



RADIO SERVICE NEWS

PUBLISHED . IN . THE . INTEREST . OF . RADIO . SERVICE . SALES . ENGINEERS

JUNE 20, 1934

CAMDEN, NEW JERSEY

Vol. I, No. 2

BIG I. R. E. CONVENTION HEARS TELEVISION PROBLEMS OUTLINED

Television Experiments, Cathode-Ray Tube Applications Feature Ninth Annual Meeting of Radio Engineers



W. R. G. Baker

Speaking before the ninth annual convention of the Institute of Radio Engineers, W. R. G. Baker, Vice President and General Manager of RCA Victor Company, outlined the difficulties that must be overcome before there can be a television receiver in the average home.

Describing some of the problems, Baker said: "Considering the service range per transmitter of from 15 to 20 miles radius and in general limiting the locations to those capable of servicing 100,000 population, we have a possible coverage of 42,000,000 of the country's population."

Huge Investment Required

"Based upon our present tools and assuming a possible coverage of 42,000,000 people, we would require about 60 transmitters, with an investment of, say roughly, 40 million dollars. If we required the networking of these transmitters under present-day knowledge, an additional investment of probably 40 million dollars, representing about 5000 miles of network—or a total investment of about 80 million dollars—would be necessary. The annual maintenance and operating costs would be about \$14,000,000. The time required to set up such a system would be at least six to eight years and would take at least 41,000 man-years to accomplish."

"While the present sound broadcasting chains produce about 5000 hours of entertainment a year, we will be fortunate if we have 2000 hours of television talent available, including all the feature movies, stage productions, etc. The entertainment life of the television artist will be much shorter than that of the sound entertainer, due to the fact that the public will become tired of looking at the same artist."

Challenge to Industry

"The question is—who will provide the capital? Even if the technical and financial problems are solved, there would still remain the question of what should be transmitted. The public has been educated by motion picture technique to expect high-class entertainment; television, therefore, can not hope to offer mere peep-hole images on its screen."

"Unlike radio, television will require undivided attention of the audience, which may mean television programs at only certain periods during the day. The investment will be idle unless the equipment is used for sound broadcasting during the off periods."

"While the problems of television are so complex and the capital required runs into fantastic figures, I really feel that these factors are hopeful rather than pessimistic. They simply indicate that we do not have the necessary tools or information on which to base a national system of television, and they stand as a challenge to the engineers and to the radio industry to discover new tools and new methods in order that television may become commercial."

More than 800 radio engineers registered at the Benjamin Franklin Hotel in Philadelphia, on May 28th, 29th and 30th, to attend the ninth annual convention of the Institute of Radio Engineers. This was the largest attendance on record.

One floor of the hotel was devoted to displays of products and apparatus, with fifty-five manufacturers represented. Among the most interesting exhibits, from an engineer's standpoint, were those of the RCA Victor Co., Inc., and RCA Radiotron Co., Inc. At the large RCA Victor display room the RCA World-Wide Antenna System and the new Type TMV-97-B Full-Range Oscillator came in for much favorable comment from the visiting engineers. The World-Wide Antenna System was demonstrated with an RCA Victor Model 140 Globe Trotter receiver. Even in this unfavorable location in downtown Philadelphia foreign stations were brought in with remarkable freedom from noise.

Cathode-Ray Tubes were featured at the exhibit of RCA Radiotron Co., Inc. On the second day of the meeting, W. H. Painter and P. A. Richards, of the RCA Radiotron Research Laboratory at Harrison, N. J., delivered a highly interesting lecture to the assembled engineers on "Cathode-Ray Tubes and Their Applications." Afterwards the equipment used in demonstrating the lecture was operating and on view in the display room.

(Continued on page 2, column 2)

Makes Good



Perseverance wins in radio broadcasting or in radio service. Betty Winkler's first trial in radio was in the famous radio drama, "The Trial of Vivienne Ware." She made good and has been a feature player for NBC ever since.

COÖPERATION—AND CODES

An Editorial by E. M. Hartley, Manager, RCA Parts Division

The radio service industry in its present disorganized state can no longer hope to obtain relief from present conditions in the industry through the fair trade practices and price-fixing features of an NRA code. The NRA has withdrawn from this field of activity.

This action by NRA means that the service industry itself must set its house in order. Radio service sales engineers must depend on COÖPERATION to get results.

Coöperation implies organization. Every radio service sales engineer should belong to an organized group of his fellows. In union there is strength—strength to accomplish the things that the radio service business needs at this time.

Many radio service organizations have blossomed and then faded within a short time. Many a member has withdrawn from an organization, or failed to take an active part, claiming that "they didn't accomplish anything" or "all they do is talk without deciding anything."

No organization, local or national, can transform the business over night. No organization can accomplish worth-while results without the active help of the great majority of the service engineers in its territory.

Join your local radio service engineers' association.

If there is no local association, start one.

Having joined an association, participate in its activities. When things don't go the way you would like to have them go, don't quit the organization. Do something about it. If the association is wrong, tell them so and keep on telling them so until they get right.

COÖPERATE!

RCA RADIO SERVICE NEWS welcomes contributions describing constructive activities of local or national radio service associations.



E. M. Hartley

New Oscillator Has Direct Reading Dial

Light Weight, 90 to 25,000 KC Range, and low price make new signal generator instrument ideal for service work

An astonishingly low price is only one of many attractive features of the Type TMV-97-B direct-reading Test Oscillator recently announced by the RCA Parts Division.

Priced by RCA Parts Distributors at \$29.50 net to service sales engineers, this new oscillator meets every requirement of service work. Its extremely wide range, from 90 KC to 25,000 KC, makes it possible to service any radio receiver on the market. For most work, no charts are necessary with this new oscillator, since the dial is calibrated directly in kilocycles, accurate to within the narrow limit of three per cent. Complete individual calibration for each instrument may be obtained for only \$5.00, giving a remarkably accurate test oscillator for only \$34.50. No additional coils or other accessories are needed.

"Five pounds of efficiency," remarked E. M. Hartley, Manager RCA Parts Division, in describing the oscillator. "Service sales engineers wanted an oscillator that was light enough to carry easily and which would handle all jobs without fussing around with charts, etc. They also demanded that the output be adjustable to any desired level, because this is very necessary in servicing sets with dual-purpose AVC tubes. This Type TMV-97-B oscillator gives them just

STORE AERIAL SEEN AS AN AID TO SET SALES

RCA Dealer Antenna Assures Good Reception for Stores

In response to numerous requests, the RCA Parts Division has just announced an RCA World-Wide Antenna System especially designed for installation in radio stores.

Dealers, most of whom are located in downtown neighborhoods where local interference in the past has almost precluded making satisfactory store demonstrations, especially of short-wave sets, were quick to realize the help that the RCA World-Wide Antenna could give them. As soon as a few of them had tried out in their stores the standard RCA World-Wide Kit, which is primarily for home installations, they enthusiastically endorsed the principle but pointed out the need for a system to which several receivers might be connected so that the antenna could be switched instantly from one set to the other. This is especially important, of course, for any dealer who conscientiously tries to "build up" his unit of sale from a low-priced instrument to a better one that will actually give the customer far greater satisfaction in the long run.

Antenna Shifting Switch

The new RCA World-Wide Dealer Demonstration Antenna System retains all of the advantages of the old one, but also includes a four-way switch, mounted on the wall, for rapid changes of antenna from one receiver to another, accommodating up to four receivers. From the switch four 36-foot 8-inch secondary transmission lines lead to four receivers, which may be placed at convenient places in the store. A special transformer which matches the impedance of the complete transmission line is provided for each set. The main transmission line, 73 feet 4 inches long, leading from the switch to the antenna, makes the correct total of 110 feet of transmission line, including the secondary line, in use at any one time.

A second 110-foot length of transmission line may be added if needed in order to place the antenna in the most noise-free location available. Beyond 220 feet, the length of transmission line is not critical. Additional line may be added up to 500 feet total for main and secondary line if necessary.

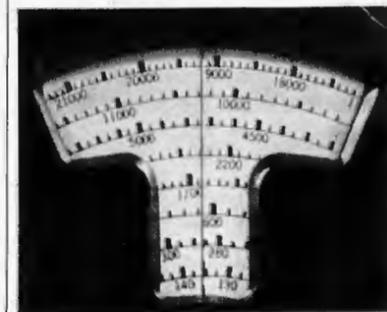
(Continued on page 4, column 5)



New RCA Oscillator

what they wanted and at a price they can afford to pay."

The RCA Full Range Test Oscillator, Type TMV-97-B, is an improved model of the famous TMV-97-A Test Oscillator which has found such universal acceptance among service sales engineers. The new model retains all the desirable features of the TMV-97-A such as light weight, compact size and reliability of operation. New features include an extended frequency range, a direct reading dial marked in kilocycles, a direct reading range switch, an exact calibration service (\$5.00 additional) and a new sensationally low price.



Direct-Reading Dial

Such an oscillator as the TMV-97-B is a fundamental necessity for properly servicing receivers of any type and manufacture. Alignment, sensitivity measurements and checking of individual stages all require a controlled source of radio frequency voltage. Heretofore, such a device has been available only to laboratories due to its excessive cost. However, due to advanced design and production

(Continued on page 2, column 5)

DEMAND GROWS FOR STANDARD BAND AERIAL

RCA Shielded Antenna Improves Reception of Regular Programs

A re-awakened demand for efficient antenna systems for standard broadcast reception is reported from many quarters as a result of increased interest in short-wave reception. Radio listeners are beginning to realize that not only is a scientific antenna system essential for short-wave reception, but that an appropriate standard broadcast antenna system can add greatly to their enjoyment of the "old reliable" programs.

While the famous RCA World-Wide Antenna System gives unparalleled performance on all-wave receivers, its greatest range of efficiency is over the short-wave ranges of the instrument. However, the RCA Standard Shielded Antenna System is available for those installations where the utmost in efficiency throughout the broadcast and police bands only is desired. This system is identical electrically with the famous RCA Centralized Antenna Systems that are installed in large apartment houses in numerous cities. It does not require a doublet or special antenna structure and is somewhat more easy to erect than the World-Wide Antenna System.

Receiver on Antenna Pole

The system makes use of two transformers and a special shielded low-impedance line. One transformer is connected to the antenna at the top of the pole and the other is connected to the receiver. The shielded transmission line eliminates any pickup between the antenna and receiver, as well as transmitting the signal without any loss in efficiency. To visualize the gain in these systems, the results will be approximately equal to the reception that would be obtained if the receiver were located at the top of the antenna pole.

The Stock No. 7718 Antenna Kit is for use with most receivers. It has both an antenna transformer and a receiver coupling transformer. List price is \$5.

The Stock No. 7717 is for use only with those receivers—such as RCA Victor Models 280, 380 and 380HR—which have a tap on the antenna coil, which matches the impedance of the shielded lead-in. This kit contains no receiver coupling transformer, and lists at only \$3.50.

Creating Demand

Foreign Reception

NOISY?

ALL-WAVE SETS

Need this Special

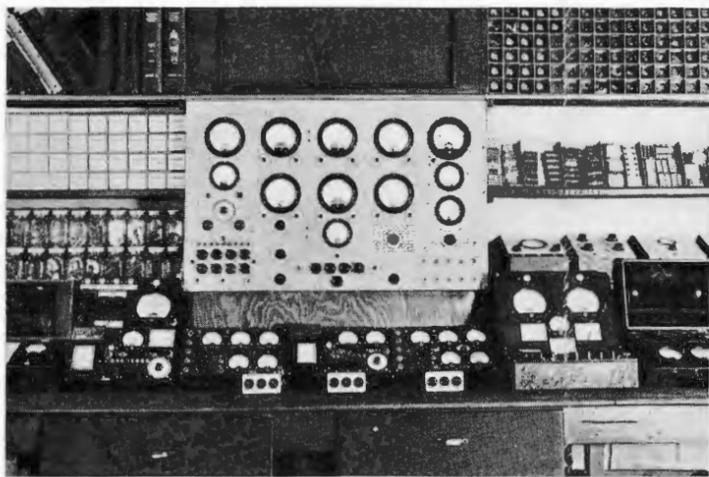
ANTENNA for MORE FOREIGN STATIONS MORE VOLUME LESS NOISE

Price \$7.00 plus installation. Ask your dealer or service engineer today to make a Certified Installation



This is one of the first advertisements of the vigorous campaign now under way on the RCA World-Wide Antenna System. Note how the "Certified Installation" feature of the copy gives the service engineer a boost. The above advertisement appeared in recent issues of Radio Guide, a weekly reaching over 350,000 good prospects.

WINS TEN DOLLARS



FIRST PRIZE, SERVICE BENCH PHOTO CONTEST

Radio Repair and Service Co.
121 North Main Street, Akron, O.

Congratulations to Radio Repair and Service Company. Theirs is a service bench with an unusual array of instruments. Note the completeness of the parts stock as well as its accessibility. When in doubt at this bench, there is a handy reference library within arm's reach. Small parts are kept in glass jars.

I. R. E. CONVENTION

(Continued from page 1)

A high point of the meeting came on the first day when the eminent Dutch scientist, Balth van der Pol, who came from Holland to attend the meeting, read his paper on "Nonlinear Theory of Maintained Electrical Oscillations." Evidence of RCA's leadership in television research was given on the first day of the I. R. E. meeting, when Dr. Vladimir K. Zworykin, of the RCA Victor research staff, was presented with the Liebman Memorial Award of \$500 for his inventions in television.

Television

Practical tests with an experimental television system which was used to transmit an outdoor scene from a short distance and from a New York studio to Camden, N. J., using an intermediary radio relay station, were described in a symposium of technical papers on television presented by research engineers of the RCA Victor Company.

These tests were conducted as another stage in the orderly development of television technique by the Camden laboratories to determine the objectives for continued research. Separate papers were presented on the transmitter equipment, the New York to Camden radio relay circuit, and the receiving apparatus.

The television transmission experiments were made with the Iconoscope, an electrical scanning device having no moving parts and whose operation has been likened to the human eye.

It includes a photo-sensitive screen composed of millions of photo-electric cells upon which is focused the picture to be televised. A cathode-ray beam traverses the screen 240 times progressively from top to bottom at the rate of 24 frames each second, to present a continuous intelligible image. The use of the Iconoscope in the experiments provided a new degree of flexibility over former methods in that it made it possible for the first time to successfully transmit outdoor scenes and cover greater areas in the studio.

Cathode-Ray Tube Used

A cathode-ray tube, or Kinescope, was used as an integral part of the receiving system. A beam in this tube traverses the surface of the fluorescent screen in synchronism with the Iconoscope on the transmitting end, the intensity of the beam corresponding with the varying light and shadow picked up by the Iconoscope, thus duplicating the appearance of the original image.

GOOD AUTO ANTENNA

Sales of Easily Installed Auto Antenna Reach New Heights

Sales of RCA Auto Roof Antennae are reaching new heights as the auto season advances, reports G. P. Allen, of RCA Parts Division.

The Auto Roof Antenna is just the thing for those installations in which the factory-installed antenna does not give satisfactory results or for cars that do not come equipped with aerials. It can be attached to the inside top fabric of the car in a few minutes, and returns a neat profit to the dealer.

The antenna is composed of No. 23 gauge, single-cotton-covered soft copper wire, covered with book-cover paper, size 36 inches long by 24 inches wide, fitted with six curtain-type pin-hooks for attaching. As furnished, the antenna is equipped with a sufficient length of lead-in wire ready attached. The paper covering is procurable in "gray" (7622) or "tan" (7621) finish. The list price is \$1.50.

The tests indicated the desirability of utilizing two carrier waves, one for picture and synchronization, and the other for the sound associated with the picture. In the Camden experiments the picture carrier was transmitted on 49,000 kilocycles and the sound carrier on 50,000 kilocycles. The two receiving circuits necessary for picking up the picture and the sound carriers, respectively, are electrically tied together so that they operate simultaneously.

Tiny Microphone

An inconspicuous little microphone, no larger than a matchbox, weighing only three ounces, and designed to be fastened to the coat lapel of a public speaker or entertainer, was the subject of another paper jointly delivered by Dr. Harry F. Olsen and Richard W. Carlisle, research engineers of the RCA Victor Company.

The remarkable little device was worn by the Camden engineer, who delivered the paper as a practical demonstration of the application of the new microphone, and it carried the voice of the speaker through an amplifying system to all parts of the large meeting room with extraordinary clarity.

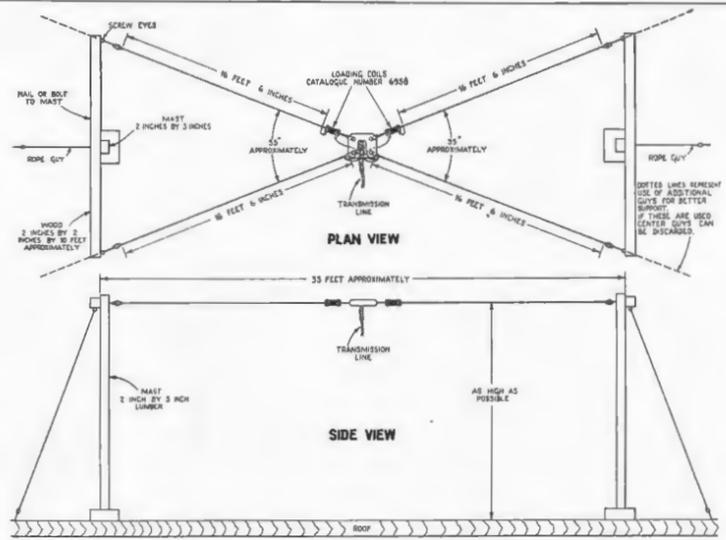
The outstanding features of the new lapel microphone are that it does not pick up mechanical vibrations from the speaker's chest or from body movements, and it permits the speaker to move around freely without causing any appreciable change in the intensity or quality of his voice. Another advantage is that the audience's view of the speaker is unobstructed by bulkier apparatus. The new microphone is expected to find a useful application not only for public speaking and broadcasting but also for sound newsreel work.

Trails Speaker's Voice

The new lapel microphone employs the velocity principle of operation. A



Lapel Mike—Actual Size



Sometimes sufficient space is not available for an ideal installation of the RCA World-Wide Antenna System. For such cases, there are several optional methods of installation which make the system adaptable to almost any location. Above is shown the double doublet in a horizontal position, with loading coils to shorten space required. Loading Coils, Stock No. 6958, list at 60 cents per pair.

VICTROLA JOBS BRING PROFITS

Owners Eager to Have Old Machines Modernized With Electric Parts

"Modernizing and renovating old phonographs is a growing and lucrative field of work that belongs particularly to the radio service sales engineer," reports E. M. Hartley, Manager, RCA Parts Division.

"Only ten years ago the phonograph was one of the most prized possessions of almost every American home. Families invested real money in them and recorded music was the great source of home entertainment. Radio, coupled with tremendous improvements in sound reproduction, made these phonographs obsolete, even though the cabinetwork frequently might have graced a palace.

"Today many of these owners of handsome but obsolete instruments are again hankering for what they want when they want it in music. They would like to restore the phonograph to a place beside their radios, but until now the cost of modernizing the equipment has prevented them from dusting off the old 'talking machines.'

"The RCA Synchronous Reaction Motor, Stock No. 9038, eliminates the old spring-driven motor, and the RCA Pickup, Stock No. 6592, converts any phonograph from mechanical reproduction to electrical reproduction. The motor lists at \$8; the pickup at \$5.

Modernizing is Profitable

"One or both of these items, plus a few hours of professional services, make a highly profitable job for a radio service sales engineer. But notice that word 'sales.' I stress the point because the possibilities of modernizing phonographs must be pointed out to the customer, and the best opportunity to do it is when you are in the home where you can size up the situation in regard to the old equipment."

The motor mentioned by Mr. Hartley is distinguished by several unusual characteristics, the most important of which is its extremely small size. However, its size is in no way a criterion of its performance, as the motor will operate either a 10-inch or 12-inch 78 R. P. M. record. Other features include hand starting (no switch required), low-power consumption (5 watts under load) and simple fool-proof construction. The motor has only one moving part, the combined rotor and turntable.

The RCA Type RMP-61 Pickup and Tone Arm assembly is a special straight-arm type pickup designed to be used in conjunction with the RP-112 Motor. The pickup is characterized by excellent reproducing qualities, extremely small size, and it may be obtained either with a low or high impedance coil.

thin aluminum ribbon is suspended in a magnetic field between two poles, and it is operated by the varying pressure on the ribbon resulting from the impact or velocity of the human voice. Advantage is taken in the design of the fact that this type of microphone is equally sensitive front and back, and when in use it is so arranged that the optimum sensitivity lies in the direction of the mouth when the speaker's head is turned to either side away from the microphone. Provision is also made to compensate for diffraction of the voice around the head. A high degree of fidelity in reproducing the voice is assured by the ability of the mechanism to effectively reproduce tones from 80 to 7,000 cycles, uniformly.

MORE PRIZES

Help! Help! The judges are still groggy from trying to pick winners in the Service Bench Photo Contest. Pictures of the benches of the winners are shown in this issue, along with just a few of the many to whom the judges wished to give "honorable mention." The pigskin wallets have been awarded to the latter, whose benches are shown in this issue.

Next month's prize awards will be for photos of vehicles—trucks, motorcycles, bicycles, airplanes or mule carts—used in radio service work. All those whose photos are published will receive handsome pigskin wallets. Photos will be judged for their reader-interest and novelty of the vehicle, as well as for its advertising and utility value. Send your photo, with name and address on back, to RCA RADIO SERVICE NEWS, Camden, N. J.

NEW OSCILLATOR

(Continued from page 1)

methods, the TMV-97-B is available to service sales engineers at a cost less than that of a good volt-ohmmeter.

To manufacture an instrument such as the TMV-97-B Test Oscillator, new limits for the winding of coils, testing of coils and manufacture of tuning capacitors had to be established. For example—the inductance of the coils is held to a plus or minus limit of 1/2 of 1 per cent. The limits of the tuning capacitor are held to 1/2 of 1 micro-microfarad at the minimum capacity end and 2 micro-microfarads at the high capacity end. To produce the direct reading dial it was necessary to carefully calibrate 25 oscillators involving more than 2500 calibration points before the final readings could be established. The TMV-97-B dial is not dependent upon a trimmer capacitor for its reading, but rather on the exact capacities and inductances of the coils and tuning condenser.

Circuit Research

The selection of the circuit required considerable research. For example—a circuit was necessary that would be free from frequency variation over a considerable change in battery voltages and climatic conditions. It was also necessary to choose the type of modulating circuit so that the modulation percentage would not change with the output frequency. These and other considerations led to the adoption of the tuned grid plate modulated circuit and the use of a separate R. F. oscillator and audio modulator tube. Other important considerations were the self-contained power supply which simplified the shielding requirements and provided a single unit oscillator. The use of Radiotrons RCA-30, which have an extremely low power consumption (both plate and filament), makes possible long battery life with very small batteries. In other words, the TMV-97-B oscillator is an expertly engineered job designed and built primarily for the service sales engineer.



Individual Calibration Chart

The TMV-97-B is available in one extremely wide frequency range extending from 90 K. C. to 25000 K. C. This range is divided into eight bands, any one of which may be selected by means of the direct-reading range switch. (Each position is marked by the kilocycle range it covers.) The dial is read directly, it having the eight bands marked directly on its face. The accuracy of the dial is guaranteed plus or minus 3%, which is sufficiently accurate for most line-up purposes. However, in event a more accurate calibration is required, complete individual calibration is available (accurate to plus or minus .5%) at a slight additional cost. The calibrated oscillators use the same dial as the standard and a correction curve for all bands is attached to the back panel of the oscillator. This curve sheet is fastened by an aluminum frame to the oscillator case and is protected from damage by being covered with heavy celluloid. A blank error sheet is supplied with all standard oscillators and the frame may be purchased and used by those who wish to do their own calibration.

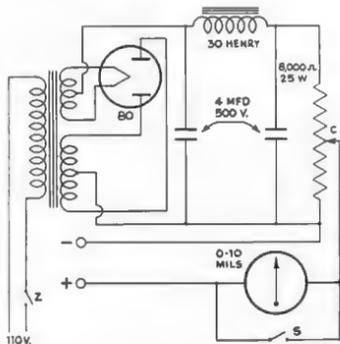
SERVICE TIPS

Win a handsome pigskin wallet. Until further notice, these popular wallets, will be given to all whose tips on any phase of radio service are published in this column. Send your favorite idea to RCA RADIO SERVICE NEWS, Camden, N. J.

Service Tips are our readers' ideas, not ours. While RCA RADIO SERVICE NEWS believes they are worth while, we can not be responsible in any way for results obtained.

Leakage Tester

In order to measure fairly accurately the leakage on a wet electrolytic condenser the hook-up shown here was constructed. It can be made of old parts lying around the service bench and will prove very handy and valuable to the service man.



The electrolytic condenser can be hooked to the negative terminal on the tester and the positive to the positive terminal. The milliammeter is short-circuited by switch S and then switch Z is thrown on. Clip C is adjusted to the working voltage of the condenser under test. This condenser should have about 50 seconds to fully charge and then switch S is thrown open and the meter needle will deflect. If the current through the condenser is more than 1/2 mil per microfarad then the condenser is defective. This method can also be used in determining the capacity of a new condenser in case its label becomes defaced.

F. C. Underwood, Jr.,
Box 367,
Quitman, Ga.

RCA Victor Model 121

Here is an experience I have had on five different RCA Model 121 All-Wave sets in the past week.

Three of these sets were installed by owner, and two by service men. In each case complaint was violent noise and very weak reception on the most powerful stations.

On top of the 58-tube shield can there is a small cap about one inch in diameter, with slot on one side. Through this slot runs the grid wire to top of 58 tube. There is a small piece of cambric tubing over this wire which is intended to be up close to the grid cap on end of wire. This tubing slips down, allowing portion of grid cap soldered to wire to touch shield cap, thereby causing all the trouble.

The tip to service men is to see that this tubing is forced up to grid cap as far as possible, and that there is no chance of its slipping.

The better idea would be for RCA to use soft rubber that would not slip, or a bakelite top for the grid wire.

A. K. McCarroll,
McCarroll Radio Service,
East Orange, N. J.

(Editor's Note: Thank you, Mr. McCarroll. This trouble has been corrected at the factory and will be found only in a few sets of early production.)

Tube Merchandising Ideas

When installing new tubes, I find the customer is much more satisfied—men especially—when the new tubes are checked on the tester in comparison with the old tubes that are being removed. Thus, a readily seen contrast between the high and low tests helps convince the customer of the need for the new tubes.

Never take old tubes away with you—it arouses suspicion that they are still useful. Better to instruct the customer to throw them away himself. Tear cartons that came on new tubes so that the old worn-out tubes will not be placed in them and carefully stored away.

If only two or three tubes in the set test fair or in the doubtful zone—the rest being "shot"—endeavor to show the advantage of a complete replacement to save future trouble and service calls. Output tubes, especially, should be replaced as soon as they start to drop off, because of the impairment of tone quality.

Charles H. Watts,
Dover, N. J.

Locating Cause of Fading

Fading in sets with AVC is difficult to locate because of the interaction of circuits. Disconnecting the AVC bias circuit and temporarily using a manual RF and IF bias control will make the solution much easier. If this change cures fading the trouble is usually condensers or resistors in the AVC circuit. If fading still occurs, the AVC circuit can be considered as not affecting the trouble, which simplifies the problem greatly.

Bernard L. Cook,
Medford, Mass.

Proper Antenna System

Here is a tip that has proven very profitable to me: On several sets where the owner was using an aerial eliminator, I have had complaints of poor general performance and excessive hum. Most of these eliminators fail to provide the receiver with a direct ground. A good ground being very important on the older sets with old-type power packs, in each case I have installed a proper antenna and ground. The customers have been greatly pleased with the improved performance. I am sure the new RCA Antenna will make many friends for me.

Jones Radio Service,
Columbia Station, Ohio.

Service on 32 Volts

Service men in towns surrounded by communities which use 32-volt lighting systems must be able to service 32-volt receivers. This puts the service man who has only 110-volt A.C. current available in a bad spot. Here is the way the situation has been met here.

We procured a 32-volt motor, paying \$5.00 for it. This was drafted into service as a generator. It was equipped with a "V" type pulley, a rheostat was connected in series with the shunt field to control the voltage, a 0.1 mfd. condenser was connected from each brush to frame and a 2 mfd. condenser was connected from negative to positive across the line. The motor selected was an Emerson with adjustable brush holder. This is speeded up to about 2800 R.P.M. with a 1/4 H.P. motor (110 volts). This system is free from noise and produces plenty of current for operating any radio set that I have found yet and can also be used for checking other 32-volt appliances.

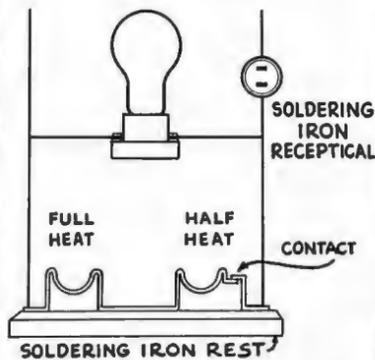
Steve's Radio Shop,
Angola, Ind.

Installing Dial Cables

Putting dial cables on sets, I have found if you put a spring with fairly good tension over the shaft and then put on a knob so that spring is compressed against the chassis the cord will not slip off the pulleys when putting it on; you can turn same, but it will not turn by itself.

G. D. Craig,
Craig's Radio Lab.,
3804 Grove Street,
Oakland, Calif.

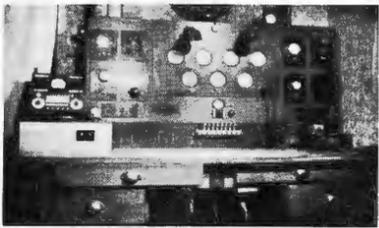
Keeps Iron Hot



I like a clean soldering iron, and of course an iron that is left on all the time will pit and blacken. To avoid this, I use a switch that shorts out a light bulb in series with the iron. For a 75-watt iron, I find a 60-watt bulb will hold the iron at stiff solder temperature so that it will heat up in about ten seconds. Of course as soon as the iron is picked up full voltage is applied as long as it is used.

M. M. DeWitt,
1310 Dale,
Oklahoma City, Okla.

Wallet Winner



Impressiveness is an important feature of the service bench of Ellis Radio Service, Parsons, Kansas. Note the shaded lights and general well-balanced design.

EDITORS BOOST ANTENNA SALES

Trade Papers, Magazines, Newspapers Praise RCA World-Wide Antenna System

All-wave antenna systems are "hot." That they are one of the items every dealer can profitably push during the next few months is proven by the publicity they are getting.

Martin Gosch, widely-read radio columnist of the *New York Post* syndicate of newspapers, devoted his entire space on May 11th to the RCA World-Wide Antenna System, saying that "it does nothing but produce results—minus the usual fuss and bother." In another place in the column by Gosch (the pun is his, regularly used in the title line of his articles) he said, "We hand the palm to RCA engineers for having developed an antenna system which unquestionably is superior to anything we've tried so far."

Radio Editors Enthusiastic

Nick Kenny, breezy-styled radio editor of the *New York Daily Mirror*, remarked in his "Hot News" paragraph of May 16th, "The RCA's new World-Wide Antenna System for short-wave radio reception is creating a sensation... it brings in short-wave stations in locations where they never got through before, and reduces interference considerably."

Charles W. Horn, general engineer of NBC, was interviewed for *The Country Gentleman*: "But the thing which people can't seem to understand," emphasized Mr. Horn, "is that good reception depends just as much upon a decent installation as upon an excellent instrument. Probably 85 per cent of the home installations in this country are bad."

"What gets me hot under the collar," he went on, "is that the retail radio dealers themselves never have met this problem squarely. Nine out of ten salesmen emphasize ease of installation rather than excellence of installation."

Service magazine, *Radio and Electric Appliance Journal*, *Radio Retailing* all have articles in the current issues on all-wave antennae and show diagrams of the RCA World-Wide Antenna System in recent issues.

Set Alignment Value Stressed

Factory Methods Now Possible With Small Equipment Investment

Alignment of radio receivers is a largely unexploited source of both profits and goodwill for the radio service sales engineer, according to J. P. Allen, RCA Parts Division.

"Every automobile owner has his car tuned up regularly, but few radio listeners have their receivers tuned up, simply because service engineers in general have not capitalized on the opportunity provided them by a test oscillator, an alignment wrench, and a tuning wand. And yet it is a fact that practically every set in use today can be improved so much by proper alignment that the service sales engineer who does it earns the radio owner's lasting goodwill as well as handsome profits on the comparatively small investment necessary now for equipment.

Mr. Allen then pointed out that there no longer is any need of avoiding alignment jobs nor for attempting to align a receiver using a broadcasting station and the ear, because of the low price of \$29.50 on the new full-range RCA Oscillator Type TMV-97-B.

Factory Methods

How do radio manufacturers line up receivers before they leave the factory:

1. They all align the intermediate frequency amplifier.
2. They all align the high frequency end of a particular band next.
3. They all align the low frequency end of the band while rocking the main tuning capacitor back and forth.
4. They all return to the high frequency end of the band for the final adjustment.

The Oscillator

The oscillator must have several important characteristics; namely, proper range, exact calibration, 400-cycle modulation, and proper control of its output. Also it is very important that the fundamental frequency of the oscillator be used for all frequencies, as harmonics are generally unsatisfactory. The difficulty of identification and the low output render this type of signal unsatisfactory.

An oscillator to produce the frequencies needed for aligning a modern all-wave receiver must cover the range from 100 K. C. to 25,000 K. C., with its fundamental frequency continuously. The output must be adjustable to a very low value, so that the action of the A. V. C. in the receiver will not defeat the trimmer adjustments being made. The need for exact calibration is very important, for without it, proper setting of tuning dials is impossible.

Tuning Wand

The tuning wand is a new service tool recently introduced to Service Sales Engineers. By means of it, the need or lack of need for aligning a circuit can be predetermined before actually touching the trimmer capacitor.

BRIDGEPORT PLAN ELIMINATES GYPS

Association Members Use Stickers to Protect Public and Selves

Members of the Greater Bridgeport (Conn.) Radio Service Men's Association have adopted a unique plan designed to protect the public as well as the service engineers and to increase public confidence in the service industry.

The feature of the plan, as described in a letter to RCA Radio Service News by C. Zimmerman, manager of National Radio Service, 246 Gregory Street, Bridgeport, is a sticker measuring about two and one-half by three inches, which is pasted on the back of any receiver serviced by a member of the association.

Serviced by _____

Member of
Greater Bridgeport Radio Service
Men's Association

Remarks: _____

"When we service a job, we write in, under remarks, the parts used, type of repairs, and the amount charged," says Mr. Zimmerman. "In case another man services the machine, he will know just what has previously been done to the instrument and what was charged for the work. If the other man has charged a customer \$7.00 or \$8.00 for a job for which a fair price would have been only \$1.75 or \$2.00, he is considered a 'gyp.' We report him to the organization, bring him up before the other members and find out the reason for the exorbitant charges. If he continues this sort of work we drop him from the organization. This method is a step toward honest prices for honest work."

ACCURACY!



Laboratory precision at moderate prices is the goal in the manufacture of RCA Test Oscillators. Above is shown one of the tests applied to all coils used in the Type TMV-97-B Oscillator. Inductance of coils is held to a plus or minus limit of one-half of one per cent.

RCA EARNINGS SHOW INCREASE

Annual Report to Stockholders Reflects Better Conditions

At a meeting of stockholders of the Radio Corporation of America, held in New York in May, all of the directors whose terms expired this year were re-elected by a unanimous vote.

Improved cash position and increased earnings over the corresponding period of the previous year were reported by David Sarnoff, President. Net profit for the first quarter of 1934 amounted to \$1,235,725, compared with a loss of \$478,164 in the first quarter of 1933. This statement, of course, embraces all of the various subsidiaries of the corporation.

It was disclosed that no bonuses have been paid to officers of the corporation or its subsidiaries for several years. An overwhelming vote approved the salaries of officers.

Members of the radio trade will welcome the news of better earnings by RCA not only as an encouraging sign of the times but because it pays to do business with firms that are in a sound financial position.



Advertising Brings Members

Unexpected results were obtained by a joint advertising campaign recently undertaken by the Philadelphia Radio Service Men's Association. Advertise for customers and you will get members, according to A. H. Prow, President of the Philadelphia Association.

The Philadelphia Radio Service Men's Association appointed an Advertising Committee and gave it \$75.00 with which to work. A heading was designed for an ad which took 4 1/4 inches, two-column width. Half of the space was occupied by the heading which stated:

"For Better Radio Service call a member of the Phila. Radio Service Men's Association."

"An organization composed of experienced radio men pledged to render dependable courteous service at fair prices."

The remainder of the space was occupied by one-line ads consisting of the name, address and phone number of individual members who paid for their space at but a slight increase over standard newspaper line rates. Names were grouped by type of business.

Whether the individual service men benefited directly by the ad is a matter of personal opinion. The original appropriation plus assessments was sufficient to run the ad for eight weeks. At the time of the original insertion the membership of the Association was 175. When the campaign closed the membership had increased to 375. Of course full credit should be given a very active membership committee for its work, but the Association undoubtedly can attribute a portion of it to the advertising.

Nine Types of Tubes Fill 80% of Demand

Classification of Types According to Rate of Movement Indicates Types Different Dealers Should Carry in Stock

Interesting facts about the salability of tubes by types are disclosed by a chart of tube movements recently compiled by RCA Radiotron Co., Inc.

Approximately 80% of the tube renewal business is done on nine types of tubes. These are the types that every service engineer and dealer should carry in stock in adequate quantity. Of the other types, the demand varies greatly from dealer to dealer, depending on the class of trade, the sets handled, and the types of power supply available in the trading area.

Whether a radio service sales engineer is still carrying the heavy burden of the large number of tube types, or whether he has relieved himself of this expense by handling tubes on consignment, he should watch his stock carefully. In the long run the wholesaler can afford to serve only those retail agents whose stock shows sufficient turnover. For this reason retail agents should watch their stocks of consigned tubes as carefully as they would stocks of tubes purchased outright.

For the guidance of service engineers, the table of tube demand prepared by the RCA Radiotron Co., Inc., is given below:

GROUP INFORMATION

- Group 1**
Heavy Renewal Demand Types
Equipment Years
- 01A—1922, 1923, 1924, 1925, 1926, 1927, 1928.
 - 24A—1929, 1930, 1931, 1932.
 - 26—1928, 1929.
 - 27—1928, 1929, 1930, 1931, 1932.
 - 35—1931, 1932.
 - 45—1929, 1930, 1931.
 - 47—1930, 1931, 1932.
 - 71A—1926, 1927, 1928, 1929.
 - 80—1926, to date and still active.

All "old timers." Every dealer should have representative stock of the above. Probably over 12,000,000 sets in use using these types.

- Group 2**
A.C. 2.5-Volt—Newer Numbers
1932, 1933
- 55, 56, 57, 58, 2A5, 2A7—Large equipment volume in 1932 and 1933. Great bulk of the demand on 56, 57 and 58. Types 55, 2A5, 2A7 may be required in very moderate quantities for immediate service. True renewal demand yet to be developed.

53, 59, 2B7—RCA Victor and G. E. dealers particularly will require small quantities for service work only.

2A3—A. K., Colonial and Stromberg Carlson sets.
2A6—A. K. sets.

The greatest need for these types for small stocks will come from dealers handling the sets noted.

- Group 3**
6-Volt A.C. and Auto Types—Old Timers
- 36, 37, 38, 39—These types have been fairly active in the equipment market since 1931.

Large number of A.C. sets and universal A.C.-D.C. sets as well as auto sets went into the market in 1932 and 1933 using them.

- Group 4**
Air Cell Types—Farm Market—Portable Battery Sets
- 30, 32, 34—Active. Out in equipment over two years—in moderate quantity.

Dealers in farm markets where there is no A.C. house current should stock. Some dealers may require in wealthy neighborhoods where portable sets have been sold.

19, 31, 33, 1A6, 49—Slow. Only recently in equipment or else only used in few sets.

Ratio of these types to 30-32-34 very low. Anticipated average sale about one per dealer for renewal this year in battery markets.

- Group 5**
6-Volt A. C. and Auto Types
- 77, 78, 6A7, 42—These types (1932-33 numbers) came in heavy in equipment field and will probably be active for renewal this year. Expect renewal demand to develop this fall on first three. 42 already moderately active in renewal market and demand will increase.

- Group 6**
Tubes for Universal A.C.-D.C. Sets
- 1, 1V, 12Z3, 25Z5, 43—1933 first really big equipment year on these numbers. Used in small table model A.C.-D.C. sets and small amount in other miscellaneous equipment; 43 and 25Z5 by far the most popular.

- Group 7**
New Popular 6-Volt Equipment Types
- 76, 6C6, 6D6—These numbers are coming into the market this year for initial equipment. Actual renewal demand will be small, but the dealer selling sets using them will require a small stock for service.

- Group 8**
Special 6-Volt Auto A.C.-D.C. Types
- 75, 79, 84, 6B7, 6F7, 41—Moderate equipment sales in the past. In most cases will remain popular for equipment this year.

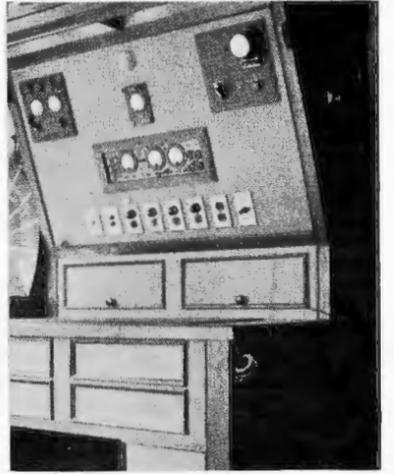
Because of comparatively small equipment sales, only moderate renewal demand.

- Group 9**
Miscellaneous Types—Highly Specialized Demand
- 12A, 46, 50, 81, 82, 83, X99, 5Z3, 22, 85, 89—Type of dealer and trade he serves will determine whether stock is needed.

- Group 10**
Extremely Small Demand Types
- V99, 48, 00A, 11, 12, 20—Type 48, for example, sold only as equipment in direct-current markets. Equipment demand on 48 very small.

On others—very few old sets in use employing them.

Wallet Winner



Service Bench of Specht's Radio Service, 817 Woodward Ave., Ridgewood, Long Island, N. Y. A design combining convenience, accessibility, and neat appearance.

STORE ANTENNA

(Continued from page 1)

One of the difficulties of merchandising all-wave radio sets has been in making convincing demonstrations. Few stores have heretofore been able to get good standard broadcast reception, to say nothing of short-wave reception, with the aerials commonly in use.

The RCA World-Wide Dealer Demonstration Antenna System seems to be the solution of the problem. Also, the System provides a good excuse for not making demonstrations in the home, since the switch on the transformer supplied for each set amply demonstrates the need of a noise-reducing antenna system.

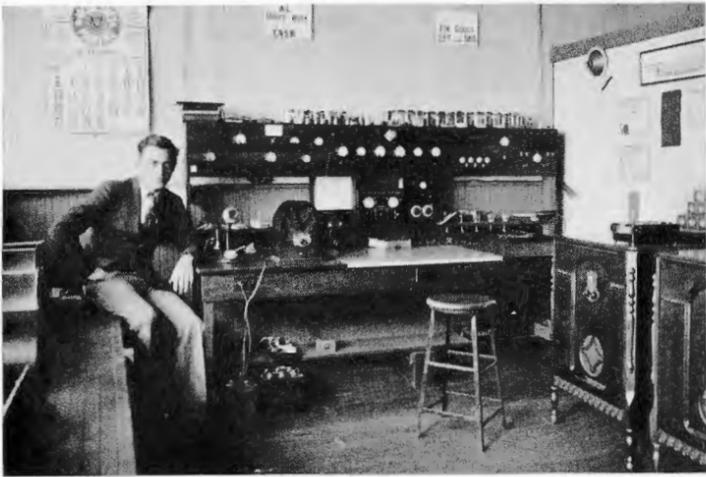
Dealer's Report Success

Gimbel Brothers, a leading store of Philadelphia, where the System was first introduced, report as follows in a letter to Paul Zeisler, service manager of Raymond Rosen Co., distributors: "We are particularly gratified with the results obtained; we have previously undertaken short-wave reception of several European stations in connection with the use of several alternative antenna systems, but without any semblance of satisfactory results. Despite the fact that we are directly under the antennae of two 500-watt broadcasting stations, we are able to tune in European stations with surprising good clarity and without any suggestion of broadcast wave-length harmonics."

A. H. Prow, service manager of Strawbridge & Clothier, another large downtown Philadelphia department store, writes: "We have installed the RCA World-Wide Antenna System and found short-wave reception truly remarkable. Reception was absolutely free of 'man-made' static, and GSB, Daventry, England, on 31.5 meters, was received louder than WJZ. With the advent of warm weather and the demand for 'All-Wave' receivers, short-wave antenna system provides a new source of profit for the wide-awake service man."

The Kit for the RCA World-Wide Dealer Demonstration Antenna System Kit is priced at \$9.85 net to the dealer or service engineer.

WINS FIVE DOLLARS!



Second Prize in the Service Bench Photo Contest goes to Varihy Radio Service, Seeleyville, Indiana. Convenience and completeness make this a bench conducive to high-class work.

The Voice of Radio Service

A forum for members of the radio service industry. Letters of general interest will be published. Let us have your views.

Radio Service News, Vol. I, No. 1, has just arrived. This I read with interest and especially the editorial by yourself, "Radio Service Sales Engineers." I feel that you should be complimented on it, as I feel that you have hit the nail on the spot. . . . due to the fact that every high school boy thinks that he knows radio, and will do a job, or try to do it for 50c a call. Naturally this class of work does not get by, and the result is that service work here is demoralized. . . . Then when one reads what you have written it sure feels good to know that at least one company stresses efficiency in service. . . . I hope that your work will meet with the success that it deserves, and will result in putting the service work on a higher plane.

Arthur Pearce,
531 St. Louis Street,
New Orleans, La.

I recently picked up a copy of the new "RCA Radio Service News." I am happy for myself and countless others that your Company is getting conscious of the independent service man. It has always been my humble opinion that one of the best radio salesmen is the fellow who is supplied by a manufacturer with complete information about his line, and not to "high-hat" said serviceman with "authorized dealer" bunk. "Them days have gone forever!" If there is a mailing list for this little paper, please ask Mr. Hartley to place me on same. I have an idea I am going to win one of the Radiotron wallets.

Robert C. Barton,
1041 University Ave.,
Bronx, New York City

Parsons, Kansas
. . . I think it is a fine publication. The editorial by Mr. E. M. Hartley is something that should be read by every service man. My service work dates back to 1926, and I have found that high quality parts and tubes mean a lot in repeat calls. . . . a few questions about the World-Wide Antenna System. . . . I am enclosing a diagram. . . . The owner has a Philco all-wave set and has given me an order for an antenna system that will work.

B. R. Ellis

I want to compliment you on your editorial in the April 20 RADIO SERVICE NEWS on "Radio Service Sales Engineers."

In later years, during the period of bankruptcies and failures which the industry has gone through, surplus, reclaimed and other goods have been on the market, which merchandise has done more than its share to bring the good radio dealer and serviceman into ill repute.

I therefore am very much pleased with RCA's entry into the parts field, since the quality of the merchandise that will be put out will serve as a stimulus to other manufacturers to offer only high-grade, dependable merchandise, and through the merchandising angle help clean up the situation that has existed very largely up to the present time.

We assure you of our heartiest cooperation in waging an active selling campaign on all merchandise that RCA offers, since we are certain that the dependability and prestige of RCA will do more than anything else that we know of to remove the stigma of gyp merchandise from the radio business.

Robt. Fogelson
ALLIED RADIO CORPORATION
Chicago, Illinois.

EARL L. GITZ, Radio
7711 Maple Street
New Orleans, La.

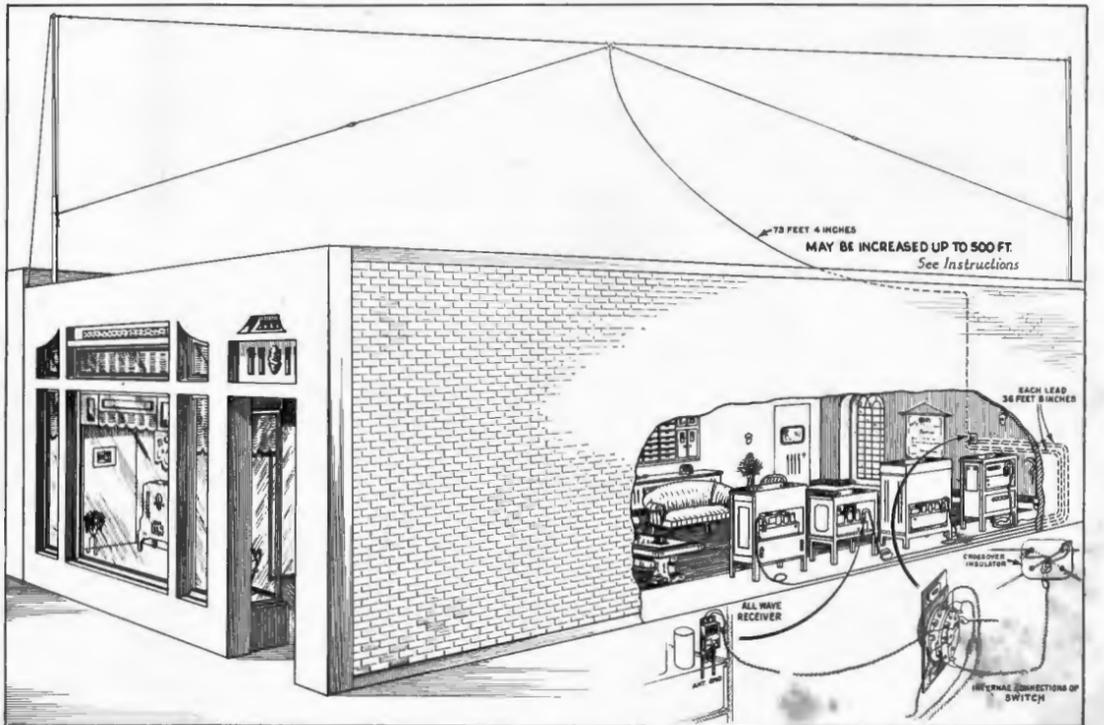
I have just had the pleasure of reading your article on "Radio Service Sales Engineers" in the April 20th issue of Radio Service News.

This is the most complete diagnosis of "what's what about radio" that has ever been my privilege to read.

Do you not think this article would make a hit printed in individual pamphlet form, which might be enclosed in our usual advertising correspondence? If such a move has already been made, won't you please advise me at the earliest possible moment?

And again, Mr. Hartley, CONGRATULATIONS!

Earl L. Gitz



INSTALLATION OF RCA DEALER DEMONSTRATION ANTENNA SYSTEM

The four-way switch mounted on the wall, and four 38-foot 8-inch secondary transmission lines permit this noise-reducing antenna system to be connected to four receivers in widely separated points in the store.