming (May) issue of SERVICE.

For the Fourth Successive Year

In their letter to RCA shareholders, Brig. General David Sarnoff, Chairman of the Board, and John L. Burns, President of RCA, announced that RCA sales of products and services have, for the fourth successive year, exceeded one billion dollars.

They expressed heartiest congratulations to the men and women of RCA who have achieved an unparalleled record in an intensely competitive industry.

New Computer Textbook

A new textbook titled "The Language and Symbology of Digital Computer Systems" has been published by the RCA Service Company and is available for $2 postpaid from Government Service, Bldg. 210.

In the digital computer field the language is a combination of symbols and words which vary among different manufacturers and users. The book provides a common index of that language.

Entering the Age of Space

Vice President Conrad Describes Events Leading To New Government Contract.

In 1952, the first contingent of RCA Missile Test Project scientists, engineers and technical specialists were assigned to the Air Force Missile Test Center at Patrick Air Force Base in Florida. Since then, the RCA Service Company's Government Service Department has been an integral part of a joint Government and Industry team that is guiding our Nation through the Missile and Satellite development era to the very threshold of the "Space Age." The entire World anxiously awaits news of the latest in an important series of X-15 tests that will ultimately put man into outer space—a tremendous "break-through" which will convert the "Space Age" dream to reality in the years to come.

Serving all Branches of the Armed Forces

"Our Department's Missile Test Project staff has made many significant contributions to the programs underway at the Air Force Atlantic Missile Range," says Mr. A. L. Conrad, RCA Service Company Vice President in charge of the Government Service Department. "So have our Department's engineers, technicians and instructors who are working with the Army's Ballistic Missile Agency at Redstone Arsenal and White Sands Missile Range and with the Navy at the National Pacific Missile Range in California." Mr. Conrad, who was the original Manager of the RCA Missile Test Project and later became its first Vice President, points out that the Government Service Department has gained valuable experience during the past six years and has developed the capabilities needed to play an even more vital role during the "Space Age" that lies ahead.

U. S. Government Establishes Space Agency

Recognizing the increasing need for the coordination and consolidation of the Military's Missile and Satellite projects, the Government established a new Federal Agency late last summer. This new organization, knuwn as the National Aeronautics and Space Agency, has been assigned the responsibility for overtaking and surpassing the Russians in the race to conquer outer space. One of NASA's first important projects was the development of a Missile and Satellite test range at Wallops Island, Virginia—and it is significant that the Government Service Department was selected to assist in this project by providing a team of engineers to perform the initial range instrumentation planning services.

A. L. CONRAD

Mr. Conrad, commenting on one of his recent trips to the National Aeronautics and Space Agency headquarters at Langley Air Force Base, Virginia, had this to say: "We have now finalized on arrangements to establish an engineering facility in Virginia which will be responsible for performing the services required under this our first NASA contract. I am confident that the personnel assigned to this task will provide the high caliber of services that will reflect favorably on our Department, the RCA Service Company and the Radio Corporation of America."

GSD Facility Opens in January '59

The Government Service Department Facility was officially opened on January 26th of this year and work on this NASA contract is now progressing satisfactorily. Additional requirements have already been forthcoming from NASA and there is every indication that, as instrumentation planning is completed, the task of installation, then operation and maintenance will follow. In discussing the new requirements at Wallops Island, Mr. Conrad added: "Based on the excellent reputation we enjoy among our Military and other Government customers, we have every reason to believe that the Government Service Department can expect to expand its services to the National Aeronautics and Space Agency and to make outstanding service contributions in our Nation's future 'Space Age' projects."

Leonard Bros. Transfer Company, specialists in the long haul of over-size loads, stopped for a radio road-test; were checked on the spot by an RCA Mobile Service Shop. At left (left to right) **a Leonard Bros. driver with Service Company Technician Robert Kaltenbaugh and Field Supervisor John MacKenzie.**

Over-the-Road with an Over-Size Load

The call for service came from Bordentown, New Jersey. Leonard Bros. Transfer Company of Miami wanted a check-out of their RCA "Carfone" 2-Way Radio System on which they depended for the safe transport of an over-size load on a 1500 mile trip.

They were carrying classified equipment—fourteen feet wide by eighteen high—for the military. Largest over-the-road caravan of its type ever handled by Leonard, they were on their way from Pittsfield, Massachusetts to Biloxi, Mississippi via Pensacola, Florida.

Radio-equipped, their fleet of six trucks and one auxiliary vehicle was escorted by two station wagons. The lead wagon, riding approximately a half-mile in advance of the convoy, kept the fleet informed by radio of road conditions ahead.

Low-bridge, for example, will bring the fleet to a halt. If the clearance needed is an inch or two, tires can be deflated enough to permit passage. Otherwise, a detour avoiding the bridge must be mapped out, with consideration given to the great height, width and weight of the load and its maneuverability on secondary roads.

The radio scout car is indispensable, too, in relaying stop-over instructions for, as soon as dusk comes, they are off the road. Adhering strictly to state laws of safety, they travel only on prescribed routes, never at night nor on weekends and holidays. For safety on the highway, each truck is "Danger" blazoned as a warning to all motorists.

RCA Mobile Service Shop Arrives

Leonard Bros. got prompt action on their Bordentown call. Manned by Service Company Technician Robert Kaltenbaugh and Field Supervisor John MacKenzie, the RCA Mobile Service Shop arrived to perform a thorough "on the road" check-out of the trucking company's RCA 2-Way Radio System.

RCA Service Company's policy provides service at the customer's location, with no need to tie up his vehicles

and men by having them drive to a service shop. Technical Products Technicians, equipped with Mobile Service Shop vehicles, work for the most part out of their homes. When on the job, they are constantly in contact with a telephone answering service, and available in emergencies.

The Mobile Service Shop vehicle is fitted out with a complete set of modern test equipment, a work bench, a test panel which permits the operation of various mobile unit models, and a large stock of spare parts. Every normal service job can be handled by the technician and his Mobile Service Shop.

Leonard Bros. men had a unique device to interest the RCA technicians—a sealed mechanism for recording road jolts which, when opened on arrival, gives a report on the amount of vibration the equipment had been subjected to during the trip.

With this exchange of information and the 2-Way Radio test completed, Leonard Bros. continued over-the-road to Biloxi.

In Southern California

2-Way is not always a Mobile on a cross-country tour. The Larwin Company, builders of planned home communities in Southern California, uses a four-base station operation for communication between its main offices, on-the-road personnel, and its widely separated home construction tracts.

Installed in 1955, the RCA system coordinates all Larwin activities and, on at least one occasion, was worth its weight in gold. During a heavy rain—when storm drains overflowed, streets were blocked and power lines knocked down—Larwin used their RCA radio to direct the crew in emergency operations at a 250-home tract. The homes were saved, and the Larwin Company credited the radio with saving them an estimated $50,000 in a few hours.

At the Chrysler Plant

Chrysler Corporation's Highland Park plant has also been using RCA 2-way radios since 1955, in its materials handling operation.

From a small, quiet room the dispatcher maintains constant two-way communication with ten radio equipped jitneys, and one magnetic crane (used for unloading castings from trucks).

With this arrangement, the dispatcher has two-way communication with large areas of the plant. When plant No. 3 (there are six plants under the Highland Park unit) needs a bin of bolts from Storage, the dispatcher calls the radio-equipped truck driver in the Storage area. The call goes out to all trucks. If the Storage area truck is somewhere else, another nearby truck answers the call.

In New York City's Parks

Police who patrol the sprawling 34,000-acre New York park system have become walking radio stations by means of the RCA Personalfone "Belt" radio—a pocket-size two-way system enabling patrolmen to contact each other as well as communicate with radio-equipped patrol cars and headquarters.

The 28-ounce transmitter and 10-ounce receiver of the RCA Personalfone, providing a new communications flexibility for personnel-on-foot, is also a valuable aid in fire-fighting, in airline operation, in civil defense work, in military action, many industrial and other applications. Service for each and every application is available on a nationwide basis—an RCA *exclusive* in the two-way radio field.

Chrysler Corp. uses two-way radio in its materials handling operation. Above, a driver reports completion of delivery.

Superintendent of the Larwin Construction Company radios his report to headquarters from one of three building sites.

International programs, 3-inch screens, predicted for American TV by Robert Sarnoff, NBC Board Chairman.

In the World of 1969

Auto races in Monte Carlo, the bullfights in Madrid, the Edinburgh music festival, the Nobel prize award dinner in Stockholm—perhaps even the Folies Bergere in Paris—may be the norm in telecasts in 1969 according to Robert Sarnoff, Board Chairman of the National Broadcasting Company.

Mr. Sarnoff predicted in his recent address to the Los Angeles Junior Chamber of Commerce that, in ten years hence, it may also be possible to earn most of a basic college education through courses offered on television. More leisure in 1969, he said, will result in an increased interest in education, and noted that programs such as NBC-TV's current "Continental Classroom" will be "the precursor of many more educational TV efforts."

An Evening in 1969

Projecting to an evening in 1969, Mr. Sarnoff said the average night will find a TV set on in 30 million American homes.

"One fashionable set will have a three-inch screen—correct, three inches," he said. "It will be a transistorized miniature that will work on the beach, in trains and on planes. For home use, the 1969 set will replace the present picture tube with a thin, flat screen that can be hung on the wall like a painting—and the viewer will operate it from a small box at his side.

An Age of Growth

Before looking to the future, Mr. Sarnoff traced the development of television during the past ten years. In rapport with the whole of America, he said, television's position today is illustrative of what is happening and what will happen in this Age of Growth.

"Ten years ago," Mr. Sarnoff said, "there were only one million television sets in American homes. Today there are more than 48 million. Ten years ago the country had 51 television stations; today, 544."

Based on the reasoned calculus of NBC's Planning and Research Department he stated, there will be 58 million TV homes in ten years, with total sets at nearly 70 million.

"The growth of network broadcasting," the NBC Chairman continued, "is directly responsible for the massive growth of set manufacturing. And that laid the groundwork for the whole complex, varied world of electronics, from microscopes to missile systems."

The "Look" in 1959—RCA Victor Color TV

HIGHLIGHTS OF THE RCA ANNUAL REPORT FOR 1958

RCA's annual report to stockholders was released February 27 by Brig. General David Sarnoff, Chairman of the Board, and John L. Burns, President of RCA. In their letter to shareholders, they said:

"Sales of products and services of the Radio Corporation of America were $1,176,094,000 in 1958. Net profit, before Federal income taxes was $60,442,000 and after taxes, $30,942,000. Earnings per share of common stock were $2.01 in 1958 compared with $2.55 in 1957."

Growth Opportunities

The report reviewed the year's expansion and realignment of organization and manufacturing facilities, which prepared the Corporation to take advantage of new challenges and opportunities in the years ahead.

Twelve important new operational units were created for the purpose of accelerating progress in areas of great potential growth such as missiles, satellites and space vehicles, automation, electronic data processing and atomic energy.

In the area of Space Age technology, related to national security and exploration in space, RCA established a new Astro-Electronics Products Division in May, 1958.

As a further step, a new RCA missile and radar plant is being built at Van Nuys, California, with completion of the initial phase of construction scheduled by the end of 1959.

In industrial and nuclear electronics, RCA scientists and engineers are actively working toward the objective of developing thermonuclear fusion power for peacetime purposes. Applications of electronics for the performance of business and industrial tasks are opening vast new fields of opportunity for business computers and automation. In this area, a completely transistorized, general purpose, electronic data handling system known as RCA-501 was recently introduced to the market.

1958 New Products Campaign

A new products campaign conducted throughout 1958 led to a variety of new RCA developments for use in business, industry and national defense as well as in schools and the home. The sustained upswing in the popularity of color TV and enthusiastic acceptance of stereophonic sound promise increased activity in these fields in 1959.

A composite of the Manufacturing Plants and Home Offices of RCA Product and Service Divisions

Service Company Personalities

W. T. A. BAXTER, as Manager of Government Service Personnel, directs the department's Employment, Wage and Salary, Security, Training, and Organization Development activities at Cherry Hill, Alexandria, Va., and the West Coast (Palo Alto) office. He also functionally supervises BMEWS and MTP personnel activities.

Originally associated with Camden plant personnel, he transferred to Service Company in 1950 to direct field employment for all three of the Company's operating departments. Recalled to military duty in 1951, he served as an Engineer Combat Commander in Korea; was awarded the Bronze Star. His previous service in World War II was as Range officer in a 90 m.m. AA Battalion and as Company officer in the 292nd Engineer Battalion in Europe.

Returning in 1952, Mr. Baxter was successively made Employment Manager, Organization Development Administrator, and Manager of Missile Test Project Personnel at Cape Canaveral. He became GSD's Personnel Manager in 1956.

Mr. Baxter has travelled extensively in the Caribbean, in Europe, Japan, Korea, Canada, and Mexico.

William T. A. Baxter

Myron E. Wheaton

M. E. WHEATON, Technical Products Mid-Eastern Service Manager, has had a career dating back to pre-Service Company days.

He joined the Installation and Service Department of the RCA Manufacturing Company in 1936, as a field engineer assigned to the installation and servicing of RCA Photophone theatre sound equipment. Growing as the Service Company grew, he was a Tech Products Service Supervisor for three years (1941-44); then directed the activities of the Philadelphia District as its Service Manager for twelve years.

He has been Mid-Eastern Region Service Manager since 1956, responsible for the sales, installation, and service activities of Theatre and Industrial, Radiomarine, Mobile, Microwave and Broadcast operations.

Mr. Wheaton is interested in Scouting at Council, District and Unit levels. For recreation he camps, canoes, sails, and has had a number of memorable Canadian fishing trips.

Lawrence G. Borgeson

Edward S. Wozniak

L. G. BORGESON, Consumer Products Manager of Field Operations since 1956, was a Photophone engineer in the Los Angeles area when he first joined RCA in 1941, in an easy transition from his former projectionist job with Fox West Coast Theatres.

Transferring to RCA Government Service in 1942, he progressed from field engineer to leader of the Pearl Harbor Government Group (1944); thence to West Coast Government Supervisor in 1945.

He became Consumer Products Hollywood Branch Manager in 1946, and its West Coast District Manager in 1947. Made Western Area Manager in 1953, he assisted in the establishment of the Honolulu Branch of the Consumer Products Service Department.

Mr. Borgeson was promoted to Manager of Field Administration at the Home Office at Cherry Hill in 1953. Three years later he was appointed to his present position, responsible for the overall operation of Consumer Products regions, districts and branches.

He's a member of the S.M.P.T.E.; likes to golf and bowl.

E. S. WOZNIAK of St. Louis, Missouri, is Consumer Products Service Manager of West Central Region, responsible for the coordination and supervision of staff activities and the region's eight branches.

After three years in Alaska with the Signal Corps (1943-1946), he was briefly associated with the Electronics Company of America; then joined RCA Service Company (November, 1946) as a TV technician. Among his many assignments, he regularly serviced ,the radio and TV equipment in General Sarnoff's and Mr. Folsom's offices and residences.

He became the Flushing Branch Manager in 1948 and Bushwick Branch Manager from 1951 to 1953. For the next two years he was New England District Manager, then for one year served as Midtown Branch Manager. In 1956 and for one year thereafter he was Pittsburgh District Manager, assuming his present post in 1957.

As pastimes, Mr. Wozniak enjoys woodworking and color photography. He also displays an interesting collection of early American pistols.

branch manager of the year

MARTIN R. CHERNIN

for outstanding accomplishment

Martin R. Chernin, Manager of the West Palm Beach, Florida, branch has been selected as the "Outstanding Manager of the Year" by the RCA Service Company's Consumer Products Department.

He was cited for outstanding accomplishment in directing the activities of his service branch from the standpoint of customer service, as well as for general overall efficiency in branch operations. Managers of more than 150 branches throughout the United States participated in the competition.

Mr. Chernin was honored at a special ceremony in New York at which D. H. Kunsman, President of the RCA Service Company, other Company officials and seven regional winners from over the nation were present.

Working toward Product Improvement

Government Service Specialists assist RCA Defense Electronics Products division and the Military with Product Reliability Analysis

If there's such a thing as a sick missile, then there's also electronic pathology to research into the nature of its ills—conducted, in engineering parlance, by a "Reliability" group.

In the scientific study of equipment malfunction lies the key to design improvement, as well as a mathematical prediction of the reliability of uther equipments still in the design stage.

The RCA Service Company's Reliability and Data Processing group was established in 1954, initially to conduct programs for various RCA Divisions and for Military Organizations.

Today, in addition to its staff of engineers, statistieians and other technical specialists, the Government Service Department's reliability facilities at Cherry Hill include a reference library containing over 1000 periodicals and military specifications on reliability, maintainability and related subjects—plus approximately 400,000 items of failure data on various types and makes of military electronics equipment.

There are also data processing facilities available to Government Service Department which provide a flexible and rapid means of screening equipment performance data prior to analysis.

They Evaluate Product Performance

One of the GSD's most important programs involves the field evaluation of RCA Defense Electronic Products, to assure conformance with contractual specifications which call for specific reliability and maintainability achievement.

Government Service reliability engineers, mathematicians, field surveillance engineers, data analysts, and supporting personnel have conducted such programs on RCA-manufactured military products.

In accomplishing these programs, they collect and analyze field performance data, and supply this information with pertinent reports to RCA-DEP reliability, quality control, and engineering staffs who are thus assisted in their product improvement programs.

In order to provide a flexible means for processing large amounts of field performance data, a completely integrated IBM facility is available. GSD Reliability is also utilizing their data handling and data processing facilities in the DEP Ballistic Missile Early Warning System and Atlas programs, involving cable and chassis wiring information.

They Predict Product Reliability

The Government Service Department's Reliability group is also assisting RCA-DEP in programs involving the prediction of reliability on several airborne and ground equipment designs. Such programs are being accomplished now in support of RCA's Central Standards Engineering Services reliability design group.

An integrated IBM facility processes large amounts of field performance data on the FPS-16, Data Link and other programs. Above, IBM operator transcribes field reports to punched IBM cards.

A study of component parts, associated circuits and operational modes lead to calculated predictions of equipment reliability. GSD Reliability engineers M. N. Vincoll and P. M. Bartuska analyze a typical transistorized sub-assembly.

They Support Military Research

GSD's Reliability group functions in research to seek new knowledge of methods, techniques and procedures which will permit the development and effective use of more reliable and maintainable electronic equipment.

Typical of such programs is an Air Force contract awarded to GSD in November 1956, which GSD Reliability is spear-heading, covering three non-RCA ground electronics equipments.

This program is being conducted at the RCA Service Company research office at Rome, New York, under the sponsorship of the U. S. Air Force Air Research and Development Command, Rome Air Development Center. Close liaison is maintained with the RCA Cherry Hill Facility, as well as with RCA Defense Electronic Products, Standards Engineering and Services group who have provided important support in these and related areas of the program.

First Phase—Theoretical

As part of the initial planning under this Air Force project, realistic reliability goals were established for each equipment, based on actual operational and environmental conditions of end use.

These goals were translated into suitable reliability estimates, and predictions calculated in accordance with the detailed study made of each component part, associated circuits, and the equipment's operational modes.

Procedures were then developed for the eventual testing of the equipment under controlled laboratory conditions, as well as for the measurement of equipment reliability under actual field conditions.

Phase Two—Actual

The second phase covered the correlation of the actual laboratory and field reliability figures with theoretical predictions.

As a part of this phase, a series of tests were conducted in the environmental laboratory at Rome Air Development Center. Extensive field tests were also conducted, further validating predictions and laboratory tests. GSD personnel visited Air Force sites in the Central Air Defense Force area to acquire failure, environmental, maintenance, logistic and operational data on each equipment under test.

An interim report was one of the basic end-products, including a summary of Phase I results and specific recommendations involving philosophy and techniques for the assessment of reliability in relation to procurement specifications and contractual negotiations.

Reports dealing with the reliability prediction for each equipment under study and several aspects of the laboratory and field programs were also included.

Extensive field tests are conducted to further validate predictions and laboratory test figures. GSD Rel. engineer N. Merlock describes instrumentation methods to Communications Officer at Air Force site in Alexandria, Louisiana.

Extensive laboratory tests were conducted to validate theoretical prediction. GSD Reliability engineer R. A. Miles is shown making equipment performance measurements.

Phase Three—Expansion

GSD is continuing in and expanding upon this important Air Force program under an amended contract. GSD engineers and technical specialists assigned to the project are conducting additional field surveillance tests at other Air Force sites throughout the United States and Europe, with similar tests being carried out in the Far East.

SILENCE CAN BE MADDENING—but helpful

Complete silence, in an echo-free chamber helps RCA test TV and Hi-Fi sound systems

A man could be driven crazy, if locked up in RCA's anechoic (echo free) chambers over night. He'll hear sounds he's never heard before, like blood circulating in his head . . . his neck or knee joints emitting weird creaks.

But there's a definite purpose for such silence. The vibrationless atmosphere permits the accurate testing of new designs and refinements in sound systems for RCA Victor high fidelity phonographs and television receivers.

It's achieved by creating the natural phenomenon that permits sound waves in space to drift into nothingness. Instead of space absorbing the sound waves, they disappear into the walls of RCA's echo free chambers, the same as they might disappear out of an open window.

A Room Within a Room

Moving Muther Nature indoors required bales of wire mesh to hold literally thousands of square feet of Fiberglas in place, plus tons of concrete and plaster. To keep out test-disturbing noises common to any building, a room was constructed within a room. Traditional coustruction was taboo—the inner chamber had to be on steel springs.

Special rubber pads were placed beneath more than a hundred coil springs to hold the floor and four walls of the inner chamber. Similarly, but suspended on springs, the ceiling fits between the four walls, but not touching the sides. Felt padding isolates the ceiling and walls. The Fiberglas sheets and wire mesh are formed in wedges two feet deep and, resembling gigantic jagged teeth, they line the walls and ceiling in an alternate horizontal/vertical pattern.

A five-inch thick mat of different density Fiberglas covers the floor, covered by a metal grate, to preserve the acoustic qualities.

Robert L. Libbey, acoustic engineer, hits his guests with the impact of complete silence. "Hold your breath and count to five," he suggests. Visitors receive a sensation of nothingness . . . no customary vibrations . . . no noise from breathing . . . only the noises produced within their own bodies.

How Testing Is Accomplished

A test oscillator sends electrical waves into the chamber by remote control and, if a speaker system is being tested, the sound is generated by the speaker previously set up. Curves are drawn when the sounds are picked up by a delicate laboratory-type velocity microphone which may be either suspended on a wire or mounted on an arm to swing into a 180 degree arc to measure the directional output of the speaker.

Acoustics Engineer R. L. Libbey (TV Advanced Development), prepares to measure the sound performance of a television set in one of RCA's echo free chambers.

As many as eight different microphones may be used for various tests. Sometimes a "mechanical voice," described as a very, very good loud speaker, is used.

After the tests in the nearly-perfect echo-free chambers, sound systems are moved into adjoining listening rooms designed to simulate actual living room conditions. Curved plywood sheets in the shape of giant half-cylinders protrude from the walls to absorb the low frequencies while draperies and acoustical tile strategically placed throughout the room absorb the high frequencies.

Sound systems, when played in the listening rooms, sound the same as they do when played in the average living room.

THEY TRACKED THE "PEACE" ATLAS

Gele V. Bartley and Harold Brown, two of five RCA Service technicians who tracked the Atlas.

Ralph Caen and Randall J. Joyner at tracking station in Corona, Cal.

Assembly of four bay helical array antenna used to track the Atlas.

The first voice heard from outer space was that of President Eisenhower, with a message of "Peace on Earth" to all parts of the world, from a four-ton Atlas satellite on December 18, 1958.

RCA Service Company technicians were a part of the team of tracking specialists who recorded the historic occasion from four mobile tracking stations which stepped across the southern half of continental United States.

Roughly half of the personnel were RCA Service Company people; the remaining were Civil Service Engineers and Army Signal Corps technicians from the U. S. Army Signal Research and Development Laboratory, Ft. Monmouth, New Jersey.

Heading the Service Company groups were Gele V. Bartley, Project Leader, and Randall J. Joyner, stationed at Corona, California; Claude A. Steffey at Ft. Huachuca, Arizona; Harold Brown at Ft. Sam Houston, Texas; and Samuel Miller, Ft. Stewart, Georgia.

The tense moments following the successful launching climaxed a program of several weeks. The five men first reported to the Astro-Electronics Products Division in Hightstown, New Jersey, where they assisted in the development of the RCA equipment, then to the U. S. Army Signal Research and Development Center at Ft. Monmouth, where several additional weeks of cooperative work on the project took place.

Finally, in preparation for the field tracking assignment, the five technicians were sent to their respective locations. Equipment was installed and checked out. Simulated equipment was flown over by helicopter, and the ground crews received necessary training under conditions as similar to the actual tracking mission as possible.

"We heard the countdown by phone," said Bartley. "We knew that the launching was good, but, of course, at this stage no one knew if the Atlas would go into orbit. We simply waited.

"Suddenly we picked up the beacon signal very strong and we knew the launching was a success. Throughout the project we sent and received messages, tracked the satellite without difficulty, and thrilled to see the new concept in communications under successful test."

The Business...The People...The Money

Eighteen graduates received certificates in the February presentation of the Government Service Training Program, conducted once a month for field and home office managers at Cherry Hill.

To date a total of sixty-six "trainees" have completed the week-long program which will eventually be made available to all GSD managers.

Sessions cover the over-all aspects of Government Service business, personnel practices, finance, and other operational activities, in a series of illustrated lectures directed by management.

Government Service Vice President A. L. Conrad had this to say when he introduced the series last November:

"The program is conducted in recognition of the continuing problems encountered by Government Service Managers in the daily fulfillment of their responsibilities. It is designed to accelerate the manager's experience—to enable him to cope with problems inherent in an expanding organization."

The programs in this series will continue to be presented one week of every month until June, and once every three months thereafter. Classes consist of approximately sixteen managers each, and the sessions last from eight to ten hours per day.

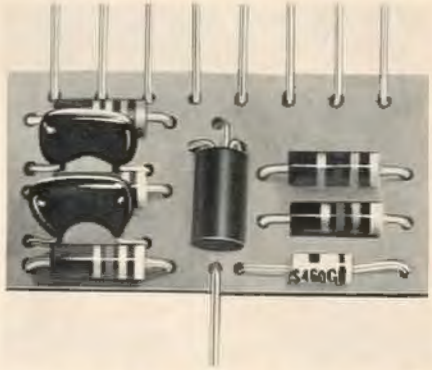
Managers attending the third (February) program were: H. J. Mills, J. A. McIntyre, E. C. McCollough, G. R. Sauer, W. R. Brackett, E. M. Thomas, E. N. Hansen, R. J. Campbell, R. M. Fleisher, J. Lenkowski, W. J. LaPerch, J. E. Tucker, R. S. Rudman, D. G. Remark, N. Richmond, W. P. McDonald, G. V. Bartley, R. C. Herrlin.

GSD Operations Manager W. L. Zaun (right) presents diploma to H. J. Mills, Manager, Army & Non-Military Services.

GSD's training program session on finance was presented by R. L. Coshland, Manager, Budgets and Pricing.

RCA President John L. Burns displays a 501 memory core unit for (left) Fidelity-Philadelphia Trust's President H. C. Petersen and Senior Vice President S. M. Walker.

Operator monitors and controls the system's operations from the control panel.



Transistors and components are assembled on plastic wafers, with connecting wiring printed on the other side. This forms a "module."

PAPERWORK BY PUSH-BUTTON

RCA's 501 system puts Data Processing within reach of moderate-sized companies.

The building-block (or modular) concept of RCA's new all-transistorized 501 electronic data processing system created considerable interest at the electronics conference of the American Management Association, where a replica was exhibited as a basic system within reach of the moderate-sized company.

E. D. Foster, Vice President and General Manager of the RCA Electronic Data Processing Division, explained that "the low cost of a basic 501 system enables the user to do a complete job right from the start and, as his business grows, expand on a gradual easy-stage basis."

Orders for 501 systems have been received from a number of companies in banking, insurance, utilities, communications and manufacturing, as well as government agencies.

A Large Philadelphia Bank

Announcement was recently made of a lease agreement, for delivery of the RCA 501 in 1960, by President H. C. Petersen of the Fidelity-Philadelphia Trust Company and T. A. Smith, RCA Executive Vice President, Industrial Electronic Products.

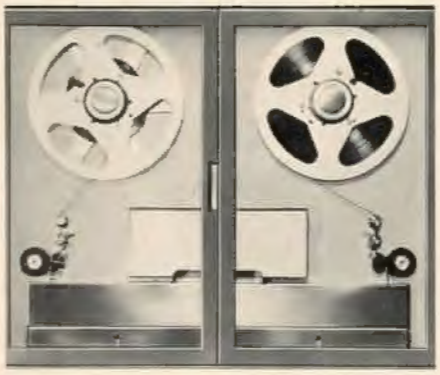
The bank's work load is expected to more than double in the next twelve years. One of the largest financial institutions in the area, it handles an average of 90,000 checking and deposit actions daily.

"While the need for automation is most urgent in checking account bookkeeping," Mr. Petersen said, "other banking functions—notably personal credit, savings accounts and trust accounts—should benefit as well from computer control."

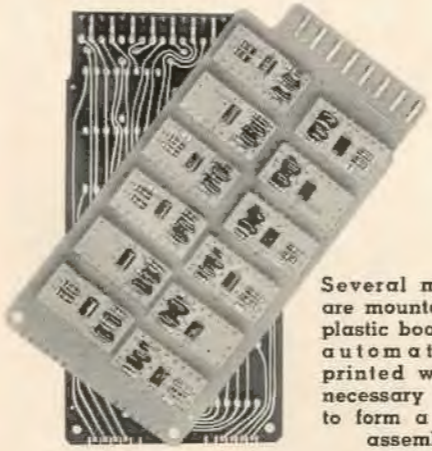
Heart of the System

Heart of the Fidelity-Philadelphia data processing system is the compact computer with a high speed magnetic core data storage unit linked to eight magnetic tape stations. Also under direct control of the computer are a tape reader and a tape selecting unit.

Built into the console is a program control element with electronic circuitry for the interpretation and execution of the instructions given it.



A 2,400-foot reel of magnetic tape stores 8,500,000 characters (numerals, symbols, etc.)



Several modules are mounted on a plastic board, also automatically printed with the necessary wiring, to form a plug-in assembly.

The plug-in assembly is installed in the system simply by sliding it into position. The assembly takes up only 1/4 the space required by vacuum tube circuitry of the same capacity.

Each tape station is capable of storing eight and a half million data characters on a 2,400-foot reel of magnetic tape. A character represents a number, letter of the alphabet or punctuation mark. The eight tape stations in the Fidelity-Philadelphia 501 system thus can hold sixty-eight million characters.

The high speed memory, with a storage capacity of 16,384 characters, accepts data drawn from the tape stations for the actual computation process. The results of the computer's calculations are fed automatically to an Electrical-Mechanical Printer which turns out its report at the rate of 72,000 characters per minute.

Northeastern Utility Firm

Niagara Mohawk Power Corporation of Syracuse also announced plans to install an RCA high-speed, completely transistorized, electronic data processing system to increase the speed and efficiency of its customer accounting operations, and eventually for wider use in other phases of its business.

The company now serves over 1,300,000 electric and gas customers and is adding nearly 30,000 customers each year. Niagara's Vice President and Controller, George J. Brett, said that the new system will enable them to do a great deal more work at no increase in cost, which is essential if electric and gas rates are to be kept low.

Flexible Maintenance Service

Specialized RCA service by Service Company engineers and technicians is available as a part of every 501 lease or sale contract, flexibly scheduled to provide each user with a maximum of reliability and capability in the operation of the equipment.

For most systems, service engineers and technicians are permanently assigned to the equipment location. Preventative maintenance work is usually done outside of normal operating shifts, and other service routines scheduled for a minimum of interruption in operating time.

Service engineers are immediately available in emergencies, and changing requirements are conveniently handled by modification of the service schedule.

What's the big Idea?

There were a lot of good Service Company ideas adopted —67, to be exact—but the biggest in 1958 was submitted via suggestion blank by W. J. Carroll, Installation and Service Technician in the Chicago South Consumer Products branch.

His idea netted him $500 as an initial award, with more to come if the actual "in use" savings of his suggestion exceed the estimated $5,000 within the first year.

Carroll had no close "runners-up," but several other sizable checks went out to Service Company people who questioned a method and proposed an improvement.

Larry Schroth, for example, an employe of the Sellersville plant, won $250 with an idea on Kine tube substitutions.

E. C. Wiley, a Tech. Products Theatre Serviceman working out of the Kansas City Field Office, won two awards totalling $125. He submitted three suggestions in 1958, two of which paid off. Carroll, the "suggester of the year," and runner-up Schroth both won on their first try.

Awards in the RCA Suggestion Program range from a minimum of $5 to a top of $7,500 per suggestion, depending upon the calculated savings or value placed on the idea.

Each suggestion is studied carefuly (see illustrations) to determine its worth. If a suggestion is rejected, the suggester is advised of the reasons why it cannot be adopted, and may appeal to the Committee if not satisfied with the decision.

Winning ideas often suggest how to reduce waste, improve quality, improve safety, reduce costs, or increase production.

If you've got an idea, drop it in the nearest suggestion box or, if you're in the field, mail it to Suggestion Administrator, Cherry Hill, 201-1.

Filing is the first step. Drop your idea into the nearest box or mail to Suggestion Administrator, Cherry Hill.

Your suggestion is acknowledged, recorded, assigned to an investigator, followed for prompt handling.

A responsible department manager and his staff evaluate the workability of your idea.

The acceptibility of a technical suggestion is evaluated by actual test.

Workability established, your suggestion is evaluated for its effect upon costs.

A committee of members from each operating department meets for final decision.

MTP Operates Largest Military Photo Processing Lab

New facility at Patrick Air Force Base provides high-speed processing for Missile Range documentaries.

One of the world's largest motion picture processing laboratories, operated by the RCA Missile Test Project at Patrick Air Force Base in Florida, is a $1.4 million facility built to provide high-speed quality processing of 16, 35 and 70 mm color and black and white film exposed on the Atlantic Missile Range.

Plans for the new laboratory were begun several years ago, when increasing test requirements and the introduction of new film types emphasized the need for a larger and more versatile plant. The new facility has eleven machines, as compared to four in the former plant.

But performance, rather than size, is the significant feature of the new installation. One of the first of its kind to be built in an operational area, the lab is designed to process film to commercially acceptable standards. Efficiency has increased, per man hour expended, according to G. M. Powers, Manager, RCA Photographic Laboratory, and more dependable and somewhat faster service can be given to civilian contractors and military agencies testing missiles on the Atlantic Missile Range.

Cool and Clean

The new plant has positive control over heat, dirt, and air contamination which, in the area, are similar to conditions existing in the middle of the Sahara Desert. To clean the water, all solid material particles larger than two microns (a pencil dot is about the same size as 50 microns) are filtered by diatomaceous earth filters. Mechanical filters in two separate air-conditioning systems remove all airborne particles larger than five microns.

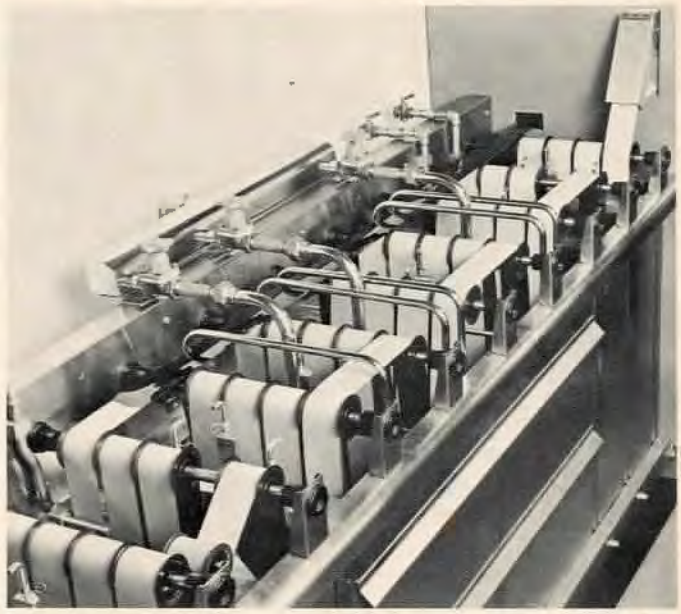
Five miles of chemical piping, 8,000 valves, and about 300 pumps transport more than 10,000 gallons of varied solutions from the basement up to the processing machines on the first floor. At the same time, used chemicals from the machines are drained to the tanks below for filtering and replenishment.

Thermostatic controls hold the large volume of solutions within a quarter of a degree of 70° F., well within the tolerance allowed in processing motiun picture film. The chilled water machinery that cools the basement recirculating tanks could make 40 tons of ice daily.

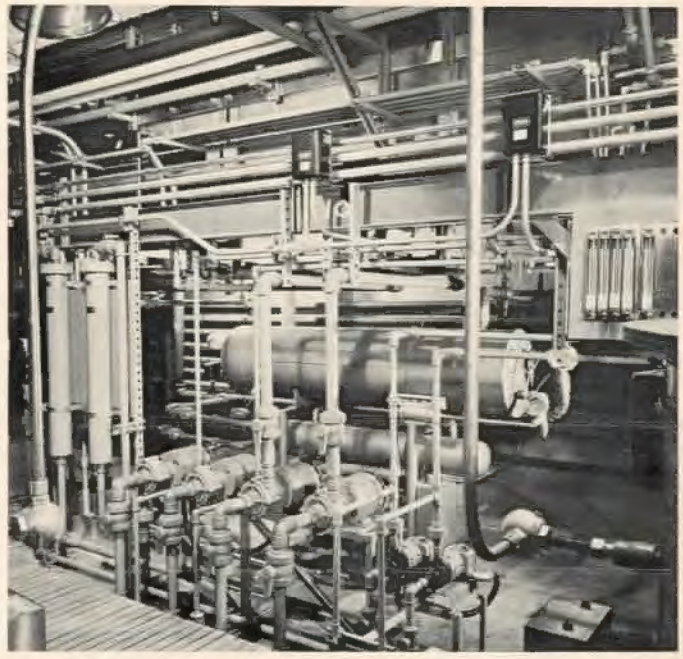
Time and Money-Saving Features

One of several unusual features in the machinery is the impingement dryer which blows hot air on the film at the rate of 3,000 cubic feet per minute as the wet film leaves the final wash stage. This dries the film so rapidly that it is ready for use in less than one minute after leaving the wash.

Rejuvenatinn of color film bleach is another time and money-saving feature. One of the most expensive of the processing solutions, the bleach is normally used and dumped. Rejuvenated, it is used indefinitely at a fraction of the usual cost.



Eleven film processing machines provide quick service to civilian contractors and military agencies testing missiles on the Atlantic Missile Range.



Part of the intricate system of pumps used to transport 10,000 gallons of processing solutions from basement storage vats to processing tanks on the first floor.

Our Kinda People...

HELEN MANN
(she won a game)

JIM JENKINS
(he won an FSO)

W. J. LaPERCH
(he won a life)

No panelist came close to guessing her occupation correctly as RCA Missile Test Project employe Helen Mann made a guest appearance on the CBS-TV show "What's My Line?"

To a nationwide TV audience she was introduced as a lady who "tracks missiles at Cape Canaveral." Actually, Mrs. Mann, who has BS and MS degrees in Mathematics and Physics, is a programmer for the computers used to reduce test data on the Atlantic Missile Range.

"Programming" consists of analysis of the problem, investigation and research as to possible solutions, establishing procedures to be followed in coding through the use of flow charts and diagrams, coding (translating problems to computer language), and checking the accuracy of solutions. She feels that knowledge of computers and their application in solving highly complex problems is a real asset to a scientist and/or engineer.

Mrs. Mann is confident that there is a real future for women in science, and urges high school girls interested in a scientific career to stress the study of mathematics, physics and other science courses.

There are two kinds of angry—plain and irate—and this customer was irate. She refused to permit her TV set to be brought to the shop for necessary repair, insisted that it be made to function properly in her own home.

Fortunately, the Atlanta Branch has an unofficial Public Relations expert in Jim Jenkins for these emergencies. Assigned to the call, he promptly returned with the FSO and one more cooperative customer added to his long list of friends.

A happy blend of technical skill and astute salesmanship, Jim's success lies in a relaxed manner, obvious goodwill, an easy Southern drawl and the "extra" bit of willing service that always closes a sale. The day is rare when Jenkins returns from his route without three or more chassis for Factory Overhaul.

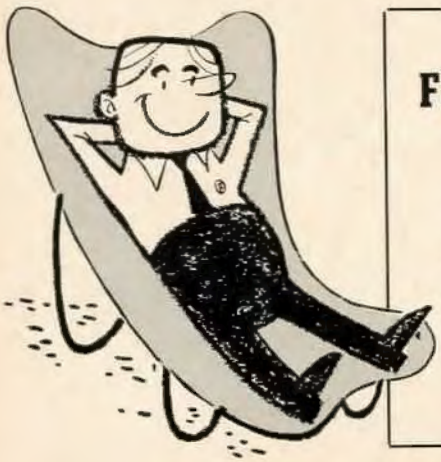
Customer confidence in Jim is so consistent that he became the automatic winner in every branch contest, filling his home with contest prizes and providing his family with additional luxuries through extra sales income. To even the odds, Jim is now competing only with the Branch's best. And to the branch itself he's (quoting Ernie Ford) handier than a third hand in a milkin' contest.

If the jetliner hadn't climbed an extra 8,000 feet to avoid turbulence, GSD's European Manager Bill LaPerch would never have reached the training session at Cherry Hill.

Without warning the craft nosed over into a screaming dive, attaining a maximum speed of Mach .94. The wind screeched, metal parts ripped, passengers were unable to move under the pressure. The pilot, ten feet from his seat at the time, crawled on hands and knees, superhumanly reaching the cockpit.

The plane plummeted 29,000 feet in less than four minutes. By the grace of God, full control was regained at 6,000.

Bill reports that even during his wartime flying he had never felt so close to death. "I was driven to my knees," he said, "and experienced difficulty in breathing. I felt surprise, then fear, then resignation. As the pressure lessened, I was able to help get life rafts down from the overhang." After the emergency he discovered that the rafts he had lifted alone were actually too heavy for one man to move.



FOR A COOL, PLEASANT SUMMER

The cool cats who own RCA or RCA Whirlpool room air conditioners are taking advantage of a special Service Company tune-up to put their units in tip-top shape before the heat is on.

The low-cost checkup ($7.95) includes: (1) Examination to spot potential trouble, (2) Seal check for leaks and defects, (3) Cleaning and oiling, (4) Performance test, (5) Tightening of unit and supports, (6) New filter, or permanent-type cleaned, (7) A complete report.

It's cool, man, and takes care of accumulated dirt, dust, and the other effects of harsh winter weather.

A Page from the Family Album

CONSUMER PRODUCTS

DSA PARTIES—1958 WINNERS

Des Moines DSA celebrants are *(l. to r.)* Ted Mitarnowski, Sponsor Sig Schotz, Don Lamberti, Virgil Larson, Ray Anderson, Jim Baker, Jack Kelley, Don Rogan.

DSA high-spot for the Cleveland-West branch was the presentation by Sponsor S. E. Baker to Branch Manager Mario DeCapite. Cleveland District Manager Laschenger *(left)*, East Central Region Service Manager Telep *(right)*.

Members of the winning Chicago-North Television Branch get together at gala DSA party held in their honor at the Sheraton Hotel.

Leonard A. Mecca, new TV Branch Manager at Lancaster, Pa., reviews reports with N. Garboczi, Garage Door Installation man.

President D. H. Kunsman *(left)* presents Service Company trophy to Vice President G. S. Pfister for Consumer Products' performance in January.

RCA Security men H. D. Knapp, RCA-DEP *(second from left)* and R. H. Martin, GSD *(sixth)* visit Grand Bahama Island with Instrumentation Manager D. T. Donaldson *(eighth)* and Dept. of Defense and Air Force security officers.

RCA ELECTRONICS HELPS THE ARMY KEEP TRACK OF A BILLION THINGS FROM OKLAHOMA TO OKINAWA

Millions of facts are put in proper sequence and "filed" on magnetic tape as the tape runs through Electronic Sorter *(above)*.

Tomorrow at a U.S. Army supply depot half a world away a jeep, tank or truck will roll in for a new bearing, generator, or spark plug.

Multiply this situation by the tens of thousands of vehicles the army must keep rolling—and you have an idea of the enormous supply job done by RCA's Electronic Data-Processing System at the U. S. Army Ordnance Tank-Automatic Command, Detroit, Mich.

It not only tells the army exactly how many of 169,938 different parts are needed *where*. It *writes* out the supply orders, 600 lines a minute. It *reads* 1,700 words a second. It files, computes, remembers, and informs.

From this "giant" RCA achievement down to the tiniest transistor in your "personal" radio, you'll see why, in industry, in defense and in your home, RCA *means* electronics—for you.

RCA RADIO CORPORATION OF AMERICA