



RADIO SERVICE NEWS

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TEST EQUIPMENT HIT OF SHOW!

PREFERENCE LIST APPROVED BY 16 RADIO SET MFGS.

Plan to Limit Tube Types Widely Endorsed

Radio manufacturers, distributors, dealers and servicemen are all heartily in favor of the RCA "Preference List" program to limit the number of receiving tube types, according to L. W. Teegarden, RCA Tubes and Equipment Sales Manager.

Endorsements from radio manufacturers and others in the industry indicate an enthusiasm for the "preference list" idea that is being backed up by action. Each month shows an increasing percentage of the 36 basic types on the "preference list" being shipped to manufacturers by RCA . . . convincing proof of the acceptance for this RCA plan.

First evidence of the soundness of this prediction is found in Mr. Teegarden's announcements that twelve of the types on the "preference list" have been reduced in price to equipment manufacturers. This has been possible, he said, because of lowered tube manufacturing costs resulting from concentrated volume on fewer tube types.

Here are the manufacturers who have so far endorsed the RCA Preferred Type Program: Sentinel, Farnsworth, Detrola, Continental, Hallicrafters, Emerson, Andrea, Stromberg Carlson, Wurlitzer, Packard Bell, DeWald, Sonora, Garod, Gilfillan, Pilot and others.

Does Not Affect Circuit Development

RCA is not advocating the cessation of circuit development in order to minimize tube types. A halt can never be made in circuit development, but operating improvements, supposedly due to circuit innovations, have not kept pace with the number of tube types announced during the past few years, due to the introduction of these circuit innovations. This is clearly indicated by an analysis which shows that of all the tube types available, 90

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Traffic Stopper!



FOR RADIO RECEPTION AT ITS BEST, REPLACE OLD TUBES WITH

RCA Radiotrons
PREFERRED FOR FINEST RESULTS

If you were walking down the street, and saw this striking, ten-color window display, what would you do? You'd stop for a second and closer look, of course, and that's what everybody else will do. So, why delay? Get in touch with your distributor, and find out how you can get this traffic-stopping, sales-pulling display!

SERVICEMEN HAIL NEW ADDITIONS TO RCA LINE

The outstanding feature of the National Radio Parts Trade Show at Chicago was the interest shown by servicemen, dealers and distributors in the display featuring the latest additions to the RCA line of test equipment.

An RCA innovation that was right in line with present developments in the radio field is the No. 164 Chanalyst Ultra-High-Frequency Converter, designed for use with the standard RCA Rider Chanalyst to extend its range to the ultra-high-frequencies which are becoming increasingly important factors in radio reception.

This unit is identical in size with the standard Chanalyst and matches the Chanalyst in appearance and styling. All interconnecting cables necessary are included so that

trouble-shooting ultra-high-frequency receivers can be accomplished with the same ease and accuracy the regular Chanalyst provides in the broadcast ranges.

The Junior VoltOhmyst, designed to supply an instrument of RCA quality, RCA design and RCA operating efficiency, was another new product that won a full share of attention in Chicago, even beside such spectacular exhibits as the Dynamic Demonstrator and the RCA Amateur Television Equipment. (Continued on page 2, column 4)

RIDER EXPLAINS WHY "THE EYES HAVE IT!"

Electron-ray Tubes Speed up Operation and Increase Versatility of Signal-Tracing Instrument

By JOHN F. RIDER

More than 3,500 satisfied users already know the Rider Chanalyst employs four electron-ray tube indicators, and one meter-type of indicator. The decision to use the electron-ray indicator in four of the channels in the instrument, and the one meter indicator in the volt-meter channel, was not an arbitrary move. It was a deliberate step taken as the final result of several years of research in which very conceivable type of indicator including the neon tube, various types of vacuum-tube voltmeters, and the cathode-ray oscillograph was used in each of the channel indicators. Various

(Editor's Note: In response to a number of inquiries as to why electron-ray tubes were used instead of meters in the Chanalyst, we went straight to headquarters for the inside information! Here are the facts . . . presented by the man best qualified to give them . . . Mr. Rider, himself!)

other forms of indication were tested—such as signal levels in absolute values upon meters and scales associated with the cathode- (Continued on page 2, column 4)

Servicemen are Enthusiastic



475 tube types available on the market. It doesn't make sense!

MODEL 167 OSCILLATOR REPLACES MODEL 153

First Users Hail It as Big Forward Step

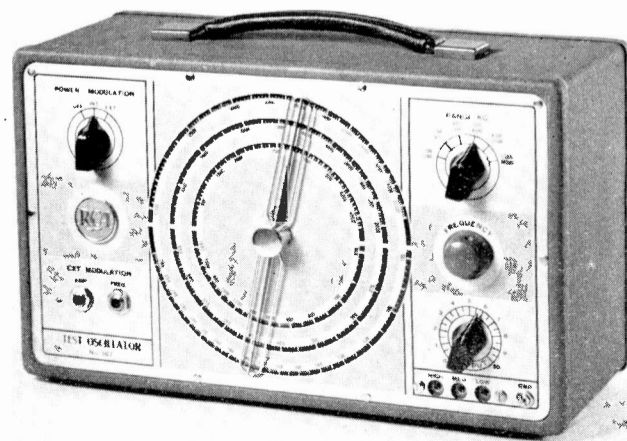
Every serviceman who inspects the new RCA Oscillator, Model 167 will be enthusiastic about the advanced features of this model which replaces the Model 153.

The new instrument is a much better looking job than the former model, and while similar in electrical characteristics, it incorporates a number of important changes. The Model 167 is designed to meet every requirement for servicing the most complex radio receiver. The frequency range is from 100 to 30,000 kcs, the dial scale is accurate and

easily read, and the instrument has an unusually high output.

The panel is chrome plated, similar to the Chanalyst in appearance, and a new type of metal pointer has replaced the celluloid pointer of the old model. The giant dial assures an easily read setting, the high frequency range alone covering more than 10 inches. RCA all-metal tubes give stability to circuit design and eliminate tube shielding.

Included with the instrument is a large, low-capacity output cable. (Continued on page 4, column 3)



Beauty and utility are combined in the new Model 167 Oscillator . . . designed to fill every requirement for servicing all types of radio receivers.

RCA Signalyst Matches Laboratory Signal Generators!

Has Range of 100 kc to 120 mc on fundamentals!

Announcement of the RCA Signalyst, a genuine signal generator has met with approval by servicemen everywhere. However, this term signal generator has been very much abused in the service field. Many signal sources which are really test oscillators, have been called signal generators. RCA has never done this because there is a marked distinction between a test oscillator and a signal generator. But now RCA is proud to offer the radio service industry a signal source which is truly a signal generator . . . the RCA Signalyst. Because of its precision output, stability, low distortion, extremely great frequency range and other features heretofore found only in precise laboratory equipment, this device lives up to the full significance of the term "signal generator".

What are the features in this instrument which make it so outstanding as to be without an equal in the radio servicing industry?

Frequency Range

The fundamental frequency range of a signal source means very much in daily service operations, because it controls the speed and accuracy with which a serviceman can secure the signal he needs. The gradual approach to the use of ultra-high frequencies in radio design has fostered the use of harmonic frequencies because of the absence of

The design of the attenuator unit is similar to that found in very expensive signal generators of strictly laboratory variety, but of extremely rugged construction, with electrostatic shielding between sections, and direct reading in microvolts in conjunction with the reference level meter. The complete system gives direct reading in microvolts of all output voltages up to 50,000 microvolts. Signal output voltages between 50,000 microvolts and 0.3 volt are indicated directly on the meter.

Stability and Permanency of Calibration

Another service problem of the



The beautiful panel of the RCA Signalyst is indicative of its performance.

high-frequency generators, and this practice has introduced certain difficulties in service operations. The signal levels available at these harmonic frequencies were, in many cases, too low to meet the needs of the servicemen. Rapid identification of the proper harmonic frequency was difficult. Slightly incorrect tuning caused an appreciable frequency error on the harmonic.

Realizing all of this, and also the future need for ultra-high frequencies, the RCA engineers designed the Signalyst to afford a fundamental frequency range which covers today's and tomorrow's needs! 100 kc to 120 mc, in 10 bands and all on fundamental frequencies!

This is an engineering accomplishment. No other signal source offered to the servicing industry, not even laboratory signal generators costing many times more than the Signalyst, offers such a wide frequency range in fundamentals.

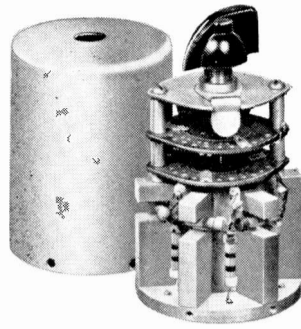
This wide frequency range provides an unlimited field of operation. This one signal source expands the operating capabilities of a service shop because it embraces the frequencies to be found in many classes of radio service. Starting at 100 kc, its range includes the frequencies used in ship-to-shore communication, marine beacons, aircraft, police, the broadcast field, the major amateur frequencies, international broadcast, facsimile, television, frequency modulation, radio fire alarm, and many others. Truly an instrument which can be used in any branch of the radio industry.

The Attenuator

How many times in the past have you cursed an attenuator system? The zero setting meant nothing! . . . You adjusted a receiver at a supposedly weak signal, only to find that it was not sensitive, because the signal from the signal source was many times the strength indicated by the attenuator setting.

Not so with the RCA Signalyst! The attenuation system gives the operator control of the signal level at all frequencies to an extent never before available in servicing apparatus.

The Attenuator



The electrostatically shielded ladder-type attenuator provides direct readings in microvolts in conjunction with the meter.

many servicemen, and greatly interfered with many operations which called for a weak signal. The design of the complete Signalyst, the shielding of the oscillating circuit components, the use of metal panel with the fewest possible openings, the absence of open-face dials, the location of the components, the coaxial cable, and the special attenuator construction—all combine to reduce leakage over the entire frequency range of the instrument to a very negligible value. This, is of tremendous importance, particularly on the high frequencies. It is also of importance in connection with AVC action during high-frequency alignment operations.

Ease of Tuning

No backlash, erratic, jumpy action, or other conditions which contribute to difficult tuning and reduce the speed with which the device can be used! Special care was exercised in the construction of the tuning condenser mechanism to provide smooth direct drive, and a smoother vernier drive. No friction drive—no dial cable—instead a positive gear drive!

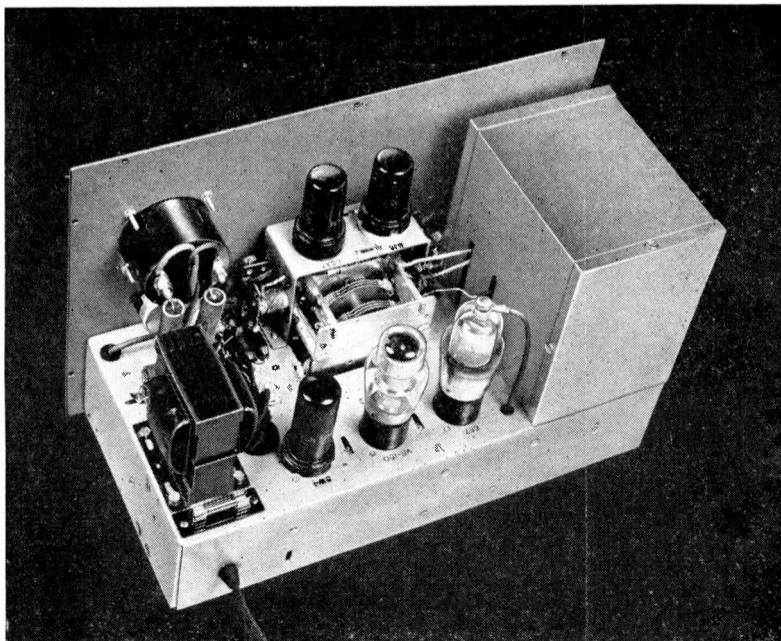
Modulation

Recognizing the possibility of varying modulation frequency needs in the future, the RCA engineers designed the Signalyst with an internal 400-cycle modulating oscillator adjusted for 30-percent modulation, with provision for external modulation at all frequencies from as low as 60 cycles to as high as 5 megacycles; also, to accept all waveforms of modulating voltage from the sine wave to a square wave. The men who designed this instrument know the future needs of the radio industry! Maximum operating utility and long useful life with minimized obsolescence!

Other Features

There are many more features in this RCA Signalyst . . . A heterodyne detector within the instrument for the purpose of easy calibration; d-c voltage output for the operation of crystal calibrators; modulated or unmodulated wave output; a 400-cycle audio output; regulated plate and screen voltage supply, and others too numerous to mention in this space.

Only by trying this instrument can you really appreciate all of its capabilities. One thing is certain—when you buy and use this RCA Signalyst, you have a signal generator with many years of life, and one upon which you can depend. You'll be proud to own it!



Inside the RCA Signalyst. A triumph of the instrument maker's art!

SERVICEMEN HAIL NEW ADDITIONS TO RCA LINE

(Continued from page 1, column 5) ment display. The Junior Volt-Ohmyst, priced at approximately \$30 will be available for delivery in September . . . and at that price there can be little doubt it will prove the most popular unit of this type introduced in many a long day.

One instrument that drew much favorable attention and comment was the new RCA No. 166 Audio Chanalyst, an extension of the signal tracing service of the regular RCA Rider Chanalyst to wider fields.

There is a definite place for an application of the Chanalyst type of signal tracing equipment in the ever-expanding sound equipment

fields. RCA's wide experience in the fields of broadcasting, public address systems, theatre equipment, sound recording, centralized radio and coordinating systems indicated a definite need for a Signal Tracing type of test instrument that would handle the wide requirements of the general audio equipment field.

The RCA Audio Chanalyst, exhibited at Chicago, provides the ideal solution for situations where the serviceman must go to the job and make repairs on the spot. It not only replaces the several miscellaneous instruments now required, but in addition provides Signal Tracing methods not previously available . . . all in a single case.

RIDER EXPLAINS

(Continued from page 1, column 5) ray tube and the electron-ray tube, and the relative indications using electron-ray tubes as well as meters.

Use of Meter Was Carefully Considered

Ample opportunity existed during the development of the Rider Chanalyst, to investigate the utility of meters as indicators. In fact, as is evident in the Rider Chanalyst, a new type of vacuum-tube voltmeter intended for the measurement of d/c potentials was developed, to fill existing and future requirements of the servicing industry. From all appearances, the many meritorious features visualized in this new development were correct. Because of this tube voltmeter circuit in the Rider Chanalyst, it has become increasingly popular in the test equipment field.

Basis of Signal Tracing

To understand the decisions made after detailed research, it is necessary to dissect some of the basic considerations involved in signal tracing.

Essentially, a test signal is traced through a communication system so as to determine where it exists—where it dies, or no longer exists—where it appears in circuits where it does not belong—where it does not receive the proper amount of amplification—where it becomes distorted—where it takes on hum, etc. There are, of course, other supplementary operations such as visual examination of the signal and listening to the signal, but these are supplementary to the basic or essential operations already mentioned.

If you analyze these operations in a critical manner, one fact stands out. At no time are you concerned with the exact magnitude of the signal expressed in microvolts at various places in the device being diagnosed. Signal tracing provides all of the necessary information and points to the trouble without requiring measurement of signal levels in absolute values. This is true irre-

spective of the type of indicator used. There are, of course, a few exceptions to this statement, such as the determination of the signal level at the antenna, the audio voltage across the detector output or input to the a-f amplifier, and across the voice coil. If you compare the last three tests with the numerous other tests in a receiver where conventional signal tracing is employed, you will find the places where signal voltage in absolute values is not necessary, greatly outnumber those where such data might be needed. Therefore, calibration of the test unit irrespective of the type of indicator used need not be in absolute values of signal voltage.

Accuracy of Electron-ray Fully Established

However, it was impossible to dismiss the use of meters as indicators on the grounds that absolute values of signal voltage did not represent essential data for rapid signal tracing. Another very important factor required consideration. This was the matter of accuracy. Was the use of meters as indicators justified on the grounds of greater accuracy in measurement? Experiments def-



The RF-IF Multiplier and Level calibrated controls on the Rider Chanalyst.

initely proved the contrary. They proved the meter was no more accurate than the electron-ray tube as an indicator in any calibrated circuit, because of certain definite con-

(Continued on page 3, column 3)

Tube Type Program!

(Continued from page 1, column 1) types cover the 20 basic functions employed in radio receivers. This does not mean that further conception of some new basic function is impossible and that new tube types will not be required to perform such functions.

It does mean that further announcement of new tube types should await development of new basic functions. This is, as you can readily see, a much slower basis of announcing tube types, and does give the serviceman an opportunity to acquaint himself with the operation and characteristics of the tubes used in the receiver and with the performance of standard circuits. This seems pretty much beyond contradiction when we realize that it is possible to select a total of less than 40 different types to cover every function adequately for any type of radio receiver within the four major categories of a-c, battery, a-c-d-c, and auto-radio receivers.

Economically Speaking

From the economic viewpoint, a reduction in tube types will mean a great deal to the servicing industry. While it is true that the parts jobber maintains the greatest por-

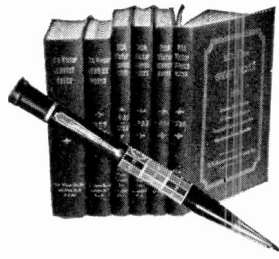
tion of the tube inventory, the service shop must of necessity keep some tubes in stock. Maybe they do not require all types; perhaps only some types, but if you analyze the tubes developed up to about three years ago, the types are so numerous that a suitable stock cannot be maintained by the average service shop.

What happens? The serviceman must call upon the jobber for certain special types or even for the types which are out of the category of the "fastest movers". He cannot even maintain the stock of the "fast movers", because it involves many more than the list of "fastest movers". This means a much higher cost for rendering service: first, as to the time required to do a service job, because added time is needed to secure the tubes not on hand, and second the reduced discount because of smaller quantity purchases.

From the viewpoint of inventory, the serviceman encounters further problems. If he tries to maintain an ample stock, the turn-over is greatest upon certain types and slow on others. There is no profit on tubes on the shelf, no matter how little they cost. Every attempt to reduce tube types will help turn-over of service shop inventory. Even

(Continued on page 4, column 4)

SALES AND SERVICE TIPS RIDER EXPLAINS



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.

Being in the automobile radio service business for quite a number of years, I have a few ideas of my own. Here are two which not only an automobile radio shop should have but also home receiver service shops.

In the case of auto receivers where the sets are built so compactly, I find this gadget most indispensable.



The full length of it is about six inches. The prod is bent at the end to a hook shape and is of stiff wire material. The handle is a round piece of wood about half-inch in diameter. On the free end of this handle is a rubber cap. I use the hook end to locate loose connections and the rubber end to tap the tubes with in order to locate a microphonic tube.

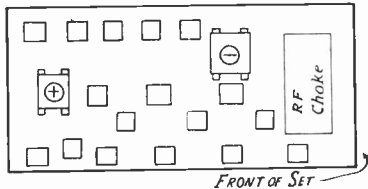
At a nearby neighborhood market I can get apple boxes free and I use these boxes to put the radios in after they have been taken out of the car for service. These boxes are placed on the shelves. On one side there is a mark to indicate whether the set has been serviced or not. In this way, I manage to keep track of all of the jobs in the shop.

Dick Wong,
192 W. Santa Barbara Ave.,
Los Angeles, Calif.

Hum—General Electric J-105

A frequent trouble in this model is a loud hum. It is due to the first filter condenser being open. The difficulty lies not in the diagnosis but in tracing the condenser connections (due to the compact and inaccessible construction).

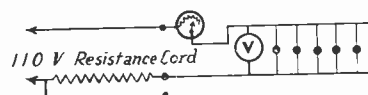
Therefore I suggest to other Servicemen that they make a mental note of the terminal-board diagram shown below. Connect an 8 or 10 mfd. condenser to the two large lugs on this board. (Note: The speaker field of this set is in the negative lead, hence connecting the condenser from B-plus to chassis will not work.)



George H. Koether, Jr.,
Round Bay,
Severna Park, Md.

Tester for Dial Lights

A handy tester for most dial lights can be made up with a resistance cord and voltmeter and about 5 sockets. A small power rheostat is used to make adjustments for various voltages. This "Dial Lite" tester used on AC or DC is the handiest unit for servicemen and stores. The sockets should be of the miniature, bayonet and candelabra types.



Ben Wolf,
Ben's Radio,
372 Tremont St.,
Boston, Mass.

"Oscilloscope Pictures"

Many service men are also amateur photographers, and can put their hobby to work for them.

The Modus Operandi is as follows: Suppose you have an oscilloscope. (What service man hasn't?) You take your camera, whether it be a miniature "candid" type, or larger, and place a copying or portrait attachment on the front of the lens. This allows you to work about 16 inches (or less) from your camera to the screen of the oscilloscope.

Now, turn on your oscilloscope, with a perfectly tuned receiver as input. Snap the picture, giving it about an exposure of 1/20 at f:8 to f:12. Since you need a tripod, speed is not necessary, and greater detail will be obtained by "stopping down" at f:12. Then, place the receiver slightly out (move the trimmers, etc.). Make another exposure. Develop and print as usual—enlarge if necessary. If you do your own developing, use Fine-Grain developer, and develop for 20 minutes. This should give you a nice through-and-through image.

Leave a print or enlargement of both these pictures in each home you visit. This will impress the radio owners, by giving visible, understandable evidence of the difference between a receiver that's "right" and one that's "out". Most people are "from Missouri"—you have to show them.

M. J. Feigenbaum,
c/o Superior Radio Service,
42 Jefferson Street,
Yonkers, New York.

Getting New Business

One excellent but inexpensive way of obtaining new business, is to obtain a list of the new families moving into your city each week. Then with the aid of a one-cent postal card drop them a note advising the prospective customer that you will be more than happy to call and check their radio and if same is all O. K. arrange for the installation of an Antenna and Ground. In doing so you have made a new friend and very often a profitable account. (Note: The list of new families can be obtained through your local Chamber of Commerce or Credit Bureau office.)

H. H. Taylor,
Jewell Radio Service,
Arcade Bldg.,
St. Joseph, Mo.

Beer Gardens Help Sell Sets

Two beer gardens on my avenue about ten blocks apart, help me sell radios. I always see that they are supplied with radios. This is what I do.

I put a radio in each of these establishments with a "for sale" sign on it and my cards nearby. Being good friends, they refuse the 10% which I know it is worth. So in return I am a fair customer to both!

Alexander Saberski,
H. & A. Radio Service,
428 Wilson Avenue,
Brooklyn, N. Y.

Motor Driven Controls on Detrola 175 and Trutone D727

These sets have motor driven tuning controls, and the mechanism seems to stick when certain adjacent buttons are pressed. The trouble may be remedied by removing the rosin that gets into the hold-down springs, and prevents proper positioning of same. These springs clamp the contacts on a frame and make contact on two metal strips mounted on a fiber drum, which is in turn mounted on the end of the variable tuning condenser. Any tendency toward a "no cct" when a button is pushed, usually indicates a film of dirt or other poor contact on the metal strips, and usually can be eliminated by polishing the bands with very fine emery cloth.

J. J. MacDonald,
112 Locust St.,
Winthrop, Mass.

(Continued from page 2, column 5)

trolling influences which exist in all such signal-tracing equipment.

To appreciate this comparison between the electron-ray indicator and the meter-type indicator, you must understand the manner in which these units can be used. Both the electron-ray type of indicator and the meter-type indicator are located in the output circuit of the amplifier channel. Such being the case, the signal applied to the two indicator systems depends upon the performance of the amplifier and rectifier ahead of the indicator in the test unit. You can therefore readily understand that any change in the gain characteristics of this amplifier will change the signal level at the output of the amplifier—consequently, the indication of signal level shown upon the indicator. This applies to the electron-ray tube, as well as the meter-type indicator. Doubtless you are well aware of the fact that many variations exist in amplifier operations, such as variation in the condition of the tubes during their normal life, variation in line voltages, humidity, etc. Any one, or all of these, will change the signal level at the output of the test unit amplifier; therefore the indication upon any type of indicator used. Thus it is clearly evident that the meter as an indicator cannot give any greater degree of accuracy in measurement in any one channel, than is possible with an electron-ray tube used as an indicator.

The fact that the meter itself is accurate to within a few percent means very little in the overall result, because variations of gain in even well-constructed amplifiers may be as great as from 30% to perhaps 100%, depending upon the existing conditions.

Recalling that calibrations in absolute values are not necessary—the comparison between the meter and the electron-ray tube narrows down to reference level indications.

Electron-ray Speeds Servicing!

Still further investigation of the use of the indicators calibrated in absolute values of signal voltage as against those used as reference level indicators, show the latter to be greatly superior in speed of servicing operations involving gain and in interpretation of the indications. The prime reason for this condition was found to be the necessity, in the case of absolute value calibration, of reading the value of signal voltage for each position of the pickup probe; then converting the indicated signal level into the same electrical units, and then dividing one by the other to arrive at the quotient which represented the gain in signal level between any two points being checked. This work involved entirely too much time and was not conducive to rapid servicing.

In the case of reference level indicators operation was much more rapid between this type circuit employs level and multiplier controls which are direct reading in amplification. This was complete proof of the advantage of the reference level indicator over the absolute signal level indicator.

Reference Level Indicators

The relative value of using meters or electron-ray tubes as reference level indicators was then investigated. From the viewpoint of general performance, the reference level type of meter indicator was just as good as the electron-ray tube—but since it afforded no advantages over the tube type of indicator, yet cost many times more and had other weak points — no justification was found for its use, since its employment in four channels meant a very great increase in the cost price to the servicemen.

To use meters just for the sake of using them or possibly for sales appeal was penalizing the servicing industry by unnecessarily increasing the cost of the instrument. Further progress in this investigation uncovered several disadvantages of the meter-type indicator even as an established reference level indicator and the definite superiority of the electron-ray tube as an indicator.

A very simple reason explains the superiority of the reference level type of indication. The calibrated controls used with such a reference level indicator to establish differences in signal level are so located in the channel, that the calibration indications are substantially independent of changes in the operating characteristics of the test unit amplifier. A very significant detail developed during this investigation. The

(Continued on page 4, column 1)

Contain Many New Items



Three new "Sales Aid Catalogs" . . . illustrating and describing the greatest assortment of advertising, sales promotion and display material ever offered the radio dealer and serviceman.

WITHIN THESE COVERS YOU'LL FIND A COMPLETE SALES PROMOTION PROGRAM!

By this time, a copy of the "Sales Aid Catalog" should be in your hands. If you haven't received your copy yet, don't wait any longer. Get in touch with your distributor, and let him know in no uncertain terms that you need a "Sales Aid Catalog" in your business . . . and you need it right away!

These new "Sales Aid Catalogs" cover the most complete lines of dealer helps that Radiotron, Victor and Cunningham have ever offered to the serviceman. When we say "most complete" we mean exactly that! On the pages of these catalogs, you will find everything you need to conduct an aggressive advertising campaign, plus a host of display ideas for your store or shop, not to mention a complete system for following up prospects, recording service orders, itemizing repair charges . . . all the way through to the happy moment when you present a bill on your own billhead!

You'll find one of the greatest arrays of outdoor and indoor signs that ever gladdened your eyes . . . not to mention illuminated clocks, decalcomanias, and a splendid va-

riety of counter and window signs.

In addition, these "Sales Aid Catalogs" illustrate a number of attractive newspaper advertisements, a window display that is really a "knockout" and a series of seven direct mail postcards that will enable you to conduct an effective selling campaign through the mails at a minimum of expense.

A wide-awake, smart appearance of the proprietor and his employees is always an asset whether you're servicing radios or selling diamond necklaces! That's why you'll find a full line of Service Garments illustrated and described in these catalogs . . . and priced at figures which make them one of the soundest investments you'll find in a coast to coast tour!

There's a service engineer's pen, a worthy companion to those pencils which have been so popular . . . but why should we go on talking about what's in that catalog? If you have one, you can look it over for yourself. If you haven't one . . . make sure that your distributor gets one into your hands right away!

SERVICEMAN'S KIT INCLUDED IN NEW RCA SALES AID CATALOG

Everything from neon window signs to a series of snappy direct mail postcards is included in a colorful Sales Aid Catalog just issued by RCA with distinctive editions for RCA Radiotron, Cunningham and RCA Victor tubes.

The catalog lists large display units such as the extremely popular Preferred Type Girl display, plain and illuminated signs, electric clocks, a unique mirror flashing sign that gives a novel third dimensional effect, decalcomanias for show windows, cardboard displays in 12 colors, and dummy tube cartons.

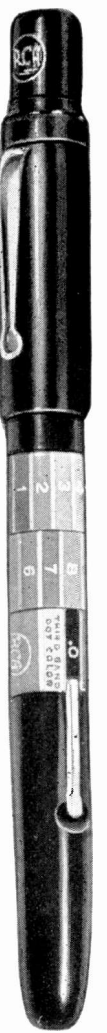
Promotions may be built around a wide selection of newspaper ad mats, a radio travelog, a movie sound trailer, and a radio transcription having thirteen different one minute spot announcements. As with all other promotional items, space is provided for dealer imprint.

The complete "makings" for a direct mail campaign is provided by a series of postal cards packing a real selling punch. Seven different cards featuring eye-catching cartoons are supplied with a three-line imprint.

Listed for the first time and of particular interest to servicemen is the serviceman's kit for carrying tools, tubes, wire and parts for outside calls. Special equipment holds soldering iron, pliers, screwdrivers, etc. An all steel parts cabinet for convenient storage on counter or shelf is also shown. Another new item is a serviceman's pen equipped with the patented RCA resistor drums, which indicate the capacity of various types of resistors. Two automatic pencils similarly equipped also are listed. One has an ingenious mechanism which shifts the lead to any one of three colors.

NOW THERE'S A PEN TO MATCH THE PENCIL

Here's the latest, and one of the handiest additions to a serviceman's equipment that RCA has ever offered! It's a fine fountain pen, with the patented resistor drums which scored such a success on the pencils offered in previous years. If you have a pencil, you'll want this full guaranteed fountain pen to complete your set. And if you haven't a pencil, you'll want this high-quality pen anyhow. See your distributor about getting either or both!



RIDER EXPLAINS

(Continued from page 3, column 3)

electron-ray tube type of indicator, which is inherently stable, did not require balancing adjustments and other precautionary measures necessary when meter-type indicators are employed in such circuits.

Longer Life and Greater Stability

From the viewpoint of operating life and stability, one prime requisite of servicing equipment is longest useful operating life and maximum stability. It was logical that the fewer complicated and critical circuits in the test unit, the more stable the operation of the unit and the longer its probable operating life. Each of the meter indications, even as a reference level indicator, required the use of a vacuum-tube voltmeter circuit, and if each amplifier channel employed such vacuum-tube voltmeter systems, it meant three additional critical circuits.

Another point taken in consideration was the fact that in normal signal tracing operations, the signal level increases between test points in unknown quantities until the actual tests are made. A meter-type indicator, even though it is a reference level indicator, cannot help but be subjected to very frequent input signal overloads as the pickup probe is moved from point to point, with resultant "banging" of the meter pointer off-scale. While such meter circuits can be designed to minimize burn-out of the meter winding, the continual banging of the pointer off-scale is not conducive to long life.

The electron-ray type of indicator has no such weak point. A signal overload causes nothing more than a change in shadow angle. This change is shadow angle, even to the extent of an overlap—which means a very definite signal overload—is entirely within the normal operating capabilities of the tube and no damage is done.

Electron-ray Simplifies Replacement

When speaking about operating life, we also have to consider what happens in case replacement of the indicators becomes necessary.

The electron-ray tube is replaceable everywhere so that a minimum loss of useful operating time of the instrument or channel is entailed if anything goes wrong with the indicator system. Since the parts are few, replacement of components, if found necessary, can be made with ease. And the cost of such replacement of the indicator is negligible.

As to the meter-type of indicator, replacement is not only more expensive but might conceivably be difficult because jobbers are not prone to stock such special meters

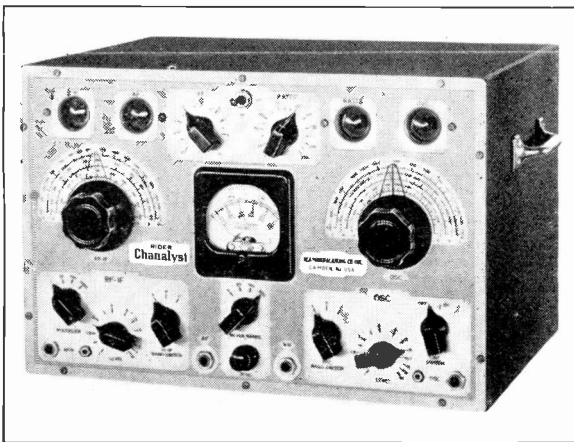
as replacement items. A definite loss in operating time would ensue in the event such replacement was necessary and the replacement meter was not locally available.

After considering all these factors, the conclusions strengthened the conviction that the use of electron-ray tubes as indicator was definitely preferable to meter-type indicators.

Summary of Amplifier Channel Indicators

Summarizing the development of the Chanalyst as it related to the use of the "eyes" instead of meter indicators, it became clearly evident that if the electron-ray tube as a reference level indicator is preferable to the use of a meter to establish the extent of amplification of the signal in a communication unit being checked, then most certainly it is to be preferred in all of those applications which do not in any way involve measurement of signal level. As to those few instances when it is desired to actually establish the signal level, it can be done with the electron-ray indicator just as conveniently as with a meter-type because the nature of the circuit permits calibration with normal reasonable tolerances. In fact, this is done in the Chanalyst and applies in those cases where it is vitally important; namely, the r-f and i-f channel and the a-f channel. In the case of the oscillator channel, it was definitely established that the function of the indicator was purely one of a tuning meter, to be employed in such operations as monitoring the oscillator output, checking frequency of signals within the frequency range of the channel, checking for drift, etc.

As the measurement of the output of oscillating systems, such as used in radio receivers and other places, the accepted practice, as shown by engineering data, is measurement of the oscillator grid current through the grid leak or the d-c voltage developed across the oscillator grid leak by the grid current. For this purpose there was provided the electronic d-c voltmeter. That such form of measurement is the accepted practice is attested to by the fact that the receiver manufacturers who stipulate



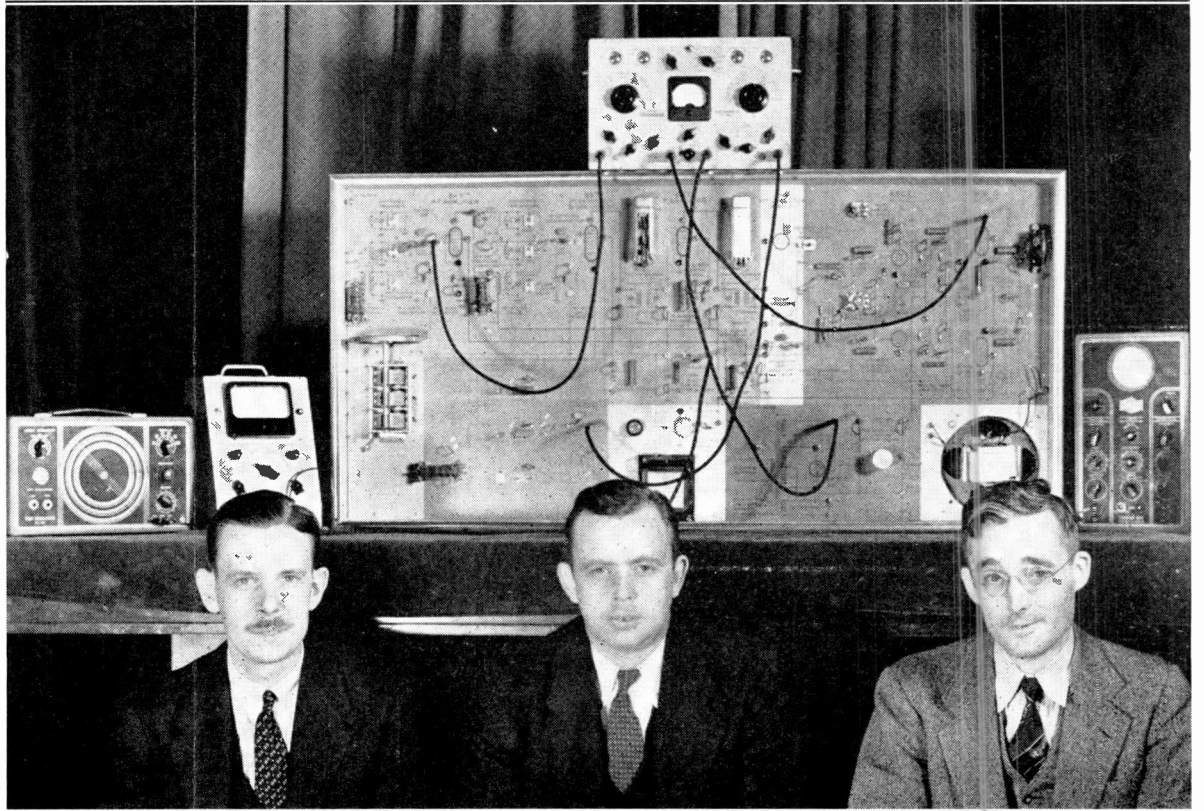
The four electron-ray indicators in the Rider Chanalyst make for versatility and rapidity of operation.

oscillator output do so by stating the d-c voltage present across the oscillator grid leak.

Wattage Indicator

The decision to use a special cir-

Here's Your Three Star Attraction at Chicago!



See the RCA Dynamic Demonstrator in action at the RCA Booth and meet the men who are taking it on a swing around the country. Left to right: Warren Kimball, Bill Bohlke and Johnny Meagher.

cuit terminating in an electron-ray indicator in this portion of the Chanalyst, was based upon existing needs. The primary purpose of this channel was to provide a rapid check of the approximate power consumption of the device being serviced so as to identify if the condition of the unit was such as to permit a signal tracing test, to show a major overload or an underload. The higher accuracy of a standard watt meter was recognized but the cost of such a device with respect to its advantages over the special circuit devised, did not seem justified.

The Eyes Have It!

It is possible to mention many more reasons why the electron-ray indicator was selected instead of meters, but we feel that the reasons given herein are the important ones—and they must be correct because the experience of the men who have used the Chanalyst in the field have proved the soundness of this fundamental design.

"Marker" Frequencies

You have used marker frequencies in connection with general visual alignment of conventional r-f and i-f systems and perhaps you have wondered if they could also be used in other applications. In checking an f-m receiver we found that by feeding an unmodulated signal from an auxiliary test oscillator we were able to check the limits of the frequency-modulated band as well as the peak frequency of the i-f amplifier simply by connecting the output of the unmodulated oscillator in parallel with that of the frequency-modulated oscillator. The result was a definite "wobble" at points on the forward and return traces of the Cathode ray image. When the test oscillator was adjusted to the resonant frequency of the i-f amplifier, only a single marker frequency resulted, which showed at the i-f peak frequency corresponding to the cross-over point of the discriminator curve. When the marker frequency was set at a point 60 kc. above the i-f peak, two marker frequencies resulted on the discriminator cross-over curve, below the cross-over point. When adjusted to produce a frequency 60 kc. lower than the i-f peak, these two marker points appeared above the cross-over point.

The marker frequencies may also be used in checking the resonance curve of the i-f amplifier in f-m receivers. A single marker frequency will then appear at a point corresponding to its frequency setting.

MODEL 167 OSCILLATOR

(Continued from page 1, column 3)

36 inches long so that you can easily connect the output of the No. 167 to the desired point in the receiver being tested. The exterior finish is of blue-gray wrinkle lacquer with the panel finished in brush and light chrome.

The serviceman who wants a comparatively inexpensive, stable, electron-coupled, well-calibrated signal source will find his requirements fully covered in this new RCA Model 167 Test Oscillator.

PEP UP THAT NEXT SERVICE MEETING!

Borrow an RCA Dynamic Demonstrator!

Yes, we said "borrow"! The RCA Dynamic Demonstrator is a show in itself, a fascinating show that will hold the attention of every serviceman who is interested in adding to his fund of technical information and equipping himself to give better service to his customers.

If either Bill Bohlke, Warren Kimball or Johnny Meagher have not as yet hit your town with the RCA Dynamic Demonstrator, you have a treat coming when your distributor puts on an RCA service meeting. Your RCA parts jobber is getting one for demonstration purposes and you can borrow it for your service meetings.

Johnny Meagher of the Camden Radio Service Division of RCA, who incidentally lectures on radio servicing at the Camden County, New Jersey Vocational School, conceived the idea of making first, a composite receiver embracing virtually every development introduced into the superheterodyne during the past ten years; second, to locate the parts upon a gigantic board with all connections accessible; and third, to arrange all the components so that every part is not only accessible, but that any part may be disconnected, shorted, open-circuited or another substituted.

Add all that together and you have the Dynamic Demonstrator, a completely exposed radio receiver to which all sorts of defects can be applied, all sorts of remedies tried, all types of symptoms checked, all kinds of test equipment used and tested.

The ability to do all of these things is of tremendous value at service meetings, large or small, because everyone can see what is being done—as it is being done—

and they can hear the results. No more is it necessary for a radio service lecturer to bury his head in a radio receiver and tell his audience what he is doing! Now they can see everything he does! Now they can see him place the probe, open the connection, short circuit the part, make the circuit change. Everything is visible! Every operation is clear—simple to understand. Now a lecture can run smoothly. As the speaker talks, he demonstrates. Having attended service meetings you know how much time is lost tracing socket contacts—turning the chassis upside down and going through operations that seem endless because they are invisible.

You know how bored you have become during such sessions. People fidget—chairs scrape—men talk to each other—the meeting drags. Because of that, many men who speak at service meetings have been forced to limit their subjects and consequently could not give the serviceman all that he wanted!

Speak to your jobber today. See that he gets one of the RCA Dynamic Demonstrators and borrow it for every one of your service meetings. Devote a portion of the meeting to the discussion and demonstration of servicing technique.

You now have the opportunity of demonstrating and comparing the operation of various kinds of test equipment—checking the performance of the different systems used in radio receivers, establishing the different defects which produce similar symptoms. It is the finest form of education that you can secure . . . one more service RCA is contributing to the improvement of the radio servicing industry, from the financial as well as the educational angle.

Tube Type Program!

(Continued from page 2, column 5)

the small improvement of certain major manufacturers limiting this year's receiver production to certain tube types, will mean more profit to the serviceman.

It will mean that he will be safe in purchasing greater quantities of these types with greater assurance of their sale. It will mean that the movement started this past year will result in the betterment of financial conditions as each day passes.

Such stabilization improves conditions all along the line. If it means a reduction in prices to the set manufacturer, it means greater sales and greater sales means more service work . . . more sockets created for the servicing industry.

The profits accruing from more rapid inventory turn-over; the decreased operating cost because of the ability to deliver the tubes needed without the troubles accompanying the sale today means much greater profit. The elimination of

obsolete stock means less loss, consequently more overall profit.

The danger of impairing the technical level of radio does not exist because no one desires to freeze development at its present level. There is no intention of not making new tubes. There will be new tube types as new basic functions are developed. And maybe the types now selected likewise will change.

Taking all things into consideration the Preferred Tube Type Program instituted by RCA in the manufacture of their receivers and followed by other major manufacturers, is a great step toward stabilization of the tube industry; towards developing greater profits for the servicing branch of the radio industry. True, this is a long term program. The benefits will not be felt immediately, but just as the past years have developed conditions which are not to the liking of those who have some association with tube sales, the years to come, if this preferred tube type program is followed, will restore harmony and help increase the income of the servicing industry.

Kinescopes Get a "Screen Test"



Checking RCA Television Kinescopes for screen characteristics. These characteristics include brilliancy, color, focusing, overall detail, and size of the picture. Every Kinescope receives this individual test. The equipment used for checking these characteristics is capable of producing up to 12,000 volts for the handling of all sizes of Kinescopes.