



# RADIO SERVICE NEWS

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## TUBE PRICES ADVANCE

### \$47.50 Oscillograph and New Oscillator Announced by RCA

Oscillograph Designed Especially for Service Men. Oscillator Is A-C Operated, Has Electronic Sweep

A genuine RCA Oscillograph for only \$47.50, including the Cathode-Ray Tube! And a sensational new Test Oscillator, with built-in variable sweep for use with the Oscillograph, for only \$64.50! The two instruments, everything a service engineer needs to service receivers the modern oscillograph way, for only \$112.00. And time payments easily arranged!

Service engineers will have to pinch themselves when they hear about it, but it is really true. The oscillograph is now within the reach of every service engineer, and the new RCA instruments were designed especially for him. Both Oscillograph and Test Oscillator are really portable; both are a-c operated. The frequency sweep of the Test Oscillator makes it unnecessary to have a separate frequency modulator. Just these two new instruments do the whole job.

#### New Tube Used

Ownership of a cathode-ray oscillograph has come to be the mark of the progressive service engineer but until now the price of high-grade oscillographs has prevented many service engineers from owning one. The extremely low price of the new RCA instrument is made possible by a new cathode-ray tube just announced by RCA. The new tube, RCA 913, has a one inch screen, which is ample for the requirements of servicing receivers and many other uses.

#### Impressive Appearance

The new RCA Cathode-Ray Oscillograph is as outstanding in appearance as it is in price. The case (Continued on Page 3, Column 2)

### WIDE CHOICE OF ANTENNAS IN RCA'S LINE

Two New Auto Antennas Look Snappy And Are Easily Installed

Two new auto antennas recently added to the RCA line make it possible for the dealer or service engineer to please any customer and make any type of installation with an antenna carrying the RCA guarantee and assurance of quality.

The two new antennas are known as the Auto-Topenna (Stock No. 9792, List Price \$5.00) and the Auto-Whipenna (Stock No. 9793, List Price \$3.50). The Auto-Whipenna, as the name indicates, (Continued on Page 6, Column 1)

### Star on RCA Program



Glamorous Gladys Swarthout sings for New York's famous Metropolitan Opera, whose Saturday afternoon broadcasts of entire operas over an NBC network are now sponsored by RCA. See story on page 3.

### WAVE TRAP MAKES PROFITABLE ITEM FOR SERVICE MEN

A new product that returns a neat profit of \$2.41 to \$3.41 per unit, and which is easily sold because it is the answer to a large proportion of all radio listeners' complaints, is (Continued on Page 5, Column 4)

### NOW IS TIME TO SUBSCRIBE FOR DISPLAYS

New Service For Radiotron Dealers Provides Displays For Whole Year

RCA dealers this year will be provided with the most extensive program of window display material ever prepared by any radio tube manufacturer. Four separate and beautiful display units, now being prepared, will be ready for distribution in February.

According to D. J. Finn, Radiotron Advertising and Sales Promotion Manager, delivery on the first of the four units will be made to Radiotron dealers in February. This display, showing the famous Radiotron Doll performing the feat of balancing on a tight wire, has an element of mystery about it that makes it a sure-fire hit. The second unit of the series, a timely and attractive slate on which the dealer can chalk his own special announcement, will go out to dealers in April.

#### Displays Have Seasonal Appeal

The third unit will be shipped in time for showing during September. It features a beautiful girl standing beside a huge 100,000 watt RCA Transmitting Tube and holding a comparatively tiny RCA Metal Tube in her hand. (Continued on Page 7, Column 3)

### RCA Moves To Boost Dealer's Profit On Tubes

Higher Costs Bring Prices That Will Give Dealers Greater Unit Profit

By E. N. Deacon  
General Sales Manager,  
Radiotron Division

After years of steady decline, Radiotron list prices swing upward effective January 2nd. Eighty-four receiving types are affected.

The great number of types and the complexity of chassis designs have caused a sharp trend away from over-the-counter tube sales and in the direction of sales by retail service outlets possessing expert technical knowledge of radio design. This in itself raises the cost of supplying tubes and renewal parts to the consumer.

#### Costs Are Higher

In addition, the large number of types and the limited demand for many of them have resulted in ac- (Continued on Page 6, Column 3)

### Display Has "It"



Shown above is just a sample of the quality of material to be supplied dealers who subscribe for the RCA Radiotron 1937 window display service. This unit combines the attention value of a beautiful girl and a huge broadcasting tube.

### Sensational New Test Equipment



The two new RCA instruments shown above make it possible for thousands of service engineers who heretofore could not afford to own oscillographs, to service receivers the modern way. On the left is the new RCA Oscillograph No. 151 that sells for only \$47.50, and on the right is the new RCA Electronic Sweep Test Oscillator that sells for \$64.50. No separate frequency modulator is needed with these two instruments.

### Rosemary



Look at Rosemary Lane. She has long been a network favorite with Fred Waring's Pennsylvanians.

## Servicing In Formosa Is A Perilous Job

### Strange Food And Modes Of Travel Described By Service Engineer

Venomous snakes and poisonous insects, strange foods and unusual conveyances, high temperatures and extreme humidity are only a few of the hardships encountered in servicing radios in Formosa, according to a report sent by one K. Torri to his employer, the Victor Talking Machine Company of Japan, Ltd.

Torri was sent on a trip through Formosa to service the company's products. His report, in neat succinct numbered paragraphs, describes working conditions which make the job of a service engineer in this country seem like a bed of roses by comparison. "All the troubles were caused by high temperature and high humidity. Cannot suppose in Naichi," states the report. Other interesting excerpts from the report follow:

"As almost all of customers are Taiwanese, service engineer used to suffer from different language required to explain to them.

#### What! No Motor Cars?

"Service engineer must go up remote place than salesman, because dealers live in town but customer may live in the country. When he travels to such a place he cannot take advantage of train nor motor car but he must take Daisha—open type wood wagon on the narrow rail—which is pushed by coolie up hill therefore the charge is various according to weather and making matter worse, it does not certify for endangering his life to cross the river he has to be carried by straw net hung by rope.

"Therefore, on his traveling service he must always expose his life to danger under the different habits, food, conveyance, weather and many kinds of venomous snakes and poisonous insects."

### Booklet Helps Sell To Schools

A new sales tool to help dealers sell the rich school market has just been issued by the Educational Department of RCA Victor. It is a handsome 32-page booklet, entitled "Sound Service For Schools," in which are listed the many RCA products that are of particular interest to educators.

Victor Records have been in wide use in schools for years. "Sound Service For Schools" lists the most popular of the records that are adapted to educational purposes, as well as phonographs, centralized sound and public address systems suitable for school use.

The booklet has been mailed to thousands of schools, preparing the way for active sales effort on the part of local dealers.

## Uses Strategy To Boost Sales Of Aerial Jobs

### Philadelphia Man Reveals Sales Tactics That Convince Most Prospects

That Henry Koch of 252 Diamond Street, Philadelphia, is a master salesman as well as a crack service engineer is proven by the clever method he uses to sell antennas.

Koch writes that whenever he calls on a prospect he takes a roll of twisted transmission line from an RCA Spider Web Antenna with him. During the course of his call, he attaches the transmission line to the receiver and unrolls it the length of the house. This procedure arouses the curiosity of the customer. Koch then points out that all noise has disappeared and that if the transmission line were permanently installed and connected to an RCA Spider Web Antenna placed beyond the reach of man-made static, the customer could receive his radio programs with the noise reduced just as the transmission line alone had reduced it.

#### The Spider Web Satisfies Them

The RCA Spider Web Antenna can be depended on to make a thoroughly satisfied customer, whether or not Koch's method of selling is used. In addition to its highly efficient noise-reducing feature, it probably gives greater signal pick-up over the entire band from standard broadcast to ultra-short waves than any other antenna in common use. This is accomplished by a design that provides the equivalent of a double-doublet tuned for each band. The remarkable results obtained by the Spider Web Antenna amaze the radio listener who has been accustomed to an ordinary antenna. The Spider Web Antenna lists at \$8.95 and, with the charge for installation, makes a worthwhile job for the service engineer and a well-satisfied customer for the dealer who sells one with each instrument.

#### Store Antenna Helps Set Sales

Similar tactics are used successfully by many dealers to sell antennas—and radios—direct from

### Oh, Joy!



Joy Hodges, shown above, seems to be rightly named. She brings joy to thousands when she sings with Jimmy Grier's orchestra and Joe Penner every Sunday at 6.30 P.M., E.S.T., over the Columbia Network.

the store. These dealers use the RCA Deluxe Dealer Demonstration Antenna. This antenna can be connected to four receivers and switched instantly from one receiver to another by a switch on the wall. This enables the dealer to demonstrate the difference between radios and helps materially in the effort to sell-up to higher-priced models. Some dealers also keep a receiver connected to the RCA RK-40 Antenna to demonstrate the improved reception accomplished by even an inexpensive antenna installation. The RK-40 Antenna is a scientific unbalanced doublet antenna that is easily installed and sells for a list price of only \$5.50.

Customer's Voice: "If it costs too much, I won't have it fixed." Customer's Thoughts: "I paid \$125 for the set just because I believe it's the best in the world, and I still think so. I'll pay any fair price to bring it back into condition. If the repairman offers me a bargain rate, I won't give him the job—he'll probably use cheap parts."

Customer's Voice: "The set didn't have any hum before you fixed it." Customer's Thoughts: "We both know it hummed, but he looked worried when I mentioned it. Bet he used cheap parts. Why doesn't he show me the new parts instead of getting technical?"

Customer's Voice: "Make it seven dollars instead of eight-fifty, and I'll give you the job." Customer's Thoughts: "No one asks for cut prices if he sees the replacements are the best. I want to feel that radio repair prices are more firmly established than the gold standard." I have capitalized on such thoughts. So can you.

## KING CUSTOMER'S WORDS AND THOUGHTS

By Raymond D. Hutchens

Raymond D. Hutchens, author of this analysis of the mental processes of the person he calls King Customer has had ample opportunity to form opinions on the subject. In 1920 he was operator of amateur radio station 9AGL in Chicago. From 1925 to 1928 he was a marine radio operator. For the next two years he worked in the design laboratory of RCA Photoradio, and then spent four years in a retail radio store in sales and service work. Since 1930 he has been Operating Engineer on maintenance equipment on the RCA Communications inter-city system.

#### King Customer



R. D. Hutchens

Individualism was rugged in the matter of price-fixing; some repairmen added the customer's house number to his age; others, with more training in legal banditry, multiplied. For parts, we removed the wheels from anything we found in the basement, and installed them with gay abandon.

I am not the only serviceman who has given more attention to the smallest bypass than to the person who paid for it.

Few things King Customer says to a serviceman are of value. I re-

paired sets for more than a year before it was bludgeoned into me that my customers' thoughts, not their words, should be worth about fifty cents apiece to my business.

Many repairmen will recognize the remarks following as clichés common in the profession. They are time-worn comments made by customers to servicemen, followed by the thoughts which usually accompany the spoken words. It is the thoughts that are really important:

#### The Customer Speaks

Customer's Voice: "My brother Louis knows radio, but I believe in giving the local man a chance." Customer's Thoughts: "Louis' only experience with electricity came during the six months he spent in a cell, but perhaps I can get the price of the job down."

Customer's Voice: "Look the set over—I think there's a loose wire some place." Customer's Thoughts: "If he pays any attention, he doesn't know his business. I'll watch him closely—his test equipment looks old."

Customer's Voice: "Five dollars for a condenser? My sister got one for a dollar last week." Customer's Thoughts: "Of course I'm lying, but if he argues, I'll know he's too high-priced. I'm willing to pay the right amount for the best parts, but he'd better show me a condenser with a good trade mark on it."

Customer's Voice: "I can't understand why I need tubes—I just bought new ones three months ago." Customer's Thoughts: "If the serviceman can't tell the age of those tubes—four years—he won't get any of my money."

## Door-To-Door Work Pays Big For Strauman

### Makes 40 Calls In Day And Nets Profit Of \$38.40 On 95 Tubes

House-to-house tube selling pays big returns when done properly and systematically, according to Charles E. Strauman of Pacific, Missouri.

Any house-to-house salesman must possess the courage and stick-to-itiveness to stand some rebuffs and discouragements, particularly until he has developed his selling technique to the point where it succeeds in a fair percentage of calls. Strauman seems to possess these qualities plus some excellent ideas on selling that have brought him real profits from this line of work.

#### Carries Large Stock of Tubes

"I have discovered by actually making them, that house-to-house contacts pay," writes Strauman.

"Each day I start out with a complete line of RCA Radio Tubes and a tube tester. I stop at every house on the route I have chosen to work and ask permission to test the tubes, pointing out that weak tubes seriously hinder effective radio reproduction. I tune on a weak station and let the customer listen to it. Then, I install a new set of RCA tubes, pointing out to the customer that I haven't touched the dials. This, I have found, is the surest way to show the improved reception brought about by new tubes. Inevitably, such a demonstration results in the sale of a set of new tubes.

"When a customer has purchased a set of tubes, I check over the ground, aerial and pilot lights of the radio. This service is free only when a person buys a complete set of tubes.

#### Almost \$1.00 Profit Per Call

"I have made as many as 40 calls in a single day, sold 95 tubes and netted a profit of \$38.40.

"After calling on the prospect, I make a note of the name and telephone number of the customer and the make and model of his radio, so that I may follow him for radio set sales in the future. If the person has not bought a tube renewal, I telephone within a week following my visit to his home and often close sales in this manner.

"My experience has proved to me that the way to sell tubes is to bring them to the customer," concluded Strauman in his letter.

## 'I'd Like To See a Radio, Please'



The RCA Victor Magic Voice has even broken into the newspaper cartoons. This one is reproduced through the courtesy of the Philadelphia Record and Consolidated News Features.

# NEW CATHODE RAY TUBE HAS SMALL SCREEN

## Low Price Of New RCA Tube Makes It Suitable For Many Purposes

A new, small cathode-ray tube that has a viewing screen of approximately one inch in diameter and which will be sold at a price so low that many new applications undoubtedly will be found for the tube was recently announced by the RCA Radiotron Division. The new tube is known as the RCA-913 Cathode-Ray Tube, and sells for \$5.60 list.

The 913 is a high-vacuum cathode-ray tube utilizing the All-Metal construction and having a fluorescent viewing screen approximately one inch in diameter. This tube, designed for operation with an anode voltage as low as 250 volts, is provided with two sets of electrostatic plates for deflection of the electron beam. The 913 produces a brilliant, luminous spot having a greenish hue. This new type greatly enlarges the field for practical applications of the cathode-ray tube.

### Image Can Be Regulated

The electron source of the 913 is a substantial cathode indirectly heated. The cathode, control electrode (grid), and focusing electrode which functions also as an accelerating electrode, constitute an electron gun for projecting a beam of electrons upon the fluorescent screen. The resulting luminous spot, easily visible in a well-lighted room, can be regulate as to size and intensity by suitable choice of anode voltages. The two interconnected sets of electrostatic plates in the 913 produce fields at right angles to each other, and consequently deflections at right angles. One set serves to reproduce the phenomena under observation; the other is used for the time sweep.

### Many New Applications

Because of its unusually small size and its ability to produce a bright image at extremely low voltages, the 913 is especially suited for compact, portable, oscillographic equipment. These features, in addition to the relatively low cost of the 913 and its associated apparatus, make this tube practicable for use in many types of test equipment where a larger cathode-ray tube would not ordinarily be employed.

### Typical Operation Data

Heater Voltage (A.C. or D.C.) 6.3 Volts  
Heater Current 0.6 Ampere  
Anode No. 2 Voltage 250 500 Volts  
Anode No. 1 Voltage\*\* 50 100 Volts  
\*Grid Voltage.  
\*\*Approximate.

# Announce New Oscillograph And Oscillator

(Continued from page 1, col. 1)

is of gray crinkle-finish lacquer with nickel trimmings. The control panel is both attractive and impressive to customers, which, as every service engineer knows, is important. The weight of only 14½ pounds makes it easy to carry.

### Sensitivity Is High

The sensitivity of the new No. 151 RCA Oscillograph is quite high—1.75 volts (RMS) for full scale deflection. Vertical and horizontal amplifiers have individual controls, flat from 30 to 10,000 cycles. The linear timing axis has a range of



RCA 913 is a new low-priced cathode-ray tube with a one-inch screen and a metal shell surrounding the glass bulb. It makes possible many new uses for the cathode-ray tubes, and is used in the new RCA Cathode-Ray Oscillograph pictured elsewhere.

from 30 to 10,000 cycles, an unusual feature for an instrument priced so low.

### Guaranteed Accuracy

The new RCA Electronic Sweep Test Oscillator, No. 150, is as remarkable as its companion instrument, the No. 151 Oscillograph. Whether receivers are aligned with an output meter or with an oscillograph, this new oscillator fills every requirement. High output, negligible leakage, and variable width frequency modulation are but a few of its many fine features. A four-inch dial, rotating over 340°, spreads the six fundamental frequencies ranges over a total scale of 45 inches for easy reading. A double range vernier makes tuning easy. Accuracy is guaranteed to be

## PRICE CHANGES ON SIGN AND CLOCK

Increases in the cost of production have made necessary slightly higher prices on two of the most popular RCA Radio Tube sales promotional items, both of which have great value to the dealer and remain wonderful bargains even at the new prices. The Enameled Metal Flange Sign with the words "Expert Radio Service" on one hanging panel and the service engineer's name on another now sells for \$1.50. The RCA Radiotron electric clock with "RCA Radio Tubes—Tubes Tested Free" inscription now sells for \$8.

within 1% which assures the finest kind of results in radio service work.

The new electronic sweep circuit incorporated in the RCA Model 151 Oscillator makes it ideal for use with all types of cathode ray oscillographs in alignment applications, eliminating the need for a separate frequency modulator. In combination with the RCA Model 151 Oscillograph, the new Oscillator provides the service engineer with equipment unequalled for rendering the highest type service on the modern high fidelity receivers, and at a price never before approached.

### Will Change Methods

These two remarkable new instruments are expected to lead to important changes in radio servicing practices now in general use. The oscillograph has been recognized as the modern service tool, with the more complicated and critical circuits of all-wave receivers making an oscillograph almost a necessity to the well-equipped shop. Heretofore the cost of a good oscillograph has prevented many service engineers from having one, especially since for alignment work it was necessary to have a frequency modulator and an oscillator as well.

### Oscillograph Specifications

Radiotrons Used — 1 RCA-913 (1-inch), 1 RCA-885, 2 RCA-6C6, 1 RCA-80, Total 5.

Sensitivity — 1.75 volts (RMS) for full-scale deflection.

Amplifier Range and Gain—Flat 30-10,000 cycles, gain, 50.

Timing Axis (Horizontal Sweep) —30-10,000 cycles.

Input Power Consumption — 50 watts cold, 30 watts hot.

Overall Dimensions — Length 13¾", height 9¼", depth 7¾".

Weight—14½ lbs.

Finish — Gray wrinkle lacquer with nickel trimming.

### Oscillator Specifications

Radiotrons Used—1 RCA-6A7, 1 RCA-6F7, 2 RCA-6C6, 1 RCA-80.

Frequency Range—90 kcs.—32,000 kcs.; fundamental frequency, 6 ranges.

Modulation Frequency — Amplitude, 400 cycles 30%. Frequency, 120 times per second adjustable from 1 to 40 kcs. Sweep rate, 120 times per second.

Dial — Indirect illumination, no parallax, vernier ratio 2:1 and 5:1, 4" diameter, Calibration Accuracy 1%.

# RCA SPONSORS BROADCASTS OF METROPOLITAN OPERA CO.

## Saturday Matinee Performances to Go on Network—Philadelphia Orchestra Again to Tour Nation for RCA Victor

The Metropolitan Opera of New York, undoubtedly America's number one musical institution in point of prestige, is currently being sponsored over the air by the Radio Corporation of America. The series includes all of the regular Saturday matinee performances of the 1936-37 season, broadcast over a coast-to-coast NBC Blue Network.

Beginning April 20 RCA Victor will again sponsor the nation-wide tour of the famed Philadelphia Orchestra, in a repetition of the pilgrimage which met with such brilliant success, artistically and commercially, a year ago.

In the meantime, the RCA Magic Key hour, which in its maturity is found to be not only a Sunday afternoon fixture for countless families, but one of the "musts" in every recognized listing of outstanding programs, will continue.

Thus RCA and RCA dealers are magnificently fortified from a radio and musical standpoint in a manner that has perhaps never before been equalled by any commercial concern. Add to this the impressive space advertising campaigns in magazines and newspapers, and the variegated RCA promotion program, and the tremendous persuasive power behind RCA products is evident.

### Opera Audience Is 9,000,000

Surprising to many, the Metropolitan Opera, despite its "high hat" reputation, is not limited in its appeal. Careful surveys indicate that now, after four years on the air, it has an active listening audience in

close proximity to the nine-million mark. The Philadelphia Orchestra has a similar appeal. These relatively critical audiences are the ones which set the artistic standard for the general public. If they say it's tops, the public knows its "quality."

RCA's sponsorship of these two distinguished groups, plus the Magic Key and its ten million listeners, place the stamp of "superfine" on any product made by RCA. They make those products still easier to sell. It is common sense rather than fanciful logic to say that Mrs. Smith, who has heard some of these unusual programs, will buy a tube or an antenna bearing the RCA trade mark much more readily than an unknown brand. Also, that she will have a higher regard for the dealer or service engineer selling them.

### Elaborate Opera Promotion

For instrument and record dealers, RCA Victor has devised a very definite tie-in for the Opera broadcasts. Cornerstone of this elaborate program is a de luxe 32-page booklet, "The Story of the Opera," for free distribution to consumers by the dealer. When the customer calls for her copy in response to the radio offer, she is asked to listen to a Victor Record of her favorite opera star, played on a Record Player attached to an RCA Victor "Magic Voice" Instrument. Ground is thus broken for an instrument sale. Dealers not already tied-in with this promotion, should consult their distributor about getting the Metro- (Continued on Page 6, Column 5)

# New And Old Prices of RCA Tubes

The table below gives list prices of all RCA receiving tubes.

## STANDARD GLASS TYPES

Type	Old List Price	New List Price	Type	Old List Price	New List Price	Type	Old List Price	New List Price
00A	\$1.25	\$2.00	12A7	*	\$2.00	49	\$0.99	\$1.20
01A	.59	.70	12Z3	\$0.99	1.10	50	2.50	2.25
1A4	1.50	1.75	15	2.00	2.00	53	1.25	1.50
1A6	1.25	1.50	19	.99	1.20	55	.99	1.25
1B4	1.75	2.00	20	.99	2.00	56	.69	.80
1B5/25S	1.25	1.25	22	1.25	1.50	57	.89	1.10
1C6	1.50	1.75	24A	.89	1.00	58	.89	1.10
1F4	1.50	1.50	25Z5	.99	1.20	59	1.25	1.50
1F6	1.50	2.00	26	.59	.70	71A	.69	.80
1v	.89	1.10	27	.69	.80	75	.99	1.10
2A3	1.25	2.25	30	.69	.80	76	.69	.80
2A5	.99	1.20	31	.69	.90	77	.99	1.20
2A6	.99	1.20	32	1.25	1.50	78	.99	1.20
2A7	1.25	1.50	33	.99	1.25	79	1.25	1.50
2B7	1.25	1.50	34	1.25	1.50	80	.59	.70
5Z3	.89	1.00	35	.89	1.00	81	2.00	2.00
6A4/LA	1.25	1.50	36	.89	1.10	82	.89	1.10
6A6	1.25	1.50	37	.69	.90	83	.89	1.10
6A7	1.25	1.35	38	.89	1.10	83v	1.50	2.00
6B7	1.25	1.50	39/44	.89	1.10	84/6Z4	1.25	1.50
6C6	.99	1.20	40	.69	1.00	85	.99	1.20
6D6	.89	1.20	41	.89	1.10	89	.99	1.50
6E5	1.50	1.50	42	.99	1.20	V99	.99	1.50
6F7	1.50	1.75	43	.99	1.20	X99	.99	1.50
6G5	1.50	1.50	45	.69	.80	112A	.69	.90
10	2.00	2.25	46	.99	1.35	874	4.90	4.00
11	1.25	2.00	47	.89	1.25	876	6.70	6.00
12	1.25	2.00	48	2.50	3.00	886	6.75	8.00

## ALL-METAL TYPES

5W4	\$1.00	\$1.00	6F6	\$1.00	\$1.35	6Q7	\$1.25	\$1.35
5Z4	1.25	2.00	6H6	1.00	1.25	6R7	1.25	1.35
6A8	1.25	1.50	6J7	1.25	1.50	6X5	1.25	1.50
6B8	*	1.75	6K7	1.25	1.35	25A6	1.50	1.50
6C5	1.00	1.25	6L6	2.00	2.25	25L6	*	2.25
6F5	1.00	1.25	6L7	1.50	1.75	25Z6	1.25	1.50
			6N7	1.50	1.75			

## G SERIES TYPES

1C7G	*	\$2.00	5V4G	\$1.75	\$2.00	6K6G	*	\$1.35
1D5G	*	2.00	5X4G	1.25	1.50	6K7G	\$1.25	1.35
1D7G	*	1.75	5Y3G	1.00	1.00	6L6G	*	2.25
1E5G	*	2.00	5Y4G	*	1.00	6L7G	1.50	1.75
1E7G	*	2.75	6A8G	1.50	1.50	6N7G	1.50	1.75
1F5G	*	2.00	6C5G	1.00	1.25	6Q7G	1.25	1.35
1F7G	*	2.00	6F5G	1.00	1.25	6R7G	1.25	1.35
1H4G	*	1.00	6F6G	1.25	1.35	6X5G	1.25	1.50
1H6G	*	1.75	6H6G	1.00	1.25	25A6G	1.25	1.50
1J6G	*	1.35	6J5G	*	1.20	25B6G	*	1.75
5U4G	*	1.50	6J7G	1.25	1.50	25Z6G	1.25	1.50
			6K5G	*	1.35			

\* Indicates New Tube.

## An Outstanding Value Among Amateur Receivers



The handsome new RCA Amateur Communications Receiver ACR-155, with a net price to amateurs of only \$74.50, offers unusual features for a receiver priced so low. It has the latest RCA superheterodyne circuit with one tuned r-f stage, and a built-in 6-inch electrodynamic speaker. Note the convenient arrangement of the controls.

# Amateurs Get 3 New Tubes In RCA Line

## Acorn Type Super-Control Amplifier Among New Types Announced

Three new tubes of particular interest to amateurs were recently added to the RCA line. Descriptions of the new tubes follow:

### RCA-807 Transmitting Beam Power Amplifier

RCA-807 is a heater-cathode type of transmitting tube incorporating new design principles involving the use of directed electron beams. Features resulting from the use of these principles in the 807 are that the screen does not absorb appreciable power and that efficient suppressor action is supplied by space-charge effects produced between the screen and the plate. The resultant high power sensitivity makes this tube especially suited for use as an r-f or a-f amplifier, frequency multiplier, oscillator and plate-modulated amplifier. The plate connection is brought out through a separate seal at the top of the bulb to maintain low grid-plate capacitance. In r-f applications the 807 may be operated at maximum ratings in all classes of service at frequencies as high as 60 megacycles. In Class AB audio service two tubes of this type are capable of delivering an output of approximately 60 watts. The maximum plate dissipation is 21 watts. RCA-

807 is equipped with a ceramic base. Heater Voltage (A.C. or D.C.) 6.3 Volts Heater Current 0.9 Ampere D.C. Plate Voltage 400 Max. Volts D.C. Plate Current 100 Max. M.A.

# Dealers Helped On Adjustments By Tube Guide

## Chart Now Available Tells What Types Are Past Adjustment Period

As a means of protecting dealers and itself against unreasonable demands for adjustments on tubes that have seen long service, thereby increasing tube sales for both manufacturer and dealer, RCA Radiotron has issued a "Tube Adjustment Guide," a copy of which is enclosed with this issue. The Tube Adjustment Guide gives the identifying markings on tubes that have been out of the factory stocks sufficiently long to have passed through wholesale and retail channels and to have given the user a generous money's worth in actual service. A copy of the Tube Adjustment Guide, effective as of December 14, is enclosed with this issue of RCA RADIO SERVICE NEWS.

### Protects Ethical Dealers

The long life for which RCA Radio Tubes are famous has led certain users to ask dealers for adjustments on very old tubes that obviously were the victims of nothing but old age. Frequently this has resulted in embarrassment for dealers, who would make the adjustment at their own expense rather than lose a customer, even though the dealer knew the request was unreasonable and unfair. The new Tube Adjustment Guide will provide the dealer with a good explanation of the situation and enable him tactfully to refuse the adjustment.

# Check-Up Film for Dealer Use



The above scene was taken from the RCA Check-Up trailer film for advertising the Check-Up in motion picture theaters. This is one of many shots designed to impress the consumer with the ability and equipment of the trained service engineer.

### RCA-956 Super-Control R-F Amplifier Pentode (Acorn Type)

Companion to RCA 955 and 954

### RCA-956 Super-Control R-F Amplifier Pentode (Acorn Type)

RCA-956 is a heater-cathode tube of the remote cut-off type for use by radio amateurs and experimenters as a radio- and intermediate-frequency amplifier, or mixer, in receivers operating at wavelengths as low as 0.7 meter. The super-control feature of the 956 makes the tube very effective in reducing cross-modulation and modulation distortion over the entire range of received signals. This feature also makes the tube well adapted to circuits incorporating automatic volume control, without the necessity for using local-distance switches or antenna potentiometers. At a wavelength of one meter, the 956 is capable of giving a gain of four or more when it is used as an r-f amplifier in circuits of conventional design. Higher gains are, of course, attainable at longer wavelengths. Operation at short wavelengths is made possible by means of an unconventional tube structure having small size, close electrode spacing and short terminal connections.

Heater Voltage (A.C. or D.C.) 6.3 Volts Heater Current 0.15 Ampere Plate Voltage 250 Max. Volts Screen Voltage 100 Max. Volts Grid Voltage —3 Min. Volts Suppressor Connected to Cathode at Socket

### RCA-808 R-F Power Amplifier, Oscillator, Class B Modulator

RCA 808 is a three-electrode tantalum plate, transmitting tube of the high-mu type for use as a radio-frequency amplifier, oscillator and Class B audio-frequency amplifier. The plate connection is brought out through a separate seal at the top of the bulb; the grid connection is brought out through a separate seal in the lower part of the bulb near the filament base. This design insures high insulation and low inter-electrode capacities. In r-f service, the 808 may be operated at maximum ratings at frequencies as high as 30 megacycles. The maximum plate dissipation is 50 watts for Class C telegraph and Class B services.

Fil. Voltage (A.C. or D.C.) 7.5 Volts Filament Current 4 Amperes Amplification Factor 47 Direct Interelectrode Capacitances (Approx.) Grid-Plate 3 mmf. Grid-Filament 5 mmf. Plate-Filament 0.2 mmf. Plate Voltage 1500 Max. Volts Plate Current 150 Max. M.A.

# FILM OFFERED TO ADVERTISE RCA CHECK-UP

## Trailer Film For Advertising In Theaters Costs Little

The "check-up" method of stimulating sales has proven so successful that a special motion picture "trailer" film advertising the Check-Up Offer has been prepared for service engineers and dealers. The film has a sound accompaniment and takes scarcely more than a minute to show in a theater.

Cost Is Low By an arrangement RCA has made with the producer of the film, any dealer's name and address will be added at the end of the film, and the complete film, 55 feet long, ready for showing in any theater, will be supplied to the dealer for only \$5.00. This low price makes this not only one of the most effective means of cashing in on the Check-Up Plan, but also an economical one.

Many small city or neighborhood theaters will run an attractive advertising film at every performance for a week for only \$1.00 or \$2.00.

### Professional Actors Used

The Check-Up Film was prepared by professional producers who specialize in film advertising. All the ten points covered in a Check-Up are dramatically illustrated with professional actors playing the roles of service engineer and customer. Because it is a sound film, the improved reception brought about by a thorough Check-Up is convincingly demonstrated. It makes the audience want the same work done on their radios at home—and brings plenty of business to the dealer whose name appears at the end of the film.

Dealers or service engineers who

# IMPRESSIVE BUSINESS FORMS BENEFIT SERVICE ENGINEER

## Dealer Is Enthusiastic About Advantages Of Simplified Record Keeping System

Business forms that are impressive in appearance and correct in design save money for the service engineer in more ways than one, according to Charles Livingston of Triangle Radio Service, Camden, New Jersey.

made and its financial condition at any moment.

### Job Card Impresses Customers

Livingston is especially enthusiastic about the Service Order Job Card, which is the heart of the record system and the most frequently used form. Besides giving him information in regard to costs, and basic facts for his other records, Livingston says this form is a valuable help in dealing with his customers. "It makes a big impression on the

The shop keeps this copy showing costs

Triangle Radio Service was one of the first shops to put the RCA Radio Service Record System into use. After giving the System a thorough test in actual use in his shop, which is typical of thousands of other radio service shops, Liv-

ingston, the proprietor, says that it has accomplished wonders in systematizing his business and showing him what progress the business had

This is the invoice the customer gets

ingston, the proprietor, says that it has accomplished wonders in systematizing his business and showing him what progress the business had

customer," said Livingston. "When the customer gets his copy of the form he is sure that he is dealing with a reliable house that is in business to stay and that keeps the proper records of each transaction. Several customers have expressed their satisfaction with their copy of the invoice and said that other service engineers who had done work for them did not seem to have any system to their charges or their work. People are not so likely to kick about the amount of the bill when it is presented in this form."

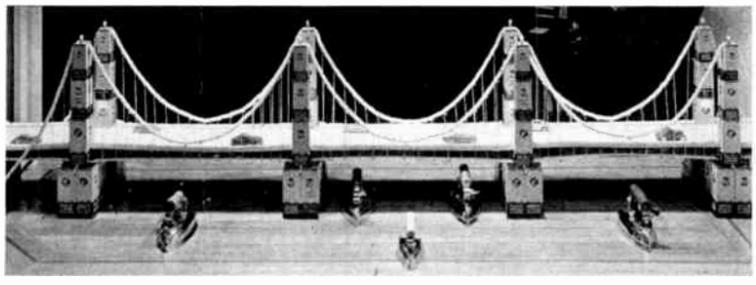
The RCA Radio Service Record System is a simple set of records especially designed for the small or average radio service business in which the proprietor is not a trained bookkeeper and wants to keep all records to a minimum.

### Book Describes System

Simple detailed instructions for operating the System are found in the book "Radio Service Business Methods," which can be obtained from RCA Parts and RCA Tube distributors at \$3.00 per copy, or for only \$.75 with the purchase of 100 RCA Tubes.

The forms required for the operation of the RCA Radio Service Record System may also be obtained from distributors or direct from RCA Manufacturing Company, Camden, N. J., if order is accompanied by a remittance. The Initial Kit, containing everything needed in the way of forms for starting the System, costs only \$5.00.

# "Tubular" Bridge



With the completion of the World's Largest Bridge over San Francisco Bay, Whitmore Electric Co., of San Francisco, ingeniously duplicated the structure in miniature with RCA Radiotron cartons. Long an exclusive Radiotron dealer, Mr. Whitmore's excellent promotional windows have been the source of much attention on busy Gear Street. The "men-of-war" sailing underneath are electric irons.

# Service Tips



Now you can win your choice of a handsome RCA Service Engineer's Pencil or any volume of RCA Victor Service Notes by sending tips to RCA Radio Service News, Camden, New Jersey . . . Service Tips must be acceptable for either RCA Radio Service News or the RCA Radio Service Tip File. . . All tips become the property of RCA to be used as they see fit. . . Service Tips are our readers' ideas, not ours. While RCA Radio Service News believes they are worthwhile, we cannot be responsible for results.

## Corroded Condenser Shaft

I had a set on the bench the other day that had all the symptoms of a poor contact to the shaft of the gang tuning condenser, but cleaning the wiping contacts and even soldering on a pigtail did not correct the trouble.

The set was normal when upside down on the service bench but became erratic as before when placed right side up.

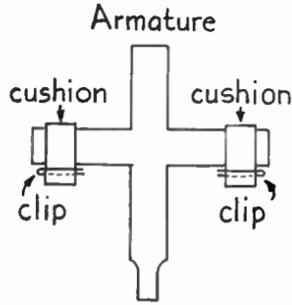
The trouble was corrosion between the steel condenser shaft and the cast metal around it holding the plates.

The remedy depends on condenser construction, but in this case I had room for a self tapping screw near one end.

Radio Sales & Service,  
Searsport, Me.

## Replacing Cushions in Pickups

When replacing cushions on RCA Victor 10779 and similar pickups, it is practically impossible to hold both cushions in place, and to put the pole pieces in place at the same time. But by using two small clips made of stiff wire and clamping the ends of



the cushions together as shown in the above diagram, this operation becomes very simple. After the armature has been fastened in place the clips may be removed by clipping at the bends with diagonals.

Joe Williams,  
Service Division,  
Tenn. Valley Appliances, Inc.,  
Nashville, Tenn.

## RK-40 Antenna

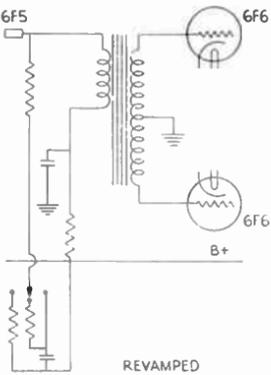
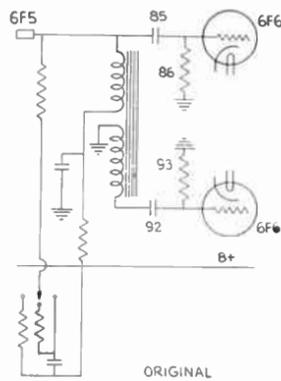
Here is a valuable tip on installing RK-40 or double doublet antenna with the fine wire twisted lead in.

Do not pull a split knob where the lead first touches the house. Use a screw-in eyelet insulator to eliminate the possibility of wires breaking off inside the insulation at a split knob insulator.

Robert Dale,  
Dale Radio Service,  
Box 943,  
Cushing, Okla.

## Noise in Bosch and Westinghouse

If you have a Bosch Centromatic or Westinghouse WR306 with an intermittent frying noise that isn't affected by the volume control, check the unshielded interstage transformer connected to the 6C5 and the 6F6's. This is located on top of the chassis between the 6K7 and



6F5. If this part isn't available it can be replaced with a good quality push-pull interstage transformer with no difference in performance or output. To make this change, take out condensers 85 and 92 and resistors 86 and 93.

W. F. Kosan,  
281 Braddock Ave.,  
Turtle Creek, Pa.

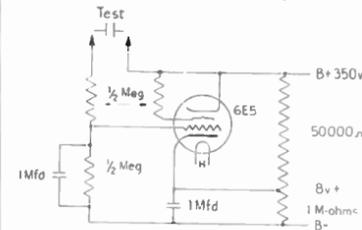
## Vibrator Hum Cure

Hum can often be reduced or practically eliminated by soldering a good ground connection from the shell or can of vibrator to the chassis.

Oliver F. Klein,  
O. K. Radio Service,  
2235 N. 39th Street,  
Milwaukee, Wis.

## 6E5 as Condenser Tester

Below you will find a diagram of a condenser tester which uses a 6E5 tube. It has a sensitivity of around 100 megohms. I have used it since the 6E5 tube was available and would not be without it, for tests where extreme sensitivity is re-

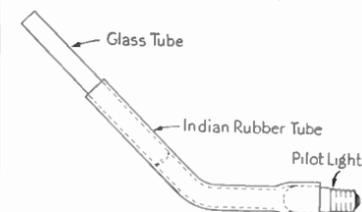


quired such as coupling condensers. Unless the shadow narrows down to original size immediately after connections are made to a condenser, I discard that condenser, as it will cause cutting off or fading.

Thos. L. East,  
East Radio Service,  
207 W. Commercial St.,  
Springfield, Mo.

## Pilot Light Tool

In order to screw in pilot lights that are in inaccessible places, place the head of the bulb in a piece of rubber tubing (this tubing can be obtained at any drug store). To give



the tubing consistency, or body, insert a small glass rod. This will help to twine the rubber tubing.

Louis Susskind,  
Davega City Radio, Inc.,  
60 Park Place,  
Newark, N. J.

## Hum in Radio-Phonographs

The noticeable hum encountered in many radio-phonograph combinations can be greatly reduced by moving the phonograph-matching transformer to a new position making an angle of about 45 deg. with the



back of the cabinet. Move the transformer about until you get the least amount of hum. When making this adjustment, have phonograph volume control on full.

R. Greenbaum,  
47 Nelson Street,  
Hartford, Conn.

## Buzzing in Lafayette Series 7G

A peculiar buzzing like code practice was developed after two months of good operation. All voltage tests were of no use but current test showed low emission on the R.F. amplifier 6D6. Immediately I suspected—and correctly—the cathode circuit of this tube. The sensitivity control is operated by the same shaft as the volume control. It was found open circuited. Not having any replacement I rearranged the controls on the set and added a real RCA sensitivity control (part 4618) and the set operates better than ever.

Georges De Voucalla,  
Athens, Greece.

## WAVE TRAP IS PROFITABLE ITEM

(Continued from page 1, col. 3)

now being featured by RCA Parts Distributors.

The new product is the RCA Universal Wave Trap, a neat little gadget listing at \$2.65, which can be attached to any radio in a few minutes and the whole job sold as a \$4 or \$5 "special" to the radio owner having trouble with cross modulation, code interference, blanketing by powerful nearby stations, broad tuning, or many other kinds of interference. Owners of radios that do not have an R.F. stage are particularly good prospects for this new unit.

### Creates Many Extra Sales

The RCA Universal Wave Trap is an ideal item for the service engineer who watches every opportunity for the "plus" sales that in many cases are the difference between a prosperous and a non-profitable business. A large proportion of all radio owners, regardless of the age or type of the radio owned, have trouble with some sort of interference. Most of them would be delighted to pay a few dollars to have



A Profit Maker

the trouble cleared up—and would regard the service engineer who accomplished it as a miracle-worker.

### Easy to Install

Installing the RCA Universal Wave Trap is so simple that a layman can do it, thus making this a good item for over-the-counter sales as well as for selling as a complete job. To install, the "A" and "C" binding posts on the unit are connected to the corresponding binding posts of the radio, and the antenna and ground reconnected. The trimmer capacitor is then adjusted to the position that minimizes the most troublesome interference—and the job is done.

### Has Many Quality Features

The unit has an extensive range of adjustment, from 430 to 1700 kilocycles, thus covering almost any source of interference commonly encountered. The attenuation is -30 db. or a drop of 32 to 1 in voltage. Electrical elements are shielded. The coil has a Magnetite core, providing a high Q circuit. A universal type of mounting makes the instrument adaptable to almost any radio chassis.

The huge market existing for just

## CEMETERY GIVES CONCERTS WITH P. A. EQUIPMENT

### Uses Many Speakers With One Built Into Monument Base

A cemetery may seem like the last place in the world to sell an RCA Public Address System but you can take the Cambria Equipment Company's word for it that you're wrong.

A recent installation of an RCA Public Address System was made by the Cambria Equipment Company of Johnstown, Pa., at Forest Lawn Memorial Park. Under the supervision of A. J. Reid, Cambria engineer, Forest Lawn Memorial Park located loud speakers in strategic locations throughout the Park. Commenting on the installation, Mr. Charles E. Silver, President of Forest Lawn Memorial Park, writes: "The installation that was made by your company and Mr. Reid in Forest Lawn Memorial Park, to our way of thinking, is without a flaw; and it is more than we ever thought could be accomplished."

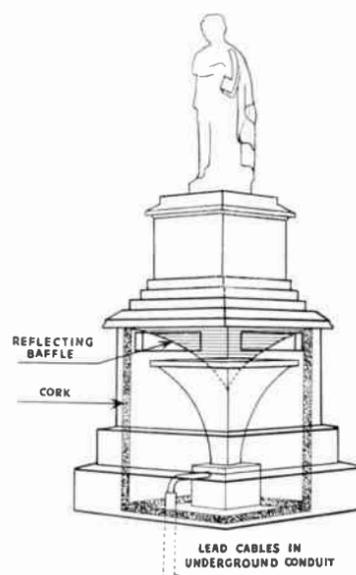
### Holds Regular Sunday Concerts

Forest Lawn Memorial Park holds regular Sunday afternoon concerts with a Gulbransen Electric Organ, played by local organists. "The programs," according to Mr. Silver, "have been well received by the public and many compliments have been received regarding the sound equipment."

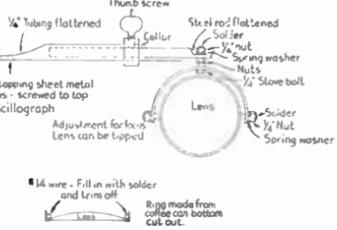
Of particular interest to Service Engineers is the installation of a speaker in the base of a memorial at the Johnstown institution. The base of the statue was designed for an RCA MI-477 baffle. Architectural limitations made it necessary to use one speaker and baffle to distribute the sound equally in four directions. Under the supervision of Mr. Reid, a reflecting baffle was constructed to fit over the mouth of the MI-477 baffle, with curvatures similar to those of the speaker baffle. The reflecting baffle was designed to reach well into the speaker, forming an apex directly at the center and inside the speaker. Cavity resonance from the stone chamber was overcome by lining the chamber with cork slabs, about one and one-half inches thick.

such a device makes it ideal for the service engineer to carry in his kit on every call. A few words of explanation as to what it accomplishes will result in many easy sales. It is also an excellent item to feature in a direct mail campaign. Order it from any RCA Parts distributor under catalog No. 13467, list price \$2.65 subject to the usual discount.

## Unique Sound Installation



The diagram at the left shows how an RCA loudspeaker was installed in the base of a cemetery monument to throw sound in four directions. The view at right shows C. R. Underhill, Jr., RCA Field Engineer, and A. J. Reid, of Cambria Equipment Company who made the installation, beside the monument.



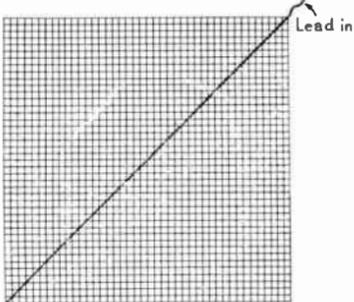
curve at a greater distance and with greater clarity. Above is a rough sketch of the lens as I have it mounted, it being adjustable. Frame for lens made from bottom end of coffee can which has been cut and made smaller diameter. Lens is held in on one side by turning out the bead of the seam and on the other side by a piece of 14 copper wire soldered in.

Buhel Buchingham,  
S O S Radio Service,  
2817 Lyndale Ave. So.,  
Minneapolis, Minn.

Editor's Note: A similar tip was submitted by H. Casteel, 2930 Travis Ave., Fort Worth, Texas.

## Antenna Screen Preparation

On screen antenna systems in cars, one being installed, or one giving scratchy-noisy reception, it is well to solder wires at one point. This may be done along any two edges so that all wires running in the two directions are connected. A still better method is as shown, (solder diagonally across antenna screen). This reduced amount of



soldering to be done by more than 25 per cent, and lowers resistance considerably, as well as noise from corroded wires.

R. N. Eubank,  
2817 Montrose Ave.,  
Richmond, Va.

## Sings With Metropolitan



The thrilling voice of Lily Pons, shown above as she appeared in "Lakme," is one of the reasons for the popularity of the Metropolitan Opera, whose entire programs are now heard over an NBC network every Saturday under the sponsorship of RCA.

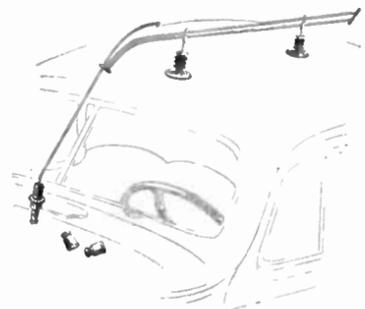
## WIDE CHOICE OF ANTENNAS IN RCA LINE

(Continued from page 1, col. 2)

resembles the old coach whip and socket in appearance, while the Auto-Toptenna extends from front to rear over the middle line of the top of the car. Both new antennas add a distinctive note to the car that is sure to make these among the most popular types of auto antennas.

### Toptenna Fits Any Auto

The Auto-Toptenna comes in two sections with an adjustable joint permitting one standard unit to fit either sedans or coupes. The top section is attached to the car roof with suction cups for which special cement is furnished, so that the installation does not require mutilation of the



RCA Auto-Toptenna

car top. Installation requires only one hole to be made in the body of the car, and this exactly on the center line of the cowl. Should the antenna later be removed from the car, the hole in the cowl can be plugged with a chromium button which is furnished with each kit for this purpose.

Wheel static and motor noise are completely eliminated by either the Toptenna or the Whiptenna.

### Whiptenna Installed in Five Minutes

A desirable feature of the Whiptenna is its extreme simplicity of installation. No drilling is required. The hinge bolt of either door is removed, the antenna quickly attached, the bolt is replaced and the

whole job is completed, usually in less than five minutes. The Whiptenna is flexible and guaranteed not to break. Chromium finished, like the Toptenna, it gives the car a



RCA Auto-Whiptenna

snappy appearance. Maximum signal pickup is assured by either antenna and the choice between these two new fast sellers depends entirely on the taste of the customer.

The two new antennas give RCA an unusually complete line of auto antennas and accessories.

### Di-Pole Is Old Favorite

For instance, for a quick and inexpensive installation, there is the RCA Auto Roof Antenna, stock No. 7622. This antenna is composed of cotton-covered, soft copper wire wound on heavy flat cardboard and then covered with attractive gray book-cover paper. It is quickly installed by pinning to the inside fabric of the top with the six fasteners of the safety-pin type that come with the antenna. The list price is only \$1.50. It gives good results in older cars, but is not recommended for steel-top cars.

The RCA Di-Pole Auto Antenna, an old favorite, is a scientific development in automobile antenna design. It's easily and quickly installed



RCA Di-Pole Antenna

on any car, gives efficient pickup from stations, and eliminates all ignition-noise pickup by the antenna. It gives excellent results on the new metal-top cars and older cars not having roof antennas. The list price is only \$2.60.

The Inlantenna is a high quality, double running-board type auto antenna, especially desirable for installing in metal top cars in locali-

## RCA Moves To Boost Dealers' Profit On Tubes

(Continued from page 1, col. 5)

tual, higher costs, where steady quantity production is no longer possible. On some types, one day's production is now well over six months' supply. Material and labor costs have advanced and are continuing to advance, making a complete review of costs necessary. Due to all the changing conditions, present costs vary considerably from initial cost estimates on which previous selling prices were established.

The new suggested lists reflect these changes and can properly be looked on as "Service Lists." RCA has suggested that its wholesale distributors quote dealers on a net unit price basis, rather than on a discount basis, a procedure which simplifies quoting, billing and record keeping, and gives the dealer his cost and profit margin at a glance.

### New Prices Aid Dealers

RCA's policy in 1937 is to assist all radio dealers and service men in the constructive merchandising of radio service—renewal tubes and parts—accessories—new and modern radio and other electrical appliances the dealer might sell.

The new price structure will materially assist the dealer and service man in this program.

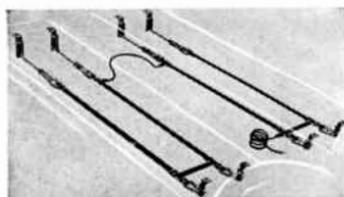
We ask your aggressive sales cooperation in expanding this service-renewal market that offers such attractive sales possibilities under a national atmosphere of recovery, planning and action, as contrasted with the discordant thinking of depression times.

Our 1937 merchandising plans are full of timely action-producing promotion material for the dealer and service man.

Look with us in the right direction—Forward! And make 1937 your Victory Year! (A complete RCA Radiotron price list, showing new and old prices, will be found on page 3.)

ties where broadcast signals are generally weak. It is easily installed, comes complete with all fittings and is furnished in two types:

The Universal type, for all cars except Oldsmobile, Stock No.



RCA Inlantenna

12322, at a list price of \$5.50; and Stock No. 12328, at a list price of \$6.00, for 1936 Oldsmobiles only.

### Profits From Header Speakers

Other accessories that offer profit possibilities are header speaker for overhead installation. RCA Header Speaker No. 9700-A, listing at \$4.50, is designed for installation in cars in which space has been provided for such a speaker. The RCA Header Speaker Accessory Kit adapts RCA Header Speakers to General Motors and other cars that do not come with provision made for a speaker in the roof. List price \$1.50.

## Spider Web



For home use, the RCA Spider Web Antenna continues to grow in popularity. Its multi-doublet design is efficient over a wide frequency range, yet requires little space. It comes ready to hang.

## RCA SERVICE MEETINGS TO BEGIN SOON

### 1937 Program Now In Preparation To Follow Plan Of Previous Years

Thousands of service engineers throughout the country will be glad to know that a new series of RCA Service Meetings for the Spring season of 1937 is now in preparation.

The Spring 1937 Series as now planned will include two meetings in each of over a hundred cities and towns. The dates and subjects of the meetings will be announced later, but it can be assumed that the subjects will be highly interesting and well prepared in accordance with the reputation of RCA Service Meetings of the past.

### Certificate for Perfect Attendance

Past meetings have been so popular and informative that in response to many requests the material of the last lecture of the 1936 Series was printed in booklet form. The booklets were given away free the day after the lecture by RCA distributors. The same policy is planned for the 1937 meetings.

Attendance at RCA Service meetings has been found to be a business asset by many service engineers.

Those who attended every meeting in 1935 were awarded a handsome Certificate which served to increase prospective customers' confidence in the possessor of the certificate. Holders of the 1935 Certificates who attended all the 1936 meetings will receive a "second year seal" to be attached to the 1935 Certificate, thus adding to the prestige it gives its owner.

## RCA Sponsors Broadcasts Of Metropolitan

(Continued from Page 3, Column 5)

politan Opera Kit comprising demonstration records, posters, streamers, booklets and publicity material.

### Orchestra to Visit 24 Cities

The Philadelphia Orchestra, comprising 100 world-famed musicians, will begin its second transcontinental tour under the banner of RCA Victor in Atlanta, April 20. Thirty-three days later, after having visited 24 cities from coast to coast, it will return home. Two renowned musicians, Eugene Ormandy and José Iturbi, will share the conductor's role. The following cities are scheduled: Atlanta, Nashville, New Orleans, Memphis, Little Rock, St. Louis, Tulsa, Dallas, El Paso, Los Angeles, San Francisco, Salt Lake City, Denver, Lincoln, Des Moines, Minneapolis, Chicago, Ann Arbor, Toledo, Toronto, Montreal, Boston, White Plains, Philadelphia.

## SHOP NOTES

To keep the readers of RCA Service News posted on the latest changes in and additions to RCA Products and technical literature, the RCA Service Division will report changes applicable to RCA Victor Service Notes in this column from time to time.

To get the most benefit from this column it is recommended that the readers of RCA Radio Service News transfer these changes and additions directly to their Service Notes on the particular model. By doing this, you are assured of always having the latest information handy.

From the RCA Service Division Publication Section

### Model 5T5

Refer to Figures 1 and 2. Change resistance value of L8 from 2.1 to 4.9 ohms and change value of L9 from 4.9 to 2.1 ohms.

### Model 5U

Refer to Figures 1 and 2. Change resistance value of L8 from 2.1 to 4.9 ohms and change value of L9 from 4.9 to 2.1 ohms.

### Models 5X, 5X3, and 5X4

Refer to Figure 4. Change resistance value from "C" of tube 5 to "SC" of tube 4 from 277 to 263 ohms.

### Models 6T and 6K

Refer to Figures 1 and 2. Resistor R15 is omitted on some models.

### Models 10T and 10K

On Figure 2, change value of C34 (terminal of Switch S2 to ground) from 15 MFD to 15 MMFD. On Figure 3, change value of R37 (terminal 5 to ground on "Magic Brain" receptacle) from 1 Meg. to 82,000 ohms.

On Figure 7 change resistance value from grid cap of tube 3 to ground to read 56,000 ohms instead of 82,000 ohms.

Change description of Stock No. 12988 Switch from "Band change-over switch (S1, S2, S3)" to read "Bias switch (S7)." Same price.

### Model R99

Delete Stock Nos. 12540 "Armature" and 12354 "Damper." Add Stock No. 14115 Mechanism—Pickup mechanism comprising one armature and spring assembly, one armature clamp, and one damper. \$1.35.

### Phonograph Combinations

Phonograph instruments should not be demonstrated or operated at a temperature below that of a comfortable average room. The oils and greases of the motor mechanism have lower viscosity at colder temperatures and will cause "wows" until they reach normal temperature. Instruments which have been removed from cold storage spaces should be allowed to stand for several hours before usage.

### Universal Wave Trap Stock No. 13467

In adjusting the trap on receivers having AVC, the indication of maximum attenuation is not readily apparent unless a very low input is applied to the receiver. Best results may be obtained by tuning the trap to a controllable signal from a test oscillator at the frequency of the station which it is desired to reduce.

At some parts of the tuning range, the angular rotation versus frequency change is quite small and adjustment requires care. The tool being used for tuning should be turned very slowly.

### Volume Control Part No. 11237/13144

Stock No. 13144 volume control supersedes No. 11237 control and will be shipped as replacements for same. List price of No. 13144 is \$1.00.

The majority of the No. 11237 controls developing noise in receivers may be repaired by cleaning the points of contact between the phosphor bronze spring and the small monel metal sliding shoe with crocus cloth or fine sandpaper. After cleaning, a very slight film of light oil should be applied to the contact point.

### Battery Receivers

When charging apparatus is used in conjunction with the storage batteries of models 6BT6, 6BK6, 8BT6, and 8BK6, a capacitor should be installed in series with the receiver ground lead to prevent short circuits due to difference of potential between the charging equipment ground and the chassis ground. The capacitor should be approximately 0.1 mfd, 200 volts, similar to Stock No. 3641.

Storage batteries should never be charged while the receiver is being used on the same battery.

### Models 15-K and 13-K

The leads from the lower to upper pilot lamps on the Magic Brains of these receivers may get out of their normal position and rub against the tuning condenser drive gear, causing a short circuit. Intermittent fuse failure and erratic operation usually results. In servicing these sets, particularly, attention should be given to bending these leads clear of the tuning gear.

## From The Other Side



Performers are sometimes as critical of their audiences as the audiences are of the performers. From peanut heaven to diamond horseshoe, the above is what is seen by the performers of the Metropolitan Opera, which is now sponsored on the air every Saturday afternoon by RCA

## Record Player Connections Shown In Book

### Types Of Circuits Are Classified and Directions Given For Each Class

Service engineers who recognize the possibilities for profit in attaching RCA Victor Record Players to ordinary radio sets will welcome a new booklet issued by RCA entitled "Suggestions for Connecting RCA Victor Record Players."

The booklet was originally given free to all those who attended the recent RCA Service Meeting devoted to phonographs and recordings. Copies of the booklet can now be obtained from RCA Victor distributors at 15 cents each.

RCA Victor Record Players are compact little instruments that enable any radio owner to enjoy "the music he wants when he wants it." There are two models: No. R-93 that sells for \$16.50 and No. R-93-2 that sells at \$24.50. Both 10- and 12-inch records are played by the R-93-2 with the lid closed, thereby minimizing needle chatter.

#### Oscillator Simplifies Connections

Record Players can be attached to almost any radio. Frequently the simplest method of making the connection with the radio receiver is to install an RCA Phonograph Oscillator, a small device listing at \$7.75, which acts as a miniature broadcasting station. The Phonograph Oscillator eliminates all internal circuit changes and makes connecting a Record Player a job of only a few minutes.

Even though the receiver has no phonograph connections and a Phonograph Oscillator is not used, connecting a Record Player is a comparatively simple job with the aid of the new booklet, "Suggestions for Connecting RCA Victor Record Players." The booklet groups all radio circuits into a few general classifications and gives complete instructions, with easily-understood diagrams, for making the minor circuit changes that are necessary in some cases.

#### Every Customer a Prospect

Almost every call made by a service engineer offers an opportunity to sell a double-profit Record Player job—called "double profit" because the service engineer makes a merchandising profit on the Record Player and an additional profit on the installation.

With the public returning more and more to records to supplement their radio entertainment, more and more service engineers are pushing the sale of Record Players and phonograph modernization jobs. Anyone wishing to jump on the band wagon can make his work easier by getting the new booklet.

## Check-Up Pays Well For This Large Dealer

### Trade Journal Reports Check-Up Calls Averaged \$5 To \$12

Cooper's, radio and electrical appliance store at Hempstead, L. I., N. Y., recently crashed the Radio and Electrical Appliance Journal, with a story of its anticipated business for 1936. Expecting to gross \$100,000 in his first year in a new location, Al Cooper emphasized the importance of radio service as a selling weapon and the effectiveness of the RCA Check-Up Plan in getting service work.

"One of Cooper's main selling weapons," says Radio and Electrical Appliance Journal, "is radio service. He employs a sales-minded serviceman and he has a shop in his basement to do all his own repair work. Cooper believes that the modern radio store's service department should pay its overhead. So far, he has been so successful in this belief that he has occasionally been forced to hire a part-time helper for his serviceman."

#### Check-Up Boosts Business

Then comes the answer to his success! Says Radio and Electrical Appliance Journal, "He mailed out six thousand copies of the recent Radiotron circular (Check-Up Campaign) with the dollar coupon 'worth \$2.50 for only \$1.50.' So many of these came back that he had to call on a part-time service assistant. So sales-expert is his serviceman that the average call grossed over \$5.00. Similar was the return card recently mailed featuring all-wave aerial installations. One thousand of these brought 25 jobs averaging \$12.00."

## Now Is Time To Order New 1937 Displays

(Continued from Page 1, Col. 4)

The fourth and final unit of the display series is a novel and attractive football window, featuring a lovely feminine football fan and the mascots of the nation's foremost gridiron machines. The mascots in this display will symbolize RCA Radiotron's power and dependability.

The four major units of the RCA Radio Tube window display program for 1937 are being prepared well in advance so that dealers can be sure to have tested, timely displays at the best selling seasons. These four units, however, are by no means all of the display service that will be offered to dealers. In accordance with past practice, RCA Tube dealers who subscribe to the Display Service will receive other special materials, such as World Series baseball window streamers.

#### Early Subscribers Get Extra Items

To encourage promptness in ordering, the first 1,500 subscribers for the new displays will receive free the following assortment of useful sales promotional material: 25 Tube Carrying Cartons; 100 Talkie Strips, effective as envelope enclosures; and 100 RCA Check-Up Postcards No. 731.

Not later than the 10th of February, RCA Radio Tube distributors will have full details on the new display program. To avoid missing any of these effective displays, dealers should make arrangements with the distributor's salesman at the earliest opportunity.

## N.B.C. CONTEST SENDS BUSINESS TO 700 DEALERS

A splendid example of how members of different branches of the same industry can cooperate to their mutual benefit was shown by the manner in which prizes were awarded in the recent Prize Contest celebrating the 10th Anniversary of National Broadcasting Company.

In addition to 5 RCA Victor 9K2 radios awarded each day for the best statements on 'what NBC programs had meant to the writer,' there were 25 sets of RCA Radio Tubes awarded each day for 28 days.

#### Dealers Delivered Tubes

Rather than send the tubes direct to the winners, RCA Radiotron arranged with NBC so that some dealer would benefit each time a prize was awarded. The names of winners of sets of tubes were turned over to RCA, who wrote a letter to the winner enclosing a certificate good for a set of RCA Tubes when presented to any dealer. The letter also explained the advantages of a "Check-Up" of the winner's radio and suggested that he have the dealer do this at the same time the new tubes were installed.

Twenty-five sets of tubes a day for 28 days! Seven hundred contacts with potential customers created for dealers! And certainly many of them were turned into sales of Check-Ups, new radios, antennas, or any of the many things an alert dealer can sell a radio listener.

The new edition of the famous RCA tube manual is now available at \$2.25 a copy from RCA Tube distributors or direct from RCA Radiotron Division, Harrison, N. J.

## GENERAL ACOUSTICS

by Albert K. Ward, Commercial Engineer  
RCA Manufacturing Company, Inc.

This article is the first of several in a series on the general problem of acoustics. This series is intended to be as non-technical as possible in order to serve as a guide to the reader who is not familiar with engineering problems. Acoustics in the past has been considered a very deep and unfathomable problem, but by means of these articles we are going to try to present this problem so that some of the mystery will disappear. Acoustics cannot be dealt with in one short article, and it is for this reason that a number of these articles will be presented in these pages on this very interesting subject.



A. K. Ward

It was not until the widespread introduction of Public Address and Sound Reinforcement systems that the need for good acoustics in a building was brought forcibly to the attention of the architect and the public in

general. One can remember a time when upon the completion of an auditorium if ideal acoustics were encountered it was considered something of a marvel and people sometimes traveled great distances to witness this phenomenon. An outstanding example of this is the extremely good acoustics of the Mormon Tabernacle in Salt Lake City. In the last few years a great many dollars have been spent in the research and study of acoustic problems. The results of these researches have been seized on by the most progressive of architects, who are applying them to their present designs.

The great amount of publicity which has been given to the acoustic treatments of radio broadcast studios, motion picture theaters and film recording studios, has slowly but surely been making the general public acoustic conscious. Manufacturers of sound reproducing apparatus and acoustic materials have done much to help too, by demonstrating at all the large shows and expositions. The largest manufacturers of sound motion picture, centralized radio and sound reinforcing equipments are now working directly with architects to obtain proper acoustics in future buildings so that their equipment will function at its highest efficiency.

#### Acoustics Neglected in Construction

In the past decade, there has been an unfortunate demand for too much speed by the owner in the erection of new buildings, and at the lowest possible cost. Sufficient time was not given to the architect to properly figure out and take care of such vital problems as acoustics. Other buildings were erected principally for show purposes, with too little regard for their utility. Many of these buildings were built or designed with large marble areas or other hard reflecting surfaces, lofty domes or low interfering balconies. After these structures were completed, it was usually found that speech sounded distorted and unnatural, and that the reflecting surfaces caused annoying echoes. To correct acoustical errors in completed buildings of this type, all kinds of devices were tried, and in many cases after the owner had spent many thousands of dollars on corrective methods the faults were not entirely overcome. One method commonly used has been to string wires across the hall to break up the sound waves. Another has been to install canopies to deflect the sound. But thus far nothing has been devised or discovered which will act as an ideal substitute for acoustic treatment properly applied, especially when incorporated in the first designs of the building.

Acoustic treatment installed at the time of erection is always the most economical, with the important added advantage of having it fit perfectly into the general decorative scheme. In recent years, many acoustic treatment materials have been put on the market which lend themselves most readily to artistic and unobtrusive application.

#### No Two Problems Alike

No two buildings, auditoriums or rooms can be considered exactly alike for treatment unless they are identical in size, shape and location, and are used for identical purposes.

It must be clearly understood that the study of acoustics covers many phases. One phase of acoustics

which is now receiving a great deal of attention in all of our large cities is that of noise abatement, especially the elimination of outside noise from homes and office buildings. Business is beginning to realize that noise is an important consideration in maintaining the well-being of their employees. They now realize that less time is lost due to ill health and production or efficiency measurably improved when proper acoustic treatment is made in factories, offices and other working locations. Another phase in the field of acoustics is the proper treatment of small or medium sized rooms to improve the intelligibility of the speaking voice. A third phase is the acoustic treatment of a room for use with sound re-enforcement equipment. There are many factors involved in each of these three phases, but this is just an introductory article; future articles will go into some of these factors in more detail.

#### Sound Absorption Units

An open window is considered as a "perfect" absorber of sound, because all sound passes through, and none of it is reflected back into the room area. The coefficient of absorption of an open window is therefore called 1.00, or 100 per cent. Practically all materials absorb sound to some extent, therefore, when calculating the number of absorption units necessary to give the acoustic condition desired, the absorption units of all the building materials, together with the absorption units of the occupants of the rooms, should be considered. These should be calculated at the frequency or frequencies which are to be absorbed. It has been found from a good many years' study and in practical experience that if the absorption units are calculated at 512 cycles per second (or one octave above middle C), the absorption at other frequencies will be satisfactory. This cannot always be depended on entirely, if, due to some machinery, steam pipe or other noise-making equipment, there are frequencies of great volume given off at some other frequency. In order to deaden this noise, absorption should then be figured at the frequency of these interfering noises.

#### Clothing Absorbs Sound

Manufacturers of acoustic material check the absorbing coefficients of their materials per square foot against the "perfect" absorber at 64, 128, 256, 512, 1024, 2048, 4096 and 8192 cycles. Beside the absorption units of specially manufactured absorption materials, furniture, carpets, floors, walls, plaster and other devices in a room, the absorption of the human occupants must be taken into consideration. In a small room, the absorption of a man may be a large portion of the absorption units necessary to give the proper acoustic treatment, whereas in a very large area with large floor space the absorption of a human being can sometimes be ignored. Absorption is also varied considerably by the type of clothes worn. The absorption of adults will vary from approximately 2 to 6 1/2 units, depending on the amount of clothes worn. It might be said here that even two units can be considered high for an adult in a modern type bathing suit, whereas with winter clothes and overcoat, 6 1/2 units is not too high. When calculating the number of units needed in an auditorium, the number of people occupying the area is considered. As a rule, it is not considered wise to figure on a full house but on a two-thirds capacity for the absorption of an audience. When figuring absorption units, care must be taken not to go to the other extreme and deaden the room acoustics too much.

The next article will deal with the subject of how to go about determining the acoustic requirements of rooms and buildings.

### NEW PRICE CARD

A price card giving the new list prices of RCA Radio Tubes is now being distributed free by RCA Radio Tube Distributors. It is suitable for hanging near the tube counter for constant reference. On the back of the card is a newly-compiled list of tubes of other manufacture for which RCA Tubes can be used as a replacement.

This new replacement chart will enable dealers to carry smaller stocks and to fill almost any request for a tube out of his RCA stock, thus giving him a faster turnover.

## 12 New Sets Announced To Trade by RCA

### Distributors Show Great Enthusiasm For New Line Of Receivers

Destined to make the RCA Victor line of receiving instruments the greatest ever offered by any radio manufacturer are the twelve new RCA Victor Radios being announced this month. They include not only the finest of RCA Victor's many technical achievements but feature a definite trend toward the functional in cabinet design.

Paced by three new 5-tube "Bookcase" or "Shelf" models featuring a radical departure from the old radio instrument design the additions to the RCA Victor line create many new sales and service opportunities for aggressive dealers. The new sets range from five to ten tubes and are priced competitively.

#### Strong Advertising Support

Shipments on the new instruments will begin at once according to a statement issued by Paul Richardson, RCA Victor Sales official at Camden. A widespread advertising campaign will flash word of the new sets to the public via magazines, newspapers and radio. A host of advertising material also will be available to dealers.

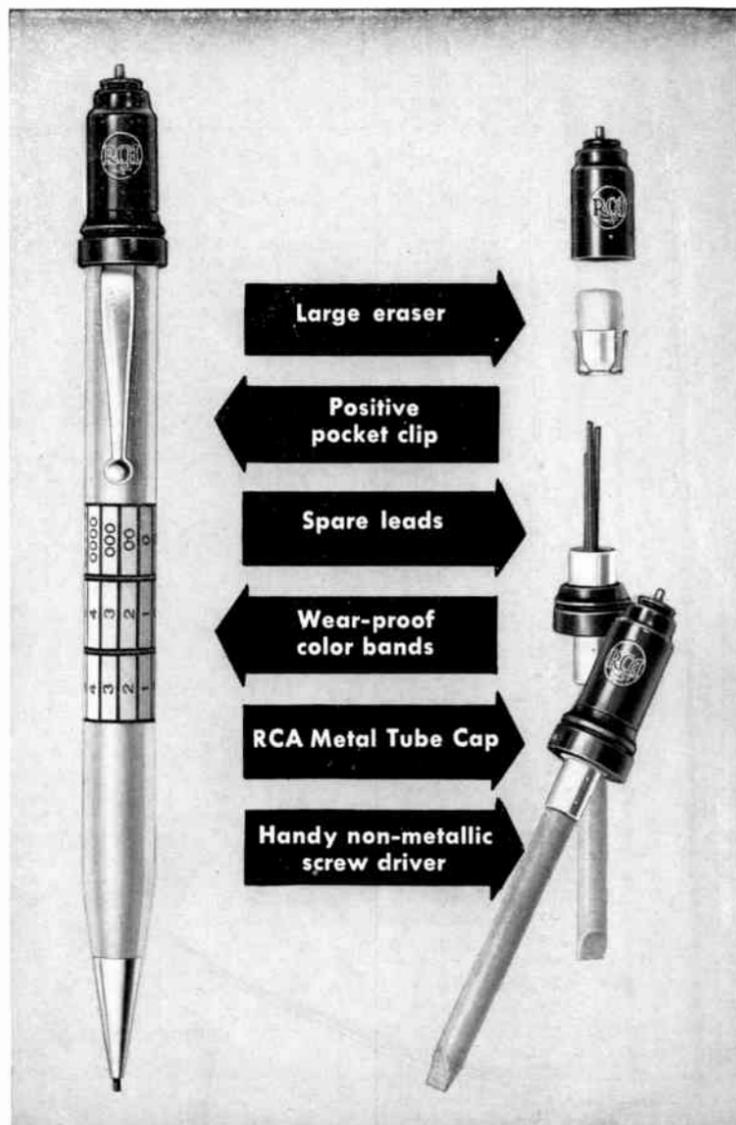
RCA Victor distributors saw the new line at their December convention and demonstrated their enthusiasm by ordering far more sets than they have ever previously ordered at a mid-season gathering.

### Bright Boy



Even the youngsters are interested in RCA Amateur Equipment. Dr. I. Humphrey, operator of Station W8JIT, of Nanticoke, Pa., snapped this picture of a neighbor's child, Master Charles Thomas, as he intently studied the advertisement for RCA Amateur Transmitters on the back of QST.

## Everything But Kitchen Sink



Large eraser

Positive pocket clip

Spare leads

Wear-proof color bands

RCA Metal Tube Cap

Handy non-metallic screw driver

The kitchen sink is lacking in the new improved RCA Service Engineer's Pencil but otherwise it is almost a complete tool kit. A non-metallic screw driver leads the list of new features, which include a metal tube cap and resistor color-code bands of wear-proof construction. The pencil is given free by RCA Radiotron distributors with orders for 100 RCA Radio Tubes. Illustration shows actual size of pencil.

## Tube Orders Win Improved Code Pencil

### Screw Driver Among New Features Added To Famous Pencil

First come, first served! Don't get hurt in the rush—for the new, improved RCA Service Engineer's Pencil. It is better, more useful, and more beautiful than the old pencil, and RCA Radio Tube distributors are giving them free with an order for 100 RCA Radio Tubes.

The old pencil was considered the most useful pocket tool that ever took the radio service industry by storm. The new pencil has the three unique multi-colored bands that tell the value of any resistor that is coded according to the R. M. A. Color Code, plus several new features that make the new pencil more desirable and useful than ever.

#### Alignment Tool Added

Most surprising of the new features is a non-metallic alignment screw-driver which is skillfully concealed in the barrel of the pencil. Take off the replica of a metal tube that adorns the top of the pencil and a light pull brings out the screw driver, one of the handiest tools a service engineer can have about him. — and he'll always have one about him if he keeps his RCA Service Engineer's pencil with him. No more lost or forgotten alignment screw-drivers for lucky possessors of this new pencil.

#### Color Can't Wear Off

With all its unique features, the RCA Service Engineer's Pencil is still a fine automatic pencil of the highest quality, a pencil that anyone will be proud to carry in his pocket. The addition of the alignment screw-driver was not permitted to interfere with the usual reservoir of

spare leads, which are carried in the tube below the eraser.

#### How It Works

The three colored bands perform the trick of solving the value of resistors. Panels of color corresponding to the Color Code and marked with the numerals of the code are on each band. To find the value of a resistor, simply align the colors on the band to correspond with the colors on the resistor (there is a separate band for body, end, and dot color of the resistor), and presto, the coded value of the resistor in ohms down to the last decimal place appears.

## TUBE MANUAL IS NOW AVAILABLE

A new, 192-page edition of the famous RCA Tube Manual will be ready for distribution about February 1, 1937.

The great number of tubes now in use and described in the book make this edition larger than any previous one, a fact which necessitates a nominal price of 25 cents per copy. For those who do not need such complete information, RCA Radiotron has published a 16-page chart giving brief information on all types of tubes. This chart is given free by most RCA Radio Tube distributors.

RCA Tube Manuals are the recognized source of information on radio tube characteristics, for dealers, service engineers, and amateurs. The introductory chapters offer a concise text book on radio principles and the theory of electronics. Following this, the Manual covers in detail the theory and application of all RCA receiving tubes. Characteristic data are supplemented by curves. Special sections are devoted to the subjects of circuits and resistance-coupled amplifier operating conditions.

The new RCA Radio Tube Manual No. RC-13 can be obtained for 25 cents either from RCA Radio Tube distributors or direct from Commercial Engineering Section, RCA Radiotron Division, RCA Manufacturing Company, Inc., Harrison, New Jersey.

## SELLING TIPS

Selling Tips are our readers' contributions for selling their services or products. All readers of RCA Radio Service News are invited to submit their ideas for increasing business. All Selling Tips printed will win one of the new RCA Service Engineer's Pencils. Let's have yours.

#### Undeniable Evidence Sells

Whenever I am called to repair an antiquated radio I take a new RCA Victor Table Model Radio along to demonstrate the different performance of a modern receiver to the customer. While it may seem difficult to believe, my selling average to date is approximately 90 per cent and my revenue has mounted consistently.

Many times I am able to sell console radios by merely pointing out the efficiency of the smaller model and explaining that the tone quality of a console is even finer.

S. S. Lebow,  
862 East 169th Street,  
New York, N. Y.

#### Service Psychology

Clean the cases of all auto radios that come into your shop with a soft cloth saturated with ordinary motor oil. Follow this with a vigorous second rubbing using a dry cloth. You will be surprised, as we were, at the improvement in appearance this added service will give the instrument. Incidentally, this also places your customer in a paying mood and gives tangible evidence that the set has been serviced and cared for.

Another important thing we have learned about the installation of auto radios may interest you. On such sets that do not have an Antenna Adjustment, drill a large hole in the case opposite the R.F. Trimmer. With the dial set at high frequency, adjust the trimmer for maximum volume to the car antenna. This materially improves the set's performance.

Incidentally, don't fail to sell a tone control on all jobs not so equipped. A s.p.s.t. toggle with the required condenser (0.02-0.06) constitutes the necessary material.

Joseph A. Napora,  
60 Easy Street,  
Uniontown, Pa.

#### Hearing Is Believing

Since our business is primarily "sound," we took to Sonotone as a "leader" for making more sales.

We sold a hard-of-hearing (Sonotone) installation to a large institution in this city. After its installation, we went to this organization and requested permission to install an RCA Victor Radio equipped with an RCA Sonotone attachment in their lobby. They agreed and we installed the equipment with a sign, "Hear Radio at Home as Clearly as You Hear the Program Inside."

We had a number of inquiries from this display which resulted in Sonotone sales for the home.

Fred S. Brucker,  
Chicago Sound Systems Co.,  
Chicago, Ill.

#### An Idea for Effective Mailing

I am ordering 500 Guarantee Certificates [RCA Sales Aid, Item No. 699] for service work stamped as follows: "Sample Copy of Guarantee Issued With Each Repair or RCA Tube." It is my intention to include this Certificate, stamped with the above copy, in all mailings to customers and potential customers. I believe that when they are included in mailings they will command a great deal of attention and instill confidence in the customer. The rubber stamps for the guarantee cost approximately \$1.10.

I. Horwitz,  
The Reliable Radio Laboratory,  
2122 Bryan Avenue,  
Bronx, N. Y.

#### The Antenna for Sales and Service

I always make it a point to impress upon the prospective buyer the fact that rapid advances are being made in modern radio receivers. To obtain maximum sensitivity, with a minimum noise level, the antenna design must be as modern as the set itself. Many radio owners, having replaced their obsolete receivers with all-wave sets, continue to use a conventional antenna. The service man is in an excellent position to "spot" these. The new home builder is a potential buyer for a deluxe, concealed, all-wave antenna installation. Cite the advantages of neatness, protection from the elements and convenient radio outlets in the living room or den and you'll find, as I have, that sales come easier and a bigger service business results.

Thomas F. Conway,  
322 Dartmouth Avenue,  
Swarthmore, Pa.

Editor's note: A similar suggestion was sent us by James J. Bolger, 1302 Arch Street, Norristown, Pa.

#### Pile 'Em in the Window to Pile Up Sales

We recently experimented with a novel window that, in the final analysis, produced more inquiries and sales than any display ever attempted. We piled as many tubes as we could lay our hands on (old ones from our service department) in the window. Then we had an attractive hand-lettered sign prepared, announcing that a complete set of new tubes would be given free to the person coming closest to guessing the correct number of tubes on display. We left the tubes in the window for approximately ten days and during that time approximately 500 people entered their guesses.

Naturally, this window produced several immediate sales. It also provided valuable leads, since all of those entering the contest were potential tube purchasers, proved by the fact that they entered the contest.

## This Display Brought Sales



Mr. Thompson of Saul & Thompson, Faith, South Dakota, poses beside the successful RCA Radio Tube window recently displayed by this outstanding drug firm. Unfortunately, reflections in the above photograph mar the attractiveness of the original window but for all that, you can't cast any reflections on the business this window produced. (Story above.)