



RADIO SERVICE NEWS

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SPRING CHECK-UP STARTS

HAMS OFFERED NEW LOW-COST TRANSMITTER

Compact Sending Equipment For Amateurs Has All Essential Features

Known as the ACT-20 Amateur Transmitter, a new RCA instrument selling to amateurs for only \$129.50 net, F.O.B. factory, is housed in a cabinet no larger than the average amateur receiver. The transmitter features single-control panel tuning, full amateur band coverage up to 30 megacycles, and complete telephone and C-W telegraph operation. The ACT-20 is particularly desirable for operation in the 28-to-30-m.c. band. Capable of full power output at these frequencies, while offering both dependability and efficiency, it brings world-wide 10-meter communication within the range of its owner.

Rapid Frequency Changes Possible

The r-f system has been designed to make possible rapid changes of both frequency bands and frequencies within any band with a minimum of adjustment. This is accomplished by arranging the oscillator and buffer/doubler stage circuits so that coils and crystals of adjacent frequencies can be interchanged without the necessity of returning the plate circuits each time.

The power supply consists of two RCA-83 full-wave mercury-vapor rectifiers operated in parallel, a fused and tapped 100-120 volt plate transformer, filter choke, filter capacitors and a filament heating transformer for all tubes.

(Continued on Page 2, Column 4)

Knee Action!



From "Popular Science," released by Paramount Pictures, Inc.

This is one way to make the study of science popular. The above scene is from the motion picture short, "Popular Science," released by Paramount Pictures, Inc. The charming young lady is demonstrating the uncanny sensitivity of the RCA Vibration Pickup. The box, on top of the device with the many controls, is an RCA Speaker for centralized sound installations. What? You hadn't noticed it!

HUGE ADVERTISING CAMPAIGN SUPPORTS NEW SELLING PLAN

Proved Sales Method Is Extended to Auto Radio Market; Remarkable Results Obtained

Service engineers and dealers who act at once can take advantage of an opportunity to make a small investment that gives, on the average, a net return of 17% within three months! This is the average result obtained by over 1,000 dealers using the Check-Up idea in the past. Similar results can be expected from the new RCA Spring Check-up, in which all dealers are invited to participate.

A net return of 17% in three months sounds like a get-rich-quick scheme or a long shot at the races, but in this case it is the verified average results which have actually been obtained. Dealers and service engineers who have tested out the new selling plan have made an average net profit of 17% of the amount of the sales resulting from the new plan. These figures include the profit from the sale of service work, tubes, and parts only, and do not include any sales of radios or other major appliances. For some dealers the sales of major appliances have exceeded in dollar volume the sales of tubes, parts, and time.

Reaches Auto Radio Market

The RCA Radiotron Spring Check-Up is a new version of a method that dealers have been using successfully for several years to boost the sales of radios and appliances, as well as service work and the smaller items.

The Check-Up method of stimulating sales was first promoted in a big way by RCA Radiotron in 1934. It was so successful that it has been continued ever since. The new (Continued on Page 6, Column 1)

Many Stations Broadcasting Service Talks

Service Meetings of Air Start — Valuable Prizes Offered

No longer need any service engineer miss the popular RCA Service Lectures because of lack of time or the distance he would have to travel to attend the meeting. The series of thirteen unique "RCA Service Meetings of the Air" now being broadcast by approximately 50 radio stations makes it possible to benefit from the lectures without even leaving the home or shop, and the valuable prizes given away free after every meeting for the best (Continued on Page 8, Column 2)

Handy Display



The handsome counter display rack shown above makes it easy for the RCA Victor Auto Radio dealer to show how he can make an installation that will match the dash of the customer's car. It holds a stock of the dash mounting plates, and is available to dealers on an attractive no-cost plan.

PINDEX TELLS POSITION OF TUBE PRONGS

Handy New Pocket Piece Gives Essential Data About Tubes

One of the handiest pocket pieces a service engineer can have has just made its appearance under the name of RCA Pindex. As its name indicates, the RCA Pindex tells the important facts about tubes that a service engineer heretofore has had to search through tube charts and service notes to learn. The Pindex is available through RCA Radiotron distributors with the purchase of tubes. It is illustrated on page 6.

The Pindex is only three inches wide and six and a half inches long and is flat so that it can conveniently be carried in the pocket for constant reference. It is made of celluloid, insuring long wear.

The operation of the Pindex is simplicity itself. Just pull the slide (Continued on Page 6, Column 3)

SERVICE MARCHES ON—An Editorial

By F. B. Ostman, Manager, RCA Service Division

Time marches on, and the service industry marches with it, making rapid progress.

Almost three years ago in the first issue of RCA Radio Service News we predicted that competition, if nothing else, would stabilize the radio service industry and bring better servicing methods, better service engineers, and greater prosperity to the service engineers who survived the struggle. This prediction is proving true.

Service engineers are better engineers. They have to be to work on today's receivers.

Service engineers are becoming more prosperous—at least the good ones are. They have learned that only the most modern equipment will enable them to turn out the kind of work customers demand; and do it fast enough—for speed as well as quality is needed, if a sufficient number of jobs to show a profit are to be completed each day.

Fortunately, the laboratories are keeping pace with the progress and demands of the industry. RCA engineers, for instance, have produced an Oscillograph and an Oscillator that are designed especially for the service engineer and that, for the first time, are priced to fit his pocketbook. And RCA also offers a merchandising plan that enables the dealer or service engineer to capitalize on his equipment and knowledge—the RCA Check-Up Plan.

All this indicates greater progress than ever will be made in 1937. Service methods and service income will improve even more than in the past.

The service engineer that succeeds will be the one who keeps pace with the march of progress.



F. B. Ostman

New Catalog Ready



A new catalog showing all RCA test instruments and service specialties is awaiting service engineers at RCA Parts distributors. A feature of the book, which has a larger page size than the previous catalog, is the chart showing principal replacement parts for corresponding models of RCA Victor, General Electric, Westinghouse and Graybar receivers.

1937 Service Market Huge, Figures Prove

Statistics Show Seven Out Of Ten Radios Now Over Five Years Old



E. N. Deacon

Statistics are frequently very dull but they are mighty encouraging in regard to the market for radio service work in 1937, according to E. N. Deacon, RCA Radiotron Sales Manager. Deacon declares that statistics on the service market

prove that what the average service shop and dealer needs more than anything else is not prospects but a means of interesting the prospects that are to be found on every hand. "Let's not deal in millions and other large national figures," said Deacon in explaining his position. "Let's just take simple percentages and apply them to any dealer's own community. From many surveys that have been made, two especially significant facts stand out: in seven out of ten radio-equipped homes the radio is over five years old, and seven out of ten radio homes—not necessarily the same seven of course—have never had the radio inspected or repaired. When you realize that—again seven seems to be the lucky figure—there is a radio in seven out of ten homes, you can see what a market for service work, new tubes, etc., there is.

Most Radios Never Serviced

"Seventy per cent of seventy per cent is 49%. That's the percentage of homes that have radios over five years old. Most of these radios, as the figures show, have never been serviced!

"What a market! In an average neighborhood if you call from house to house, in every other one you'll find a radio over five years old and the chances are that it has never been serviced.

"Some of that 49% of all homes will buy a new radio or an overhaul job if approached directly with an offer. But many of them will not. That's where salesmanship comes in. The point is that the higher the cost of an article or a service, the higher the initial sales resistance that is set up. People walk casually into a five-and-ten store in a buying frame of mind, but they do a lot of thinking before they enter an automobile sales room in a buying frame of mind.

"That's why the RCA Radiotron Check-Up Plan succeeds so well and averages about \$4.00 in sales for each call. Many a person who started out to buy a \$1.50 Check-Up just because he thinks any device is benefited by an occasional inspection winds up by buying a \$150.00 radio or refrigerator or a washing machine. But of course many Check-Up calls are not converted into sales of major appliances. In the majority of cases a service job—generally for considerably more than \$1.50—is all that results. With the service work goes the sale of tubes, and that's where RCA Radiotron comes into the picture."

Oscillograph Reduces Costs, Dealer Writes

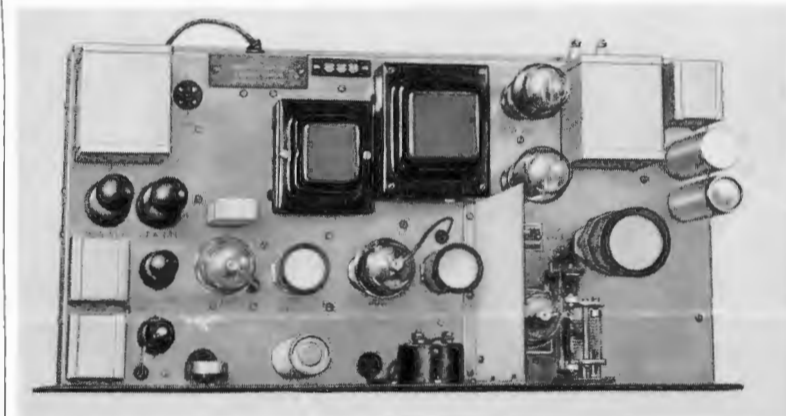
Instrument Shortens Time Per Job, Increases Sales 20%

F. H. Gable of the Gable Electric Shop, 6821 Snider Plaza, Dallas, Texas, has some definite ideas of how a service business should be operated to make a profit. He writes from experience and stresses the importance of reducing time required per job.

By F. H. Gable

The percentage of profit any business will make is always in direct proportion to the ratio of volume versus overhead. Herein lies the chief value of the cathode ray oscillograph as a money maker—volume can safely be stepped up without an increase in overhead (excepting, of course, fixed charges—such as interest on investment and depreciation).

Since the date of its availability, an RCA TMV 122-B Cathode Ray Oscillograph, together with its associated equipment, has been used in our service laboratory. To say that we are pleased with its performance would be putting it mildly. As a



Chassis View of ACT-20 Transmitter.

matter of fact, constant use of the instrument has led us to look upon it as the most valuable and inexpensive piece of equipment it is possible to buy—and these facts are based on a careful check of service records before and after!

Reduced Time 20%

The time required to do the average job, since we have had the oscillograph, was decreased nearly 20% and strange to say volume in-

(Continued on Page 4, Column 5)

Adapts Auto Radios



Many people like to keep the old auto radio when they trade in their cars. With the kit shown above they can transfer their 1935 and 1936 RCA Victor Auto Radios to almost any 1937 model car. Everything needed is included in the kit. List price, at RCA Victor Auto Radio distributors, \$6.20

Compact and Efficient



Compactness and ease of operations are only two of many desirable features found in the new RCA Amateur Transmitter ACT-20. In general appearance it matches the RCA Amateur Receiver ACR-155. The net price of the Transmitter is only \$129.50, less accessories.

HAMS OFFERED NEW LOW-COST TRANSMITTER

(Continued from Page 1, Column 1)

Oscillator

The completely crystal-controlled oscillator employs an RCA-807 Beam-Power Tube in a conventional circuit. Tuning is accomplished by a small capacitor mounted on the

Matches ACR-155 Receiver

In appearance the ACT-20 Transmitter matches perfectly the ACR-155 RCA Amateur Receiver recently announced at \$74.50. The cases of the two instruments are of the same size and shape.

Specifications

CABINET: Metal cabinet with two-tone, gray-wrinkle finish; Labeled controls. Cabinet size 24 3/8" long 11 1/2" high, 12 1/2" deep. Fully ventilated.

NET WEIGHT: 64 Lbs.

CIRCUIT: Three stage, crystal-controlled, with high quality, 100% high-level plate modulation.

FREQUENCY RANGE: 5 amateur bands (10, 20, 40, 80 and 160 meters) 1715 to 30,000 kcs.

BAND CHANGING: By plug-in coils, sockets accessible through hinged cabinet top.

TUBE COMPLEMENT: 2 RCA-807 as crystal oscillator and beam power amplifier; 1 RCA-802 buffer/doubler; 2 RCA-84 full-wave, mercury-vapor rectifiers; 2 RCA-6L6 modulators; 1 RCA 6F6 audio driver; 1 RCA-6F5 speech-input amplifier.

POWER SOURCE: 110-120 volts, 50/60 cycle single phase.

POWER CONSUMPTION: A.C. input 200 watts at 100% modulation;

RATED POWER OUTPUT: 20 watts C-W, 16 watts Phone.

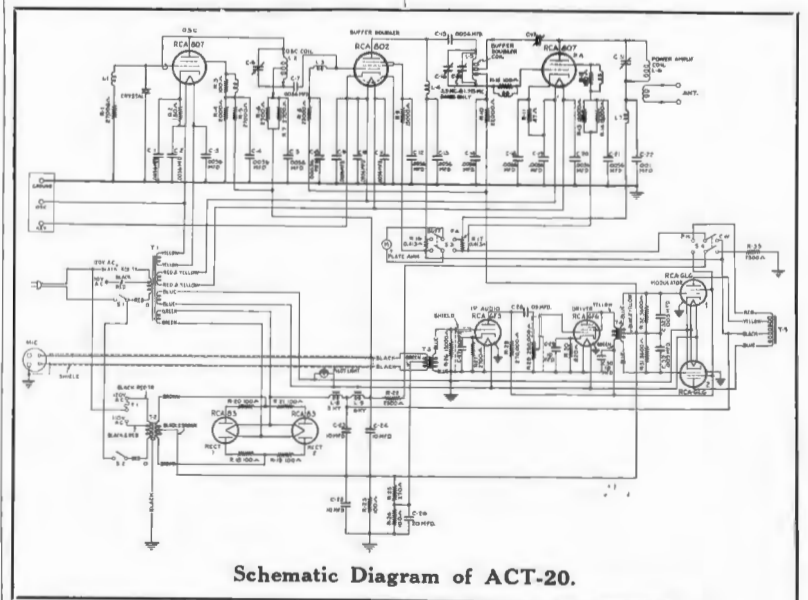
Accessories

The following accessories are needed but not included in the price of \$129.50: Net to Amateurs

- 1 Kit of RCA Transmitting Tubes for R-F stages . . . \$11.70
- 1 Kit of RCA Radio Tubes for speech amplifier stages, modulator and rectifier. List Price 9.30
- 1 RCA Double-Button Carbon Microphone, Type MI-6225-A 6.90
- RCA TMV-135 Crystal Holders only 1.95

chassis. This capacitor may be adjusted for a crystal frequency in each of the 1.715, 3.5 and 7.0 megacycle bands, and for several frequencies in a band so that when its capacitance is less than that required for any other crystal, the oscillator will perform satisfactorily with all crystals without retuning. This means that any frequency may be used in any of these three bands by plugging in the proper crystal and coil without further oscillator tuning. When a 14 m.c. crystal is used, individual tuning adjustments are necessary.

The RCA-6F5, high-gain speech



Schematic Diagram of ACT-20.

amplifier, has a transformer input circuit for coupling to a double-button carbon microphone by means of a four-prong tube socket. Voltage for the microphone is supplied automatically when the plug is inserted in the socket. Other types of microphones or inputs may be used provided they terminate in 500 to 600 ohms and have a level of approximately—35 db.

RCA V-cut Crystal with Holder (any band) 9.85
Crystals are available for 20, 40, 80 and 160 meter bands within 0.1% of frequency specified. All crystals have a temperature coefficient of 4 cycles or less per million, per degree centigrade.

Direct-By-Mail Ads Pay Well, States Expert

Returns From Old Customers Highest But Mailings To Phone List Also Pay



J. P. Allen

Direct-mail is the old reliable method of bringing in Check-Up jobs, according to J. P. Allen, of the RCA Radiotron and Parts Sales Promotional Department, who has done considerable research work

on this selling method for service shops and neighborhood stores.

"For the small shop with a small advertising budget, direct-mail methods have certain advantages," explained Allen. "The expense is small and the mailings can be scheduled so as to bring the work in when it is needed. The small shop also can pick its mailing list very carefully and this is the kind of a mailing list that gives the best results.

Old Customers Best Prospects

"We found in one test campaign that a list of old customers produced four times as high a percentage of returns as a list compiled from the telephone directory. The most gratifying part of that test campaign, however, was that even the telephone directory results were sufficient to be quite profitable to the shop. The moral is, work your old customers until you exhaust the list, then start on names carefully selected from the telephone directory, choosing only names that are residents of your working area.

"Most merchandising experts will tell you that returns of 5% are very high for a direct-mail campaign," continued Allen. "This is true but nevertheless our test campaigns

Prizes Galore Given At New Service Meets

Statements of 100-Words or Less Win Fine Prizes; Nothing To Buy

If one service engineer were lucky enough to win all the prizes offered for 100-word statements on subjects assigned at the RCA Service Meetings of the Air, he would have just about all the test equipment and much of the merchandise he would need to operate a service business.

To enter the contest, the service engineer calls on his distributor after every "meeting" and gets the Official Entry Blank for that week's contest. The blank states the subject of that week's statement and names the prizes.

Three Sets of Prizes

For the purpose of awarding prizes, the country has been divided into three divisions. There is a full set of prizes for each division. Thus each contestant's chances of winning are increased three-fold. For the first week, for example, there are one first prize, one second prize, one third prize, one fourth prize, and 25 "honorable mention" prizes for each division, or a total of 87 prizes for the country as a whole.

Statements must be written on the Official Entry blanks. The assigned subjects and the prizes awarded for each division of the country for the first three meetings are as follows:

First Week

Subject: Methods I have found most successful in selling antenna installations.

Prizes: First, 6 Spider Web Antenna; Second, 6 Spider Web Antenna; Third, 6 Spider Web Antenna. (Continued on page 4, column 3)

show that with a good mailing list, RCA Radiotron Check-Up mailing card No. 1335B will frequently produce better than 10% returns. This has been accomplished without national advertising to pave the way for the direct mail work. The returns ought to be even higher with a huge advertising campaign doing the preliminary work and leaving to the dealer's mailing only the job of reminding the prospect about the benefits of a Check-Up and telling him where he can get one."

Card Requires No Signature

The mailing piece No. 1335B mentioned by Allen is a duplex folding card with a business reply card attached on which the name and address appears through a "window" when the card is mailed to the customer. Thus the customer does not even have to sign his name when returning the card. Card No. 1335B may be had with dealer's imprint for \$1.50 per 100, or for 75c per 100 in quantities of 1,000 or more. This, and six other effective direct-mail pieces featuring the Check-Up, were illustrated in the November, 1936, issue of RCA Radio Service News.

Spots



Thirteen effective "spot" announcements for selling your service work over the local broadcast station are provided by the electrical transcription shown above. Each announcement requires but one minute, including your signature by the local announcer. The record can be obtained from RCA Parts distributors.

RADIO MUSIC SOOTHES COWS

Lancaster, Pa.—"Milk from radio-entertained cows" would be an appropriate slogan for use by Park Miller, local dairyman who also believes in keeping his cows contented.

Miller installed a radio for his 31 cows a year ago. His experiment disclosed that cows like to hear dance orchestras. They seem to prefer snappy tunes to the dreamy waltz numbers; symphonies and bits from the classics are not so effective; murder thrillers, mystery plays, comedians and speeches never should be tuned in.

Tuned in to the right program, his cows show immediate interest. And even the hired men went about their chores with more vim and vigor when a snappy tune was on the air.

Makes Debut



Arlene Jackson recently made her acting debut on the "Your Unseen Friend" program over the WABC-Columbia network. Heretofore radio listeners have known her as a delightful vocalist.

Use These For That Auto Radio Check-Up Campaign

YOUR TRADE NAME HERE
BUSINESS ADDRESS
CITY & STATE

TAKING A DUCK FOR A RIDE?

February 16, 1937

Dear Radio Owner:—

An auto radio can be **too realistic**—filling the sweet spring air with the honks of geese, the quacks of ducks and the squeals of pigs, even to the exclusion of the music you want to hear! If your radio is in this condition, why not call on us! We are giving special attention (and a special price!) to the job of taking disturbing noises from any make or model auto radio.

A thorough cleaning, testing, and "checking-up" by a trained radio service engineer will save you more than likely more your ear radio or trouble. We install new parts, or tubes only when necessary, and then at standard low prices. RCA Tubes and quality parts used exclusively.

Our regular 10-Point \$2.50 Automobile Radio Check-Up has been reduced, for a short time only, to \$1.50.

This is what we do:

1. Check overall set performance for sensitivity, selectivity and fidelity.
2. Test and label all tubes.
3. Check speaker and case for rattles.
4. Check all battery connections.
5. Check aerial installation.
6. Check and test generator and ammeter capacitors.
7. Inspect suppressors and vibrator.
8. Adjust generator charging rate.
9. Adjust dial to normal kilocycle reading.
10. Free estimate of any additional repairs needed.

Stop in and ask for the "Auto Radio Check-Up", now specially priced at \$1.50. Or phone us—we will call at your home if you prefer.

Yours truly,

*It is necessary for us to make a small additional charge for removing and replacing the radio. This charge varies according to the individual radio, and in any case represents only our actual cost.

YOUR TRADE NAME HERE
BUSINESS ADDRESS
CITY & STATE

February 16, 1937

Dear Radio Owner:—

Don't change your oil, inspect your tires, have your motor or your radiator checked up. What kind of advice would you call that? You'd probably say it was ridiculous, because chances are you do those things, or have them done, pretty regularly yourself.

But what about your auto radio? Don't you think it takes just as much of a beating as the rest of the car? Take the tubes, for instance. They are subjected to rougher treatment, even, than the tubes in your home radio—and we know those tubes, after a time, lose their freshness and vigor; they grow tired and cease giving you quiet, clean-out reception.

The same holds true of the other parts of your auto set. Dust and dirt cut down efficiency. Dampness attacks the speaker. Critical settings and connections are jarred loose. Result: noise, weak signals, distortion.

Here's the easy, inexpensive remedy. Let us give your auto radio a 10-point RCA Check-Up—comprising the inspection and adjustment operations listed below. For a short time, as a Spring Special, we are offering this complete service, ordinarily costing \$2.50, for the remarkable price of \$1.50! If new tubes are required we will install genuine RCA Radio Tubes at standard prices. Quality parts supplied on same basis.

Yours truly,

10-POINT AUTO RADIO CHECK-UP—A \$2.50 SERVICE FOR \$1.50

These are the tests recommended by RCA, performed by our expert radio service engineers:

1. Check overall set performance for sensitivity, selectivity and fidelity.
2. Test and label all tubes.
3. Check speaker and case for rattles.
4. Check all battery connections.
5. Check aerial installation.
6. Check and test generator and ammeter capacitors.
7. Inspect suppressors and vibrator.
8. Adjust generator charging rate.
9. Adjust dial to normal kilocycle reading.
10. Free estimate of any additional repairs needed.

*A small charge is also made for removing and replacing radio; this represents no more than our actual cost.

Price (either letter) with or without your 3-line imprint. \$1.00 a 100, including envelopes. Order by form number.

For the small sum of 1c Uncle Sam will go to work for you delivering messages like those shown below and at right on Auto Radio Check-Up. Order a quantity of these cards now and follow out your mailing plans for real results.

Form No. 1774 (to right) and Form No. 1773 (below) with your 3-line imprint and on government stamped stock \$1.25 a 100. Unimprinted on plain stock 35c a 100.

A Duck Riding in Your

SPECIAL AUTO RADIO 10-POINT CHECK-UP

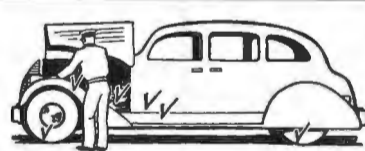
(plus cost of removing & replacing set.)

1. Check overall set performance for sensitivity, selectivity and fidelity.
2. Test and label all tubes.
3. Check speaker and case for rattles.
4. Check all battery connections.
5. Check aerial installation.
6. Check and test generator and ammeter capacitors.
7. Inspect suppressors and vibrator.
8. Adjust generator charging rate.
9. Adjust dial to normal kilocycle reading.
10. Free estimate of any additional repairs needed.

DEALER'S IMPRINT

WE USE GENUINE RCA TUBES

Form 1773



- You have your battery checked
- You have your transmission checked
- You have your tires checked
- You have your engine checked
- You have your oil checked

Ever had your Car Radio Checked?

Car Radios need to be checked. Dust and dirt attack vital parts of the radio. Dampness affects the speaker; tubes wear out. The answer? Our standard Auto Radio Check-Up consisting of these 10 separate jobs:

1. Check overall set performance for sensitivity, selectivity and fidelity.
 2. Test and label all tubes.
 3. Check speaker and case for rattles.
 4. Check all battery connections.
 5. Check aerial installation.
 6. Check and test generator and ammeter capacitors.
 7. Inspect suppressors and vibrator.
 8. Adjust generator charging rate.
 9. Adjust dial to normal kilocycle reading.
 10. Free estimate of any additional repairs needed.
- Regular price \$2.50—Now for a limited time only . . . **\$1.50** (plus cost of removing & replacing set.)

DEALER'S IMPRINT

Form 1774

Any Ducks IN THIS CAR?

Here's our 10-point Check-Up that removes squawks and quacks from Auto Radios

1. Check overall set performance for sensitivity, selectivity and fidelity.
2. Test and label all tubes.
3. Check speaker and case for rattles.
4. Check all battery connections.
5. Check aerial installation.
6. Check and test generator and ammeter capacitors.
7. Inspect suppressors and vibrator.
8. Adjust generator charging rate.
9. Adjust dial to normal kilocycle reading.
10. Free estimate of any additional repairs needed.

REDUCED FROM \$2.50 TO \$1.50

(plus cost of removing and replacing radio) if you present this tag to

DEALER'S IMPRINT

WE USE GENUINE RCA TUBES

Form 1775

Just what you want for the auto trade. A door handle hanger. Placed on the handles of autos in your neighborhood, it will produce business for you. Price with your 3-line imprint. \$1.50 per 100.

Above are shown some tried-and-proven direct mail pieces for capturing the auto radio repair business. Direct mail material for the home radio market was shown in the November, 1936, issue of RCA Radio Service News. The letter at the top left is Form No. 1776; at the top right, Form No. 1777. Orders should be placed through distributors.

Mr. Egglemud's Boss



"Yes, Mrs. Whoosis, but after eight years maybe you should have your tubes tested."

Prizes Galore Given at New Service Meets

(Continued from page 3, column 1)
 tennas; Second, 4 RCA RK-40 Antennas; Third, 3 RCA RK-40 Antennas; Fourth, 1 RCA RK-40 Antenna. Next 25 best answers each



Two of the prizes—the RCA Output Meter and the new RCA Aerodynamic Microphone

receive one RCA Metal Tube Cigarette Lighter.

Second Week

Subject: Methods I have found most successful in selling alignment jobs.

Prizes: First, RCA Test Oscillator; Second and Third, RCA Output Indicators. Next 25 best answers each receive one RCA Metal Tube Cigarette Lighter.

Third Week

Subject: The best question in regard to the first two RCA Service Meetings of the Air.

Prizes: First, RCA Universal Bridge; Second, Complete Set RCA Victor Service Notes (in bound volumes); Third, Complete Set RCA Alignment Tools. Next 25 best answers each receive a copy of book, "101 Service Sales Ideas."

oughly we are advertising the Spring Check-Up.

"Of course our Check-Up ads will not be distributed in such a wasteful manner. They will be delivered right to the best class of prospects. And the ads themselves are so striking that you can be sure they'll be read—and a lot of customers for the Check-Up created.

Ready-Made Ads Available

"Mats are available so that dealers can do their own advertising at the same time the national ads are running. Some of the mats for dealer's newspapers ads are almost identical with our magazine ads, giving the dealer a very effective tie-in. Distributors are glad to show dealers what mats are available, or we have a proof sheet of them and will be glad to send it on request. Just ask for Ready-Made Check-Up Ad Sheet, Form 1780.

"For dealer's radio advertising there is the Electrical Transcription Record, 'RCA Radiotron Service Spots,' providing 13 spot announcements of the professional type. This is, I think, the first time such a service has been offered dealers. And of course, all the Check-Up direct-mail material shown in the November issue of RCA Radio Service News, plus the auto-radio material shown in this issue, is still available and as effective as ever."

Helps Sell Auto Radios



This attractive auto radio display is now available to RCA Victor Auto Radio dealers. It holds three complete receivers, with battery power supply hidden inside the display. Prospects can actually operate the receivers from the controls in the top panel.

MAGIC VOICE FEATURED IN AUTO RADIOS

New Auto Receivers Backed By Wide Variety of Sales Helps

The new line of RCA Victor Auto Radios recently announced to the trade is unusual not only for the quality features of the instruments themselves but also for the array of well-planned selling helps available to dealers.

A Model in Every Price Class

There are four models, all using six tubes. The de luxe instruments provide two separate speakers which may be turned on separately or together. Magnetite-core transformers give great selectivity and require no adjustment after the instrument leaves the factory. The Powertrons (synchronous vibrator rectifiers) are clearly marked for polarity, a fea-

ture service engineers will appreciate, since the polarity can be shifted by simply reversing the Powertron. Metal tubes are used wherever possible in all four models.

Magic Voice for Auto Radio

Another great sales feature of the new RCA Victor auto receivers is that for the first time Magic Voice type reception has been brought to the auto field. Properly installed, the Magic Voice of the new RCA Victor Auto Radios controls reverberation in the same manner that it is controlled in Magic Voice radios for the home.

Oscillograph Reduces Costs, Dealer Writes

(Continued from page 2 column 3)

creased about the same amount. The explanation of course is that more time was available to hustle business.

Picture Worth 1000 Words

The Chinese say that a picture is worth a thousand words and truly this is well proved with the oscillograph. It has often been our pleasure to watch doubt change into confidence in the eyes of some hard to sell customer as he watches the "green lightning" on the tube screen. All the fancy dials and meters in the world would not impress him, but something dynamic—moving in synchronism with music on an applied signal catches his fancy. Many is the time our minimum bench charge of \$1.00 has been stretched into two hours at \$1.50 per hour for a good aligning job on a small set. And this when, in most cases, a serious squawk would have been raised over a dollar labor charge for twenty minutes work installing a new resistor. Boiled down, the oscillograph is the most effective selling tool (as well as service instrument) it is possible to use for the sale of our principal stock in trade—service.

Draws Crowds to Window

Nor is its use restricted to service problems. A window was well decorated with a radio, indirectly lighted, against an attractive background. The oscillograph was connected to the voice coil leads and both radio and oscillograph left running for about three hours each night. As a contrast to this window, another featuring small appliances was brilliantly lighted right next to the comparatively dark one. A check showed that 60% more people stopped at the radio window than at the other.

MAGIC KEY HOUR HELPS CHECK-UP

Millions of people will be advised to go to their local dealers for a Check-Up by the commercial announcements of the RCA Magic Key program, heard over the NBC Red Network every Sunday at 2 P. M., EST. The announcement quoted below, which was used March 21, is an example of the way Magic Key is boosting business for dealers.

"If your radio is like most radios, it needs expert attention at least once a year. Your RCA Tube Dealer is now featuring an inexpensive "Check-Up" service which includes ten cleaning, checking and tuning operations—all for only one dollar and fifty cents. Take advantage of this offer—have your set checked from aerial to tubes, and enjoy hearing your old radio sound as it did when new. Call your local RCA Tube Dealer this week—and arrange a Check-Up. It's valuable alike for home receivers and auto radios."

NATIONAL ADS BOOST SPRING CHECK-UP PLAN

Dealer Material Available To Tie-In With All Forms of National Advertising

New York—In an attempt to describe the completeness of the coverage of the advertising campaign devoted to the RCA Radiotron Spring Check-Up activity, D. J. Finn, RCA Radiotron Advertising Manager, was forced to resort to analogy while speaking before a group of jobber salesmen here recently.



D. J. Finn

"We don't claim to be philanthropists," said Finn. "We believe that if we can increase the business of service shops throughout the country we will increase our own business. We have found that when we send service jobs into service shops they send orders in to us—or rather in to our distributors. That's why we are shooting the works on the new Spring Check-Up. Everyone benefits, including the customer who needed the Check-Up but didn't know it until we told him so.

Radio, Magazines, Newspapers

"Probably never before has a dealer or service engineer had the opportunity to tie in directly with a service-selling campaign that had so much advertising support. Over 130 newspapers will carry the story of the Check-Up. The RCA Magic Key Program, rated one of the most popular programs on the air, will feature the Check-Up on many of the commercial announcements. Both the Saturday Evening Post and Colliers will carry ads twice a month for the rest of the year.

"Our figures show that the possible coverage of all the advertising media we have scheduled ranges, depending on the place, from about 60% to 120% of all native white families. The average is approximately 85%! Apply these figures to your own community and think what a selling help you have.

Advertisements from Aeroplanes

"In the magazine field alone, it is hard to conceive of the number of Check-Up advertising messages that will be delivered to the readers each month during 1937. If a pilot were to go aloft in a plane loaded with single copies of the advertisements and with an engine running at 1800 RPM, and then were to drop an advertisement over the side for every revolution of the engine, it would take him longer than three days to finish his job! That is how thor-

Well Known Ham



F. B. Ostman is known to thousands of service engineers as manager of the RCA Service Division. Here he is in another role, operator of Amateur Station W20M, using the handsome new RCA Aerodynamic Microphone, which has a list price of only \$26.50. The desk stand shown with the mike lists at \$3.75. A floor stand adjustable from 20 to 55 inches is also available at \$16.50 list. Either will fit any microphone having standard 1/8" pipe threads.

Ready-Mades

MAKE YOUR RADIO SOUND LIKE NEW
RCA 10-POINT CHECK-UP
 LESS THAN 1/2 A DAY
 brings back that new set tone

DEALER'S NAME

WE USE ONLY **RCA TUBES**

Ready-Made Ad No. 340

\$2.50
RCA 10-POINT CHECK-UP...
 NOW ONLY \$1.50

DEALER'S NAME

WE USE ONLY **RCA TUBES**

Ready-Made Ad No. 342

Mats free from Camden on request. Order by number.

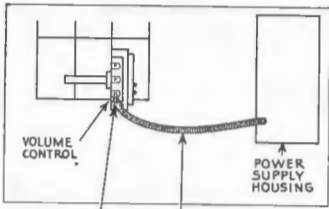
Service Tips



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.

Hum in United Motors Model 4037

A common complaint is audio hum in United Motors Model 4037 Auto Radio when the volume control is set at zero and no signals are being heard. Upon removing the grid lead from the grid cap of the 75 tube (second detector, AVC and first audio) the hum will cease. Of course, during this test a different hum will shortly appear, due to the open grid circuit. However the offending hum, which is more of a



SOLDER THIS END OF BRAIDED SHIELD TO GROUND TERMINAL OF VOLUME CONTROL AND ALSO TO VOLUME CONTROL BACK COVER. SOLDER THIS END TO POWER SUPPLY HOUSING. HOUSING IS CADMIUM PLATED AND WILL SOLDER EASILY. LEAVE ENOUGH SLACK HERE SO AS TO LEAVE VARIABLE CONDENSER FREE ON ITS RUBBER MOUNTING.

buzz that is evident when the volume control is in zero position, will have disappeared.

The remedy: Connect a low-resistance lead, such as a piece of braided shield, from the corner of the power supply cover which houses the vibrator, power transformer, etc., to the ground connection on the volume control. (The volume control is mounted on top of the gang tuning condenser.)

The hum, as I have determined it, is caused by a high-resistance return in the volume control or 75 tube grid circuit. This remedy has cured every case in which it was tried.

Jerry Fink,
Chapin Owen Co., Inc.,
Rochester, N. Y.

Oscillation in Philco 37-116

When this receiver oscillates with the gang closed or nearly so, on the broadcast band, dress the three leads behind the expander and volume control up away from the chassis. They are green, yellow, and green and white, and usually taped together.

T. Paul Taylor,
266 West Linton St.,
Philadelphia, Pa.

RCA Radiola 66

If the receiver is dead and no plate voltage readings are obtained, replace the 4,800 ohms resistor in the bottom of the S. P. U. chassis.

Lack of sensitivity in the high-frequency portion of the dial after receiver has been balanced and neutralized is due to incorrect alignment of the first detector and R. F. tuning condenser. These circuits have no trimmers. In order to correct this trouble, it is not advisable to bend the plates of the tuning condenser gang because of lack of clearance and danger of short. The best solution is to install two very small trimmers across the R. F. and first detector section of the tuning condenser gang. After adjusting these trimmers to peak, a great improvement in sensitivity in the high frequency end of the dial will be obtained, still leaving great sensitivity in the low frequency part of the dial.

L. M. Prince,
C. & B. Electric Shop,
Walton, N. Y.

Defective Rectifiers and Condensers

Before replacing the rectifier tube in any radio, when the rectifier checks absolutely "zero" for emission, and the rectifier tube is not gaseous, or the filament is not burnt out, check filter condensers for leakage. Replacing tube without replacing defective condenser, or condensers, will result in the tube going bad in a short while, in the same manner.

Albert Rosenstein,
Chatham Radio Service,
Savannah, Ga.

Motorboating in Zenith 230, 245

Motorboating in these models, which have the same model chassis, is caused by insufficient filter capacity. This can be cured quickly by adding a 4 MFD condenser to the filter circuit. This motorboating does not develop until the set has had several months' service, and is probably caused by the filter condenser changing slightly in capacity. The hum level will have increased slightly also with the drop of filter capacity.

J. R. Deines,
Signal Corps, U. S. A.,
Fort Omaha, Neb.

Hum in Victor RE-32, RE-45

High hum level in Victor RE-32 or RE-45 may be greatly reduced by changing the 26 first audio tube to a 27. The filament leads of the 26 should be left disconnected, and a new connection be made to the filaments of the 45 power tubes. Reconnect the grid and plate leads to the respective terminals and by-pass the cathode of the 27 with a 25,000 ohm resistor and a 1 mfd. condenser.

George Nakao,
Seiseido Shoten,
Box 813,
Honolulu, Hawaii.

Broken Antenna and Ground Leads

It is well on every service job to check the aerial and ground leads coming into the house, checking for broken leads, etc. In my service kit I carry along an electrician's weatherproof socket (the type with short pigtail leads coming off) with a small 7½-watt lamp in it. By connecting one leg of this lamp to the ground wire and plugging the other leg alternately into the two sides of the AC outlet, the lamp will light on one of these positions, if the radio ground is continuous. If the lamp does not light in either position, or lights only dimly, it is an indication that the ground is totally or partially open, and should be repaired.

After this procedure, the aerial lead should be checked in the same way. If the aerial is free from grounds, the lamp will not light, but if it is grounded, or if the lightning arrester is shorted, it will light, and the aerial should be repaired.

This method of checking also aids in distinguishing between aerial and ground wires when tracing them through partitions, etc., is difficult.

Lloyd Harder,
Lillyblad Service Co.,
309 Main St.,
Red Wing, Minnesota.

Brightening Tuning Indicator Tubes



One often finds, when installing 6E5 or 6G5 tuning indicator tubes in sets built without them, that with all connections OK and normal voltages on the indicator tube, the intensity of the tube's glow is low and cannot be seen easily in a brightly-lighted room. This trouble can be overcome by wrapping a layer of tape around the dome of the tube as shown in the diagram. The tape darkens the area around the screen, causing the green portion to be more visible.

Edmond S. Kosky,
Kosky's Radio Laboratories,
3546 East 112th St.,
Cleveland, Ohio.

Heat From 6E5

A customer who recently purchased an RCA Victor Model 9-T radio smelled wires burning in the radio so she abandoned the house and ran for the service man. The

service man cautiously approached the radio and by the use of his trusty schnozzola traced the smell of burning wires to the magic eye escutcheon; upon removing the 6E5 from the escutcheon he found that the heavy rubber band that is placed around the top of the 6E5 tube to make it fit snugly into the escutcheon was melting from the heat generated in the tube and giving off an odor of burning wires; the rubber band was discarded and the tube reinserted and the successful service man schnozzled up another victory.

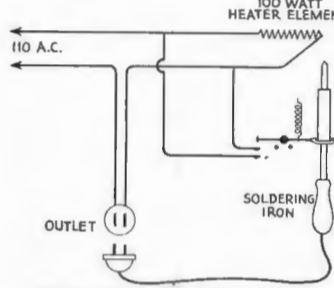
Leo J. Draus,
155 Cotton Street,
Manayunk, Phila., Pa.

Editor's Note: This trouble has been remedied in later production of RCA 6E5's. Tubes of current production do not overheat.

Soldering Iron Holder

The device sketched below will prevent the tip of a soldering iron from burning up when not in use, but still keeps it hot enough to use.

The hook switch cuts in a 100-watt heater element in series with the iron element when the iron is



hung on the hook. The heater element is shorted out when the iron is removed from the hook. Either a toggle switch or a telephone-hook switch may be used.

Harry H. Yeager,
634 Quincy,
Topeka, Kans.

RCA RK-40 Antenna

Do not try to skin the fine, twisted-wire lead-in, as you will have wire cut or torn before you are through. I always cut wire and make a pig-tail connection and solder it. This method gives a solid wire to attach to posts of arrester. It also is a good idea to put washers on posts between the wires and the nuts.

Paul I. Kresge,
444 Mahoning St.,
Lehighton, Pa.

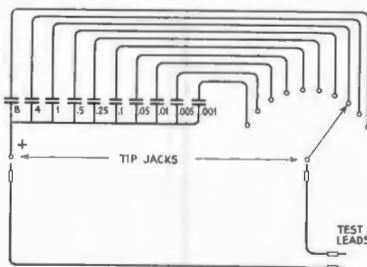
Hum in Motorola 80

Radio played at low volume is accompanied by bad hum and distortion: Trouble is due to volume control increasing to 3 megs. or more. For temporary repair, shunt volume control with a 500,000-ohm resistor.

S. Soloway,
Box 90,
Monticello, N. Y.

Condenser Checker

The diagram shows an instrument I have found very useful in finding open by-pass condensers. It has a 10-point selector switch to throw any of the by-pass condensers across



the tip jacks by setting the switch. The four and eight microfarad condensers are electrolytics and the others are tubular paper condensers. All are rated at 600 volts.

Jerry Van Oort,
621 Fourth St., N. W.,
Grand Rapids, Mich.

Plus Sales



An ideal piece of merchandise for "plus" sales is the RCA Victor Extension Speaker which lists at \$9.50. Temporary installations for home demonstrations can be quickly made.

Extra Speaker A "Natural" For Service Sales

Extension Speaker at \$9.50 Is Easily Sold After Home Demonstrations

A "natural" for sales-minded radio service engineers, according to J. A. Milling of the RCA Parts Division, is found in a new RCA Victor Extension Speaker that lists for only \$9.50 and includes a universal matching transformer that permits the handy extra speaker to be quickly attached to any radio.

Easily Carried

The RCA Extension speaker is housed in a handsome Seroco mold-wood cabinet which is appropriate in any surroundings. Light in weight and with a decorative handle, it is easily carried to any location desired.

The speaker is of the permanent magnet dynamic type with the magnet of alnico metal, assuring ample output. The universal matching transformer supplied with the unit makes installation a matter of only a few minutes. There is an on-off switch on the speaker housing so that both speakers or only the regular speaker of the radio may be used when desired.

A Natural for Service Engineers
"The RCA Victor Extension Speaker is as much a 'natural' for the service engineer who makes the most of his sales opportunities as the RCA Victor Record Player. Both are items that almost sell themselves when demonstrated in the home—and both are easily attached and demonstrated. If the service engineer when he has finished a Check-Up or other repair job will just connect one of the new RCA Victor Extension Speakers to the radio and place the extra speaker in the kitchen, for instance, almost every housewife will sell herself on the idea."

Window Hanger Is Sample of Display Service

Subscribers For Displays Receive Additional Material

Already there is proof that RCA Radiotron officials meant just what they said when they stated that subscribers to the RCA Radiotron Window Display Service would receive special material over and above the material specifically listed as part of the service. With this issue of RCA Radio Service News is enclosed the first piece of the "special" material: a gay window streamer that reminds people that Spring is here and that now is the time for the RCA 10-Point Spring Check-Up of their home or auto radios.

Balanced Doll Puzzles People

The window streamer enclosed with this issue is an example of the benefits subscribers to the service are receiving. Immediately after subscribing, each dealer is sent the fascinating "Balanced Selling Fool Display." The center attraction of this display is a cut-out of the Radiotron Doll balanced on a tight wire. How he does it is a puzzle that stops pedestrians and holds them in front of the window sometimes for minutes on end.

Since at the time this issue of RCA Radio Service News went to press not all dealers had had an opportunity to subscribe to the RCA Radiotron Window Display Service, the Spring Check-Up window streamer is included with all mailed copies of this issue. Hereafter non-subscribers will not be so fortunate, however, as other special window display material will be sent only to the subscribers to the full service.

Coronation Streamer Next

The next special window streamer will be a gorgeous poster featuring a timely subject, the Coronation of George VI, in which public interest is already approaching fever heat. Following the Coronation poster will come a prize fight window streamer, and in the Fall, the ever-popular World's Series streamers.

Other striking displays will be delivered to subscribers in August and October, besides the pictorial-news window hangers and special window streamers such as the one enclosed with this issue of RCA Radio Service News.

Service Still Available

It is not yet too late to subscribe to the 1937 RCA Radiotron Window Display Service and receive all of the units. Orders should be sent through distributors. The price is only \$2.85 unless motion (the co-ed actually waving her pennant) is wanted in the Football display, in which case there is an extra charge of \$1.50.

This Month's Display



Here's the ever-useful display that subscribers to the RCA Radiotron 1937 Window Display Service receive this month. It comes with chalk and eraser, and the slate has a good writing surface so that special bargains, etc., can be featured.

NEW CHECK-UP PLAN REACHES AUTO MARKET

(Continued from page 1, Column 4)

RCA Radiotron Spring Check-Up differs from preceding campaigns in that it is designed to sell the auto radio market, which has now reached huge proportions, as well as the home radio market. Special material has been prepared to enable dealers to appeal to owners of auto radios.

Beginning in April, RCA will devote a tremendous advertising campaign to helping the dealers who wish to participate in this concerted, nation-wide drive to open up a vast existing market.

Strong Advertising Support

Although ostensibly the campaign is aimed at the sale of \$1.50 Radio Check-Ups, involving the sale of only service work, tubes, and parts, nevertheless many sales of major appliances are made through the use of the Check-Up method of approach. Owners of old radios are the best prospects for new instruments. Many of them who at first plan merely to have their old instruments checked over buy new radios before they are through. In addition, the Check-Up Plan gets the service engineer into the home, where he has the opportunity to uncover many prospects for other ap-



Handy for dispensing one-inch package tape is the new RCA Package Tape Machine, shown above, on which the price, with ten rolls of tape (unimprinted) is now \$2.50.

pliances, such as refrigerators and washing machines.

RCA Radiotron is using radio broadcasting, newspapers, and magazines to tell the public about the advantages of having radios checked once a year. The coverage of the advertising campaign is so complete that, it is estimated, nine out of ten radio-owning families will be exposed to the message at least once and probably several times. Each advertisement tells the reader or listener to go direct to his dealer or service engineer to get the famous RCA 10-point Check-Up. All the ground work is being done. All that remains for the dealer is to tie-in with his own advertising so that the customers will be led to his store rather than his competitor's. With the material RCA Radiotron is offering, dealers can tie-in economically via direct mail, radio, or newspapers.

PINDEX TELLS POSITION OF TUBE PRONGS

(Continued from page 1, Column 2)

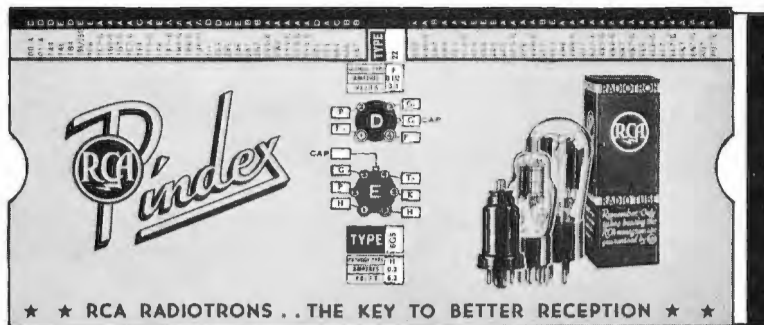
until the tube number appears in the opening beside the indicated "socket," and the pin positions are graphically shown. The type of cathode, amperes, and volts for each tube are indicated also.

The RCA Pindex is a great time saver and will undoubtedly become as popular as the RCA Service Engineer's pencil, which gives as much information about the value of resistors as the Pindex gives about tubes. Most distributors now have the Pindex in stock. They are not for sale and are obtainable only with the purchase of tubes.

BEG YOUR PARDON

The directory of RCA Parts distributors published in the last issue of RCA Radio Service News omitted four distributors. Any of the following reliable houses will be glad to show you RCA Parts and Test Instruments: Central Scientific Co., 1700 W. Irving Park Blvd., Chicago, Ill. J. B. Varick Co., 809 Elm St., Manchester, N. H. Zimmerman Wholesalers, 114 E. Washington St., Hagerstown, Md. Zion Cooperative Mercantile Institution, 351 ZCMI Ave., Salt Lake City, Utah.

Tube Information Bureau



The Pindex, which can now be obtained from RCA Radiotron distributors with the purchase of tubes, is a handy pocket slide rule for giving essential information about tubes. See story on page 1, column 2.

SHOP NOTES

From the RCA Service Division

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.

Model 67M—Hum and Noise

This receiver may respond to induction from nearby alternating current circuits when it is being tested or demonstrated in a dealer's store. The response is exhibited as hum, noise or mushy reception. It may be eliminated by attaching a 5 MH, R-F choke between the antenna terminal and chassis ground. Stock #12177 R-F coil is suitable for this application. It is not required on the receiver after installation in a car.

I-F Wave Trap Adjustment

In areas where interference is experienced from code stations operating in the range of 450-470 KC, additional reduction of such interference may be obtained by adjusting the wave trap contained in the receiver to the frequency of the interfering station instead of to 460 KC, the I-F of the receiver. Each receiver installed in affected areas should be accordingly adjusted by the dealer during installation, after having determined the exact operating frequency of the disturbing station by consulting the owners or operators of the station. Effect of wave trap adjustment on battery receivers is increased by use of a short direct (low impedance) ground lead to earth.

Model 5U—Phonograph Rumble

Hum or rumble that may appear excessive during phonograph operation can be reduced by installing a Stock #12037 filter, connected across the input transformer secondary (3 and 4) terminals. The filter unit is contained and potted in a metal case which may be mounted inside the cabinet with wood screws. Polarity of the two flexible leads is immaterial. The unit should be kept as far as possible from the power transformer and turntable motor.

Magic Eye Tubes—1937 Receivers

The 6G5 Type Magic Eye is specified for use in certain models of the 1937 spring line. In order that the confusion of types required for a particular receiver may be cleared, the following table is given:

Use 6G5 in Models	Use 6E5 in Models
6T5	9K1
7T1	9K3
7K1	7U2
	8T
	13K
	15K
	10K1
	15U

Rectifier Tubes—1937 Line

The following data on rectifier tube types in the current line may be useful:

RCA-80 Used in	RCA-5W4 Used in
5T1	5T6
6T5	6K1
	7T1
	6K3
	7K1
	5T8
RCA-5Z4 Used in	
8T	9K3
8K1	10K1
9K1	13K (2)
	15K (2)

Radio-Phonograph Combinations

It is inadvisable to transport or move phonograph instruments with the turn-table plate in place on the spindle, since a jolt will be apt to

bend the spindle or turntable and result in excessive "wow." The motor should always be clamped solidly to the motor board when the instrument is handled; this being extremely important due to close mesh between the fixed automatic main gear and the pinion on the spindle of the flexibly mounted motor. Any binding or burr produced by a jolt on the teeth of the pinion or gear will contribute to "wow" content.

Cabinet Bloom—White Spots

A condition that becomes apparent as a white milky spot under the finish of some cabinets, tending to spread or bloom with age, should be repaired by a competent cabinet refinisher as follows:—

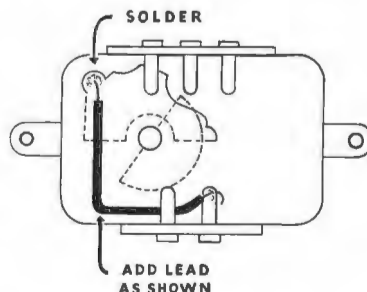
- (1) Rub surface of lacquer over area where the white spot appears with steel wool. If this operation does not remove the condition—
- (2) Spray on a new coat (additional) of lacquer over the area affected and rub down with oil and rubbing abrasive.
- (3) If spraying facilities are not available, carefully apply a light coat of slow-drying, lacquer thinner with a cloth. Allow to dry and rub down with oil and rubbing abrasive. Two coats of thinner may be required in some cases.

Models 5T6, 5T7 and 5T8

The small black insulated IRC resistor (1.8 ohms) which connects from the "hot" side of the 6F6 heater circuit to the terminal strip directly behind the volume control should be replaced on all chassis passing through service shops for repair. The replacement resistor, Stock #13820 is a wire wound type, with the resistance element enclosed in a ceramic tube. This resistor is in series with the pilot lamps and serves to reduce voltage. A quantity of the replacement resistors should be stocked for the above purpose.

Extending Wave Trap Range

The frequency range of the RCA Universal Wave Trap No. 13467 can easily be extended to cope with the interference frequently encountered from police and amateur transmitters in the 2500 and 2000-kc. bands by the addition of the jumper illustrated below. The normal frequency range of the wave trap is from 430 to 1700 kc. The change shown shifts the range to 1200 to 2500 kc.



A further increase of range to include the frequencies up to approximately 6000 kc. may be effected by removing the fixed moulded capacitor from the circuit after the addition of the jumper lead. This permits adjustment for the aircraft bands and the 4000-kc. (80 meter) amateur band.

Millions Will Read These Ads

Those tired radio tubes ain't what they used to be.

Like the old gray mare they can't do their work

Radio tubes get tired because like a faithful horse they work hard hour after hour. It's easy to find out if your tubes are tired. Call a service man and ask for an RCA Radio Check-up. For a nominal fee of \$1.50 the service man will not only test all tubes but give you the complete inspection service outlined below. It's an inexpensive way of getting back new set tone.

Be sure that the tired tubes are replaced by RCA Tubes—a product of the Radio Corporation of America.

STANDARD RADIO CHECK-UP

- 1 Check overall set performance for sensitivity, selectivity and fidelity.
- 2 Test and label all tubes.
- 3 Check speaker and cabinet for rattles.
- 4 Repeat and test all power connections.
- 5 Check aerial, ground, and light ring resistor connections.
- 6 Align antenna, detector, and beat-frequency circuits when accessible (instructions not included).
- 7 Adjust dial to normal frequency reading.
- 8 Check source of extraneous noises.
- 9 Clean interior of cabinet.
- 10 Make free estimate of any additional repairs needed.

Radio Tubes
THE CHOICE OF LEADING SET MANUFACTURERS

Tired out with playing

Radio tubes get tired, too—but rest won't cure them

Like children who tire themselves out at play, radio tubes get tired helping your set to play. Little by little they lose their vigor. And when sturdy tubes lose their vigor, the whole set needs checking up, too. To get rid of the cause of those annoying hums and crackles, ask a radio service man for an RCA Radio Check-up. It costs only \$1.50. It covers the complete overhaul shown below. Be sure your service man replaces tired tubes with new RCA Radio Tubes. Every RCA Tube is a product of the Radio Corporation of America—the only company making everything in Radio.

STANDARD RADIO CHECK-UP

- 1 Check overall set performance for sensitivity, selectivity and fidelity.
- 2 Test and label all tubes.
- 3 Check speaker and cabinet for rattles.
- 4 Repeat and test all power connections.
- 5 Check aerial, ground, and light ring resistor connections.
- 6 Align antenna, detector, and beat-frequency circuits when accessible (instructions not included).
- 7 Adjust dial to normal frequency reading.
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- 9 Clean interior of cabinet.
- 10 Make free estimate of any additional repairs needed.

Radio Tubes
THE CHOICE OF LEADING DEALERS AND SERVICE MEN

Collier's for January 30, 1937

"Hello, Charlie," he said. "What are you doing tonight?"

Four years, and not even a "How goes it?" That, reflected Charlie, was Neil for you.

Neil was living in one of those hand-some apartments over by the East River. Entering the place, Charlie looked down and saw the look of a man who had just stepped out of a swimming pool. A Filipino took his hat and coat as Neil came out to greet him.

"Good to see you, Charlie."

"Good to see you," they shook hands. "This is quite an improvement on the basement." Charlie had to smile after he had said it, for he was still living in the basement.

Charlie eyed Neil, looking for the ruin that time and success had worked, hoping for at least a double chin. Neil had had picked up a tallow that knew the line of business, but otherwise he had changed his way, thought Charlie.

When Charlie was over and they were living room where high-class glasses stood. Up till now there had been a faint restraint on all their conversation as they strolled on to avoid mention of a certain name. It got on Charlie's nerves finally. "Abruptly he said, 'Have you seen Bridget since you've been back?'"

"The ice in Neil's glass chimed softly. "I have," he said. "I can't say I haven't seen her."

"She's done pretty well for herself," Charlie said. "So I hear."

"Is that so? You'd have thought she would."

Anyone could tell Neil wanted to hear about Bridget, but Charlie was hanged up. He'd had his fun, he thought. This time I'm going to get the jump.

"At twelve o'clock they said good night. Charlie walked down First to the restaurant. He telephoned a telegram from there. After that he hopped a cab and went to the Tavern. He had asked Bridget to meet him after rehearsal.

He could not ask her to marry him. She was fond of him, he knew. Fond enough she were still in love with Neil not all the world would make it stick.

"What's the matter, darling?" she laughed as he looked up frowning.

"No," Charlie said. "How's the show?"

"She shrugged. 'I'll tell you much later after it opens. Shall I ask them to save a single in the third row?'"

He looked at her. Abruptly his eyes flickered. "Make it two seats," he said.

AS INVARIABLY happens on first nights the curtain was late rising. Charlie and Neil sat leafing through their programs. Finally the house lights dimmed, the foots switched on the fast-fete dress of a latecomer rustled in the aisle. Slowly the curtain rose. Twenty feet away, Bridget Fleming stood humming to herself.

Almost before the first line broke Charlie knew that The Unexpected Lady was not so hot. London had liked it and laughed, but so often humor is like the wine of France—it can't be shipped. It was a shame for Bridget; it meant a month's rehearsal wasted. She at least couldn't make those lines perk.

So the play went on, but something happened. It was toward the end of the first act when Bridget did that foolish thing—she allowed her eyes to stray to the audience. Charlie could feel Neil

Above is shown how the full-column ads featuring the RCA Radiotron Spring Check-up will appear in the Saturday Evening Post and Colliers. Notice how the ads dominate the page—and tell the readers to go to their dealers for a real bargain in radio enjoyment. Ads like the above will appear in these two great magazines every other week during 1937.

UNUSUAL FEATURES FOUND IN NEW TEST OSCILLATOR

Misalignment Due to Amplitude Modulation of Older Instruments Eliminated By New Design

By O. M. OWSLEY

In order to successfully service the present day receivers the service man must have equipment which has kept pace with the improved receiver design. Times and circuits have changed. We now have over-coupled broad topped I.F. transformers, rejector circuits and automatic frequency control circuits and transformers, all of which can be aligned more quickly and by far more satisfactorily with visual equipment. In fact, many manufacturers recommend in their service notes that the visual method of alignment be used.

To meet this demand, RCA has designed and built a new improved oscillator known as No. 150. It is distinguished by the following features:

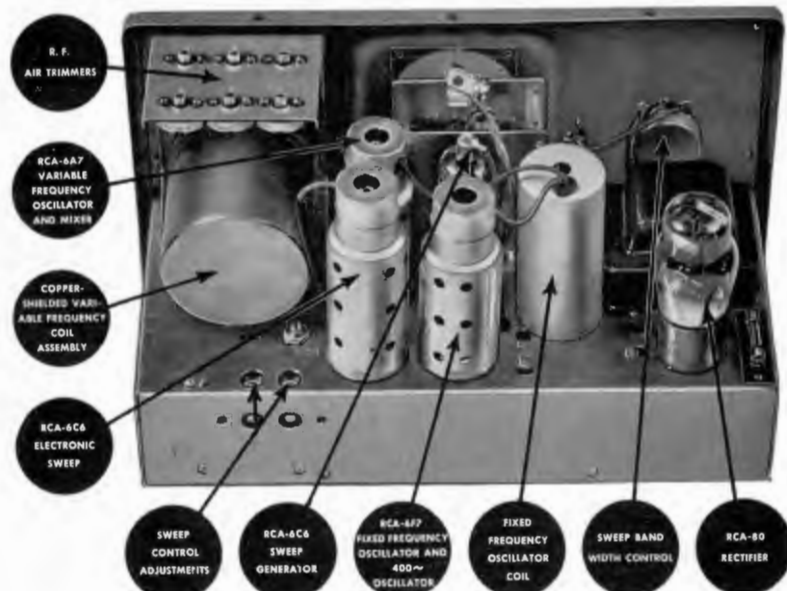
1. The price is within the service engineer's reach.
2. Easily portable.
3. Completely a.c. operated.
4. Self-contained sweep employing double image response.
5. High output and low minimum signal.
6. Accurate calibration.
7. Stable in operation.

General Description

The No. 150 RCA Oscillator supplies an r-f signal of approximately 0.25 volts maximum over the frequency range of 90 KC to 32000 KC in six ranges. This r-f signal may be amplitude-modulated approximately 30% at 400 cycles for meter alignment of receivers, or frequency-modulated ± 20 KC maximum at any sweep within its range for use with the Cathode Ray Oscillograph for visual alignment. The sweep width of the signal may be adjusted for any value between ± 0.5 KC at minimum and ± 20 KC maximum. At any sweep setting the signal is being swept symmetrically about the nominal frequency indicated by the dial scale, thus obviating retuning when frequency modulation is employed. The double image frequency modulation (no moving parts), is entirely free from amplitude modulation and requires no external parts other than the cathode ray oscillograph for visual work. A synchronizing impulse for locking the timing axis oscillator of the cathode ray oscillograph is supplied by the instrument.

Circuit Analysis

The illustration below of the chassis shows component parts and trimmer locations. An integral



Chassis view from rear, No. 150 Test Oscillator

power supply furnishes all operating voltages. The Oscillator consists of two radio frequency oscillators (one fixed and one variable) whose outputs are combined in a mixer tube to provide the desired radio frequency output. Either amplitude modulation (approx. 400 cycles) or frequency modulation (± 20 kc maximum) of the output frequency may be obtained, depending on which type of modulation is employed on the fixed oscillator. Re-

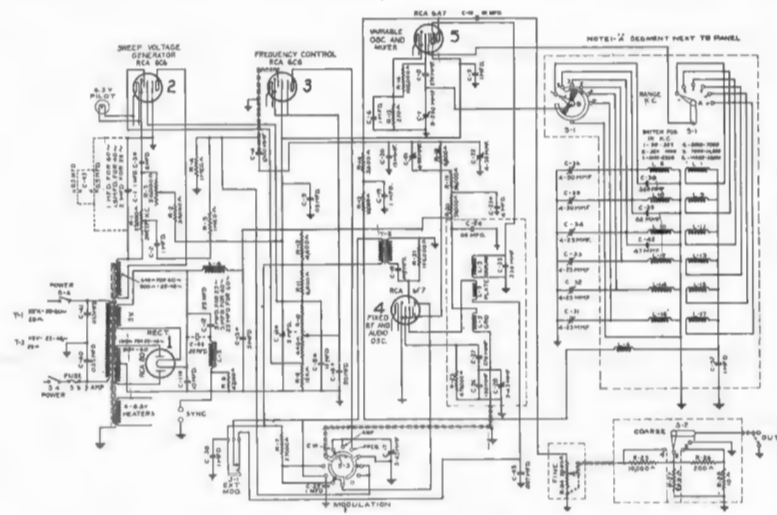
ferred to the schematic (Figure 3) the following action takes place:

A fixed r-f oscillator, consisting of the pentode section of an RCA-6F7 Radiotron and its associated inductance and capacity oscillates at a frequency of 800 kc. A pick-up coil coupled to this tank circuit feeds energy from this oscillator



RCA Test Oscillator, No. 150

into the No. 4 grid of the RCA-6A7 combination oscillator mixer tube. The triode section of this 6A7 tube, together with its associated inductances and capacities, make up the variable oscillator which is tuned by



Schematic Diagram of RCA No. 150 Test Oscillator

the variable capacitor, C-7. Due to coupling in the electron stream there will appear in the output plate circuit of this RCA-6A7 frequencies corresponding to the sum and difference frequencies of the two oscillators. The tuning dial is calibrated directly in kilocycles corresponding to the difference of the two oscillator frequencies up to 7 megacycles. Above 7 megacycles

plitude modulated an amount equivalent to the modulation impressed on the fixed oscillator.

Frequency Modulation

When frequency modulation is employed the above action of the variable oscillator and mixer tubes still holds true but the signal from the fixed oscillator delivered to the No. 4 mixer grid is being varied at a low frequency rate (frequency modulation), consequently the output frequency from the mixer tube will vary in a like manner. Frequency modulation of the fixed oscillator is brought about in the following manner:

The work plate of the RCA-6F7, electron coupled to the fixed oscillator, builds up an out-of-phase r-f voltage across capacitor C-22, which is coupled to the grid of the RCA-6C6, called the frequency control tube. The plate of this 6C6 tube is connected directly across the grid tank circuit of the fixed oscillator. With voltage of proper phase angle on the grid of the RCA-6C6 (corrected by network C-21, R-18) it can be shown that the output impedance of the control tube appears to the oscillating tank circuit as a shunt negative inductance. For the purpose of explanation this may be thought of as representing additional inductance in series with that physically present in the tank circuit. This inductance and hence the oscillator frequency may be varied up or down within limits by raising or lowering the bias on the frequency control tube and so varying its gain. This is accomplished by varying the bias on this tube around a fixed point with a linear

60-cycle pyramid wave form generated by the second RCA-6C6 tube. The pyramid wave form is employed to obtain double image response or the folding back of the forward and reverse resonance traces of a circuit.

The pyramid generating 6C6 pentode is connected in what might be called a saturation circuit. Referring to the schematic it will be noted that positive potentials are applied to control grid, screen and plate in addition to 250 volts A.C. on the plate. A condenser and resistor in the cathode circuit complete the saturated charge-discharge circuit.

During the positive A.C. swings of plate voltage and due to the pentode characteristics of the tube, the cathode current charges the condenser at approximately a linear rate. During the negative half cycle of A.C. plate voltage the cathode condenser is discharged thru the resistor, R-1. It should be noted here that, due to the fact that the total discharge time is determined by the plate voltage frequency (1/120 second for 60 cycles) resistor R-1 must be chosen in conjunction with the capacity value used so that the slope of the discharge curve matches the charge curve. The resulting voltage across resistor R-1 is a linear 60 cycle pyramid wave form.

(Continued in next issue)

IN OUR NEXT ISSUE

O. M. OWSLEY'S article on the new RCA No. 150 Oscillator will conclude with an explanation of the frequency modulation, double image response, and interesting applications of the instrument.

ACOUSTICS. Part III of A. K. Ward's series of articles on Acoustics will appear in our next issue. In simple words this installment explains "Calculating Acoustics for an Auditorium."

World's Largest



Above is shown part of the Saltair Dance Pavilion, largest dance floor in the world, at Saltair, Utah, which suffered from poor acoustics until Radio Sound & Service, Inc., of Salt Lake City, corrected the acoustics—and made a nice profit—by installing a complete RCA Sound System.

P.A. BUSINESS IS ACTIVE IN EVERY SEASON

Now Is Time To Sell To Parks, Carnivals, Says Rothenberger

Each season brings its special opportunities for the sale of public address and sound amplifying equipment and an unusually big market is ready right now, according to W. L. Rothenberger, in charge of sales for RCA's Commercial Sound Department, who pointed out that now is the time to solicit sound amplification business from parks, carnivals and resort dance halls.

New Prospects Each Season

"Because the market for sound equipment exists wherever people gather together in groups, there is no 'season' in the sound business," declared Rothenberger. "There are a new set of prospects at each turn of the seasons, but of course it pays best to work on any type of business just before its season commences. Right now the 'hot' prospects are amusement parks, carnivals, summer dance halls, etc. We have one dealer, an old trouper himself, who specializes in carnivals alone.

"An example of the profit possibilities of dance halls is the installation made in the dance pavilion at the Saltair Resort at Saltair, Utah, by Radio Sound and Service Company, Inc., of Salt Lake City. This firm installed an RCA Sound System in this pavilion, the largest dance floor in the world, to the complete satisfaction of the owners and with a nice profit to themselves.

Echoes Annoy Dancers

"Due to the vent in the ceiling of the pavilion, the acoustics were very bad. It was possible in several places in the hall to hear the original sound echo five times. The dancers were annoyed, and forced to change step due to double beats from reflected sound. RCA Directional Sound Projectors made it possible to hear perfectly at any point on the huge floor.

"Radio Sound and Service, Inc., installed equipment with a total of 60 watts power, of which 40 watts supplied the dance hall. Speakers were also installed on the midway, fun house, and in other parts of the park."

The sound job mentioned by Rothenberger is one over which Ben Bernie, Eddie Duchin, Bennie Goodman and other well known orchestra leaders have performed. All commented on the pleasing effects achieved by the sound equipment.

"In a difficult job such as this," Rothenberger concluded, "it is important to centralize responsibility

NEW PRINTING OF "TELEVISION"

The combined popularity of the book *Television* and the quarterly magazine *RCA Review* has compelled a second edition of the book, according to Frank A. Arnold, Managing Director of RCA Institutes Technical Press.

Television, one of the most complete books on that subject available today, contains 452 pages, with added inserts, and over 300 illustrations. It is not offered for sale and is obtainable only with subscriptions to *RCA Review*.

RCA Review, with which *Television* is being given for a limited time as a "book dividend," is a quarterly journal of radio progress. It presents a record of the outstanding developments in the radio and allied fields which originated in the various services of the RCA group.

The yearly subscription price of *RCA Review* in the United States and Canada is \$1.50, and to foreign countries, \$1.85.

Subscriptions should be addressed to *RCA Review*, 75 Varick Street, New York City. Mention should be made of having read this announcement in *RCA Service News*.

Ready-Made Ad

YOUR RADIO SET RECONDITIONED and MODERNIZED

A complete Radio Check-up and new antenna **LESS THAN 2c A DAY!**

We guarantee all our service work

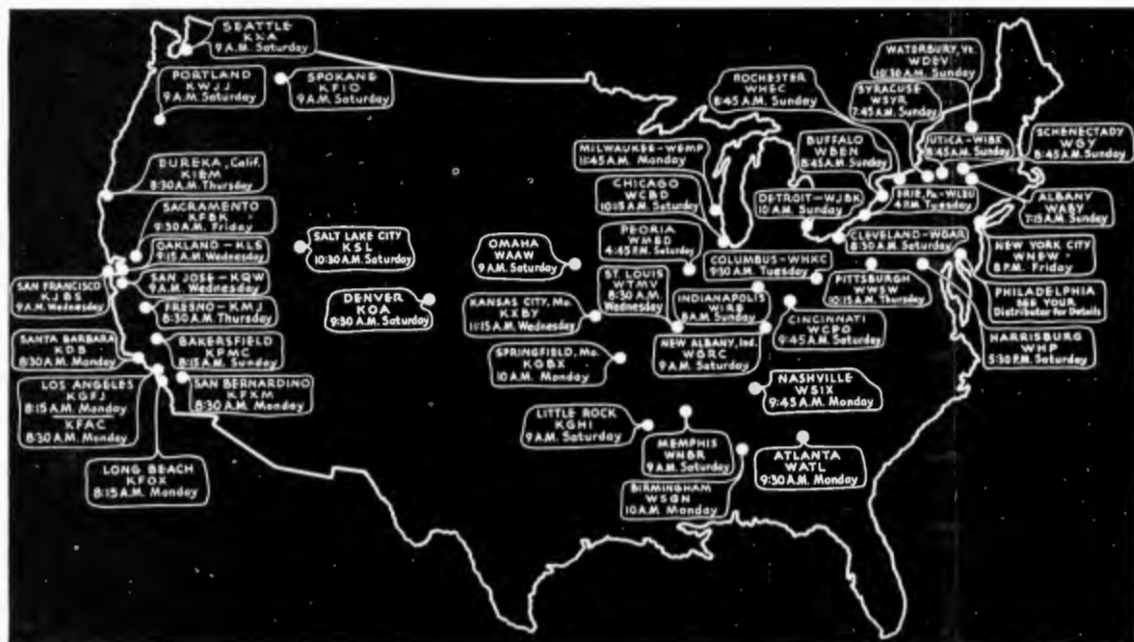
(TELEPHONE --- 0000) DEALER'S NAME

WE USE ONLY **RCA TUBES**

A mat for the advertisement shown above can be obtained by ordering Cut No. 337. A sheet showing all the new ready-made ads on the Check-Up can be obtained on request. Ask for Check-Up Ads, Form 1780.

by making the sound system 'RCA All the Way' from microphone to loudspeaker."

They'll Broadcast Service Lectures



The map above shows the stations that had scheduled the RCA Service Meetings of the Air up to March 31st. Other stations may be added later. A series of thirteen talks will be broadcast by these stations on the days and time indicated. Ask your distributor for date of opening program. Don't miss a single one of these fascinating programs. Mark your calendar now.

Service Group Endorses New Type Meetings

Broadcasts Praised For Effect on Public And Help To Trade

In accord with its policy of thoroughly testing every plan or activity before presenting it nationally, the RCA Service Meetings of the Air were tried out first in the Philadelphia area and the local service men's association asked for its opinion. It is interesting to note that the association disapproved the plan—until they heard the first lecture. Then they heartily endorsed it, and commended the manner in which any laymen who listened in were sent to a service shop for radio repairs rather than encouraged to attempt the work themselves.

On October 24th, after the idea had first been broached to the Philadelphia Radio Service Men's Association, Harry R. De Long, Secretary, wrote: "The question was voted upon and the body unanimously resolved that this Association was not in accord with the project as outlined."

"Interesting and Educational"

The story was different after the members had heard several of the lectures,—and to their credit be it said that they gladly reversed their position and gave the plan their full approval. On January 30th De Long wrote as follows: "I have canvassed the members of this Association . . . and am pleased to present the following general opinion . . . The RCA Service Meeting of the Air was, as you intended it to be, an interesting and educational program. The service information, though to some extent technical, was so interspersed with sufficient explanation regarding fundamental theories as to keep the continuity clear and readily absorbed by the average service man."

"Nothing More to Ask For"

In another letter De Long said, "I have listened to all six of the RCA Service Meetings of the Air and have this question to ask: Why stop at six? (Editor's Note—There are thirteen lectures in the current national series.) . . . The recent changes in the type of service notes distributed by RCA I had conceded to be a big step forward by the manufacturer in assisting the service man, but when the service meetings of the air came along it seemed to me that RCA was doing everything in its power to cooperate with the service man and if you continue these broadcasts I would say the service man has nothing more to ask."

Many Stations Broadcasting Service Talks

(Continued from page 1, Column 5)

statements on subjects announced during the broadcasts give an additional inducement to "attend" the lectures.

Stations Shown On Map

The stations over which the lectures had been scheduled up to March 31st are shown on the map above. The date given under each station is the date of the first lecture from that station. The other lectures of the series will follow at weekly intervals on the same day of the week and at the same time.

RCA Tube and Parts distributors are cooperating enthusiastically to make the meetings possible. Many broadcast stations, realizing that the programs are of benefit to the whole radio industry, are also cooperating. Each lecture deals with a limited

subject, such as Antenna Systems, R-F Amplifiers, Oscillator-Detector Circuits, Power Supplies, etc. A feature of each program is a frequency-checking service which is of practical use to service shops in checking receivers or test instruments.

Prizes of Real Value
First, second, and "honorable mention" prizes are awarded each week for the best statements on



One of the prizes—the RCA Universal Bridge

matters of interest to the service trade, such as "How I Sell Alignment Jobs," etc. RCA Test Instruments — oscillographs, oscillators, universal bridges, etc.—are the major prizes. Second prizes are also of real value: a stock of six RCA Spider Web Antenna Systems, for example. The "honorable mention" prizes include such popular items as the book Radio Service Business Methods and the RCA Service Engineer's Pencil.

Jingle, Jingle, Little Star



Pauline Morin, or "Birdie" as she is known around NBC, is the contralto of the famous Morin Sisters threesome, heard over the NBC-Red Network each Sunday on the Fitch Jingle Program, at 7:45 P. M., EST.

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.

Uses Manufacturers' Circulars

Making good use of literature available from manufacturers is a selling method that might be taken for granted, but it is surprising how many dealers overlook the possibilities of cashing in on this material. Many will go to trouble and expense to mail material to a list of doubtful prospects but overlook the wonderful opportunity presented when the service engineer is right in the home.

I take along a supply of circulars on every service call. After the preliminary "gab" about the sick radio—or sometimes it is best to wait until you are ready to leave—I hand the customer an assortment (but not more than three pieces) of literature with a timely comment that he will find some remarkable advancements in the new models. He usually replies that he is not yet ready to trade in his old set, to which I reply that everyone likes to keep posted on new merchandise even though not ready to buy.

This little stunt, if worked intelligently, will put more dollars in the cash register.

Ted A. Unruh,
1411 So. Main St.,
Goshen, Ind.

Simple But It Sells

Here is a simple but successful tip in which other service men may be interested.

Whenever a radio set comes into my shop, not only the radio is thoroughly checked but the condition of the chassis and cabinet, too.

After considerable experimentation, I have perfected a polish that will cover light scratches and restore the original luster to the radio cabinet. So satisfactory has the polish been that customers notice the difference in their radios when they are returned by us. These customers often ask what polish is used. When I explain that I make the polish myself, the customer often not only purchases the polish for his own use, but sends his radio to us more frequently for general repairs and cleaning.

W. G. Hostetter,
Hostetter Radio Service,
Kansas City, Mo.

Metal Tube Modernization

On all service calls I carry adaptors and metal tubes to make the following changes:

- 5Z4's for old 80's
- 6C5's for old 37's
- 6D5's for old 41's
- 6A8's for old 6A7's

Almost every owner of a set not equipped with metal tubes asks if his set can use the new tubes. When told that certain types can be replaced and that you can make the change-over at once, a "sell-up" on service is sure to follow. My average net profit is over a dollar on each one. But more than this immediate profit is the good will created.

In one week I have had seven service calls from new accounts saying they wanted their radios repaired, if possible with metal tubes in the same manner as I had repaired their neighbors.

L. M. Parker,
Sherrill, N. Y.

Antenna Demonstration

In selling all-wave sets, the salesman can give a quick demonstration in the home by mounting an RCA Auto Whiptenna (No. 9793, List Price, \$3.50) just outside the window when the customer has no suitable antenna. This aerial will also give satisfactory service in apartment houses where the management forbids the installation of an antenna on the roof. Of course, the service man should follow the first demonstration with the idea that, while the Whiptenna gives good results, the best results will be obtained by one of the standard RCA home antennas.

Arthur L. Bratzel,
5920 Sefton Ave.,
Baltimore, Md.

Little Things Build Confidence

I can think of no better tip to service men than that which would tend to increase the customer's confidence in the service engineer.

You will note that most enterprises that have a close personal relationship with the public are very particular about certain added free services. An example is the gasoline filling station with its free air, water, tire gauging, window wiping, and general good will expressed in a thousand free efforts. The radio service business should be even more eager to please a customer with added features inasmuch as the service engineer's contact is in the very home of the customer. Aside from regular visits after the repair job, I would suggest the following "good will" efforts that I am sure are the best advertisements a shop can have:

1. After the repair job is completed, give the cabinet a finished appearance with a little polish and elbow grease.
2. Place small felt pads under legs of cabinet for the elimination of vibrating contact with floor.
3. Suggest a better place for the radio for both appearance and operation.
4. Replace the old ground clamp with a new one.

These and many other little "extras" will do more to build up your business than any other form of advertising. Remember, you as a serviceman must overcome certain inhibitions of your customers, and only by added refinements of personal interest will this be done.

Samuel F. Greenbaum,
249 South 5th St.,
Philadelphia, Pa.

Wave Trap Sells Old Radios

We had ten used consoles that were in fairly good condition but did not sell. We put RCA Universal Wave Traps (Stock No. 13467, List Price, \$2.65) in these sets, and within a week we disposed of eight of them.

It seems that people expect good reception even in used radios, and we believe the RCA Wave Traps were the "link" between not selling these sets and selling them as we did.

Considering the small cost of the Wave Trap, we think this idea is something really worth passing along to other dealers who have some used radios which do not move readily. The Wave Traps certainly do improve the performance of an old radio and we think it was one of the best investments we have made in a long time.

Fred C. Even,
2525 Central Ave.,
Dubuque, Iowa.

"Wanted: Old Radios"

Put an ad in the newspaper stating that you want to buy old radios. The persons that respond to the ad can frequently be persuaded to buy a new instrument, or you can sell them tubes and repair work that will make their radios "as good as new." If they cannot be sold anything, you can limit your offer for the old radios to a price that will insure you a profit. This method gets radio listeners into your store, where they can see the new radios and gives you a good list of prospects.

Don Connelly,
Osborne Electric Co.,
Norwich, N. Y.

Sells Extra Radios

This is a good way to sell extra radios, and very profitable:

Whenever I pull a set, I leave a midget that plays well and which, with repairs, costs me on an average only \$2.50. On returning the set I start talking about how handy an extra radio is. Usually the question is "How much?" I always make a profit of \$5.00 or more and have sold six this year in less than two months.

Alexander Saberski,
428 Wilson Ave.,
Brooklyn, N. Y.