

Courtesy of American Airlines, Inc.

APRIL-MAY, 1942

# LOOK AHEAD NOW!

By JOHN F. RIDER

**A**T the present moment members of the radio servicing industry have their hands full — and then some! That doesn't come under the classification of news to most of you, for practically every service shop throughout the length and breadth of the land has more work piled up on its benches than ever before. But that does not concern us here—we want to talk about something else. . . .

In all this relatively sudden on-rush of work, servicemen are very apt to lose sight of the fact that tomorrow is another day. . . . We most certainly do not want to be classed as a calamity howler, but we would feel that we were remiss in our duties as an editor if we did not call a couple of very important facts to your attention *now*. . . . Some facts that more than likely you have not thought about in the hurry and bustle of today's business.

First of all, let us consider the matter of test instruments. . . . It makes no difference how much you already know about those which you have at present in your shop, there is doubtless a great deal more that you can learn about them and how they can be applied to your daily work. This is not exactly a matter of economy in the strict sense of the word—it is a case of necessity. If you have an insufficient number of instruments with which to equip the men working in your shop, it is up to you to see that certain instruments are used to their fullest capabilities; first in order that work going through the shop will not be held up; and second, because it is virtually impossible to obtain any replacements. . . .

And this second situation is going to get a lot worse before it gets any better! Take our word for that.

For instance, have you tried to buy a

meter lately? Almost any kind of a meter? Didn't have much success, did you? Wasn't the answer something like this, "Sorry, we haven't that particular model in stock and we can't get any definite date from the manufacturer when we will be able to get any"? Maybe not those exact words, but we'll wager that was the gist. . . . In other words, today it has happened here, as far as test instruments are concerned. And that means, make those that you have do a little something extra. . . .

Something else—just how much do you use your cathode-ray oscillograph? Are you like some fellows we have heard about, who in a loose moment shelled out good money for one of these and then relegated it to the top shelf to collect dust because it was too much of a job for them to learn to operate?

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(Continued from page 1)

Or do you use it just when you have certain receivers to align? We strongly suggest that you find out just to how many different uses the oscillograph can be put. . . . It might surprise you. . . .

And what we have said about oscillographs applies to every other instrument and tool that you have in your shop. Put them to work. You can't afford not to do this. . . .

Then here's something else. . . .

Today, as we mentioned above, there is more than enough service work for everyone in the business. And tomorrow there most likely will be even more! You are busy today; what about tomorrow? Are you going to be able to handle every bit of the business that comes your way—handle it in the way it should be handled?

Suppose at the moment you have one man helping you and you manage to get an average of let's say ten receivers a day through your shop. Now remember—no more new sets are going to be available after April 22nd and that is going to mean that if Mr. John Doe's set goes bad—even so bad that ordinarily he would buy a new one—he is going to bring it to you. And that is a situation again that will increase with time, for as time passes more and more old sets are going to pass out of the picture just in the natural course of events. And aren't you the logical person to whom these set owners will turn when they find they can not replace their worn-out receiver? Certainly, you are. And are you going to be more and more busy accordingly? Again, the answer is yes.

And what are you going to do about it?

We assumed a while back that you and one man conducted all the business that both of you could handle today. True, you can work a certain amount of overtime, but there happens to be a limit to the efficient work any human being can do day in and day out. The answer to all this seems obvious to us: prepare now for the future.

We realize that today skilled help is at a premium, but how about unskilled help? Did you ever think about getting in some up-and-coming young fellow *now* to do some of the unskilled jobs around the place and gradually training him to be a real help when a rush comes? Furthermore, did you ever think about getting a girl and training her? You know well enough that for many years thousands of girls have been employed in a great many phases of radio manufacturing, particularly where the work was delicate, and they have done a successful job.

So why not give the youngsters a chance to break into the radio business? We have every reason in the world to believe that you will find them eager to learn—willing to do what they can—and in the long run, prove to be a decided asset to your business.



*"Keep 'em Rolling  
Keep 'em Flying.."*

## RIDER RADIO BOOKS ARE DOING THEIR SHARE!

IN  
ARMY

NAVY

COAST GUARD

SIGNAL CORPS

INDUSTRIAL  
TRAINING

On land . . . on sea . . . in the air . . . communication is a vital factor dependent upon skilled men to design, operate, and maintain complicated equipment. That is why we are proud of the various services that employ Rider Radio Books in the training of radio technicians.

As a serviceman you can contribute your share to National Security by repairing defective radio receivers *quickly*. You can increase the speed of your production by knowing more about the sets on which you are working and the instruments you are using. You will find a Rider Book listed that you should read today. *Check them over and order now!*

### FREQUENCY MODULATION

136 Pages — \$1.50

### SERVICING BY SIGNAL TRACING

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### AUTOMATIC FREQUENCY CONTROL SYSTEMS

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### THE METER AT WORK

152 Pages — \$1.50

### THE OSCILLATOR AT WORK

243 Pages — \$2.00

### VACUUM-TUBE VOLTMETERS

179 Pages — \$2.00

### A-C CALCULATION CHARTS

(Ready June 1st)

160 Pages — \$7.50

### AN HOUR A DAY WITH RIDER SERIES

RESONANCE AND ALIGNMENT  
ALTERNATING CURRENTS IN RADIO  
RECEIVERS

96 Pages each

AUTOMATIC VOLUME CONTROL  
D-C VOLTAGE DISTRIBUTION IN  
RADIO RECEIVERS

90c each

**RCA 14BT, 14BT-2, 14BK**

In cases where a loss of sensitivity or some distortion occur, it may be due to frequency drift. In such an event, the trouble can be corrected as follows:

Connect a 9-mmfd condenser from the high side of the oscillator section (see schematic on page 11-149 of *Rider's Volume XI*) at the gang condenser, to ground. Realign the first-detector and oscillator tuned circuits. It may also be necessary to realign the i-f circuits.

**RCA QU2C, QU2M**

In the schematic of the chassis used in these receivers on page 12-5 of *Rider's Volume XII*, the 2.2-megohm resistor in the avc circuit should be shown connected to "D" terminal of the second i-f transformer.

In some productions the a-f coupling condenser is changed from 0.0025 mf to 0.01 mf. Also in the Model QU2M receivers, the 0.035-mf condenser that is in series with the 12,000-ohm resistor connected to the tap on the volume control, is changed to 0.05 mf.

**RCA 16K, 16T2, 16T4, 17K, 19K**

If the need arises for increased sensitivity on any of these models, which have an untuned r-f stage that is resistance coupled to the first detector, it can be accomplished by changing the r-f plate load resistor to a higher value, somewhere between 6000 and 10,000 ohms. If your customer is located in a metropolitan district, this change is not recommended owing to the possibility of cross modulation.

The schematics for the above models have been published in *Rider's Volume XI* on the following pages: 16K, page 11-151; 16T2, page 11-153; 16T4, page 11-155; 17K, page 11-157; and 19K, page 11-165.

**DeWald 812**

The servicing data covering the models 648, 650, etc., that appear on page 9-5 of *Rider's Volume IX*, apply also to the new model 812. The schematic is the same with the exception that a tuning indicator tube, 6U5, has been added to the circuit. The grid of this 6U5 is connected to the control-grid side of the 2-megohm resistor in the avc circuit (this resistor is immediately under the 6D6 i-f tube in the schematic) and the target is con-

nected to +B, to which the plate is also connected in series with the usual 1-megohm resistor.

**Philco 39-25, Codes 121, 124**

The following changes were made in this circuit, the schematic of which will be found on page 10-9 of *Rider's Volume X*:

*Run 1-1.* The single mica condenser, No. 8, 4500 mmfd has been replaced by two condensers wired in parallel, the part numbers being 30-1068 and 30-1094. The original condenser can be used if replacement is necessary.

*Run 1-2.* The electrolytic condenser, No. 17, 16 mf, has been changed to part number 30-2134, dual capacity type, 8-4 mf. Condenser No. 18, 16 mf, has been changed to part number 30-2270, 8-12 mf, dual capacity type. The two sections of these condensers are wired in parallel and connected in the circuit as a single capacity as is shown on page 10-9.

*Code 124.* The following replacement parts differ from those shown for Code 121. A 16-mf electrolytic condenser, Part No. 30-2386, is used as Condenser No. 17 and No. 18. Condenser No. 41 is 8 mf, Part No. 30-2385. The part number of the loudspeaker is 36-1471-3.

**G. E. H639AC, H639DC**

The values of the parts of this chassis are not given on the page along with the schematic, voltage, gain, and other data (page 11-80 in *Rider's Volume XI*), but will be found on page 11-63. These notations are in the Index but the fact that the values of the parts are given on another page is not noted on page 11-80. Please make such a notation.

**Crosley 122, 123, 124**

Please make a notation in your Index to Vol. X that the alignment for the above models will be found on page 2-12 in *Rider's Volume II* and that on the same page will be found some changes that were made in Model 122.

**G. E. A-51, A-56**

Please make a note in your *Rider's Volume X* Index that these two models use the same chassis as the model A-54, data for which will be found on pages 7-4, 7-5, and 7-6 in *Rider's Volume VII*.

**RCA K80**

In some cases a tendency has been encountered towards hum modulation and howl, which may be remedied by mounting the loudspeaker on rubber grommets and by making the loop antenna more rigid by winding cellulose tape around it in six places, two on each side and one on the top and one on the bottom.

**A-C Calculation Charts**

Here is something new under the sun. . . . Heretofore when someone wanted to find out certain circuit constants, it was necessary for him to wade through a long series of quite intricate equations involving values running into the millions or millionths. (And when you start squaring or extracting the square root of such values you know it's mighty easy to make an error!)

These charts—and there are 146—were designed by Robert Lorenzen of our Technical Staff to eliminate the headaches that generally accompany any involved calculations, such as those for determining the numerous a-c constants in series, parallel, or series-parallel circuits. In other words, assume that you know the constants of a certain a-c circuit and want to know at what frequency it resonates. That can be read off one of the charts and read directly in cycles, kilocycles, or megacycles as the case may be. On the other hand, suppose you had a circuit with a certain inductance that you want to resonate at a certain frequency. How much capacity must be used for a series circuit? Or a parallel circuit? Such values can be read directly off the charts. . . .

In short, problems involving the three types of circuits mentioned above can be quickly solved with these two-colored charts—problems concerning resonance, resistance, reactance, impedance, conductance, susceptance, admittance. And all these can be read directly in microhms, micromicrofarads, megohms, etc., which saves the bother of converting from one unit to another and so eliminates a possible source of error in calculating. Then, too, charts are given by means of which the Q of a circuit can be found as well as the phase angle.

*A-C Calculation Charts* have been designed with but one thought in mind. Speed is of the essence today in all engineering operations. Such a collection

(Please turn to page 8)

# INSIDE THE VACUUM TUBE

Ever since Fleming discovered his "valve" and DeForest put a grid in it, thousands upon thousands of pages have been written on how and why the vacuum tube functions. And with all due respect to the many authors who have written on this subject in books and magazines, no one has ever covered it adequately from the point of view of a man who is just starting out in radio and who desires not only a solid grounding in the theory, but also a good working knowledge of tubes. In other words a physical picture of what's happening inside the tube. This, we believe, has been done in this book.

One point, for instance, that has caused almost more misunderstanding and trouble than all the others put together, is the matter of plate current. Theory says that electrons flow from the cathode across the interelectrode space to the plate and thence out to the B battery and back to the cathode, but the traditional way of considering the flow of plate current is from the positively charged plate to the negative cathode. (You more than likely remember just that point yourself when you were learning about vacuum tubes!) Well, that is *not* done in this book; the entire basic theory of electrons is carefully explained in the opening chapters and all the explanations of the functioning of the various tubes are given according to this theory. In other words, plate current is stated as being a flow of electrons from the cathode to the plate and throughout the book that idea is rigidly followed!

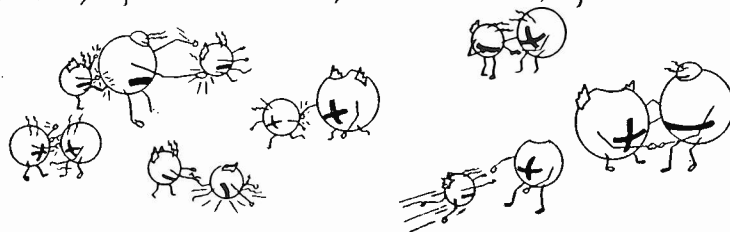
After a comprehensive and simple explanation of the electron theory which, of course, is necessary for a thorough understanding of vacuum tube behavior, comes another discussion which represents a new presentation of text concerning the vacuum tube. This is the discussion of electrostatic fields. By covering the subject thoroughly, the reader is given a comprehensive but elementary picture of why amplification is accomplished in a vacuum tube, and exactly how the grid and plate are inter-related. In other words, the reader is told why amplification exists, in terms other than just the mere statement that "the grid acts as a gate in controlling the flow of electrons to the plate." Throughout the book, which covers diodes, triodes, screen grid tubes, and pentodes, the aim is to give the reader a clear physical picture of exactly what is happening within the tube— inclusive of the development of characteristic curves of all kinds. The final chapter covers the general applications

of the various types of tubes discussed in the earlier chapters.

To many, this all might seem to be following more or less along the beaten track, but only a glance at *Inside the Vacuum Tube* will show it to be a decided departure from any book on tubes that has ever been published. In the first place, mathematical equations and calculations are kept at a minimum. Only when it was absolutely essential were equations introduced; they are as few as possible, and even then they are presented in the simplest possible form. In the next place, at the end of each chapter a number of questions pertaining to the subject matter covered in that particular chapter, are included so that the reader can check up on himself and find out just what he "got" from his reading.

Now a word about the illustrations. . . . Here is another departure from the conventional. This being purely and simply an elementary explanation of vacuum tubes, it was felt that the illustrations should tell a story instead of merely supplementing the text and that they should tell that story as inter-

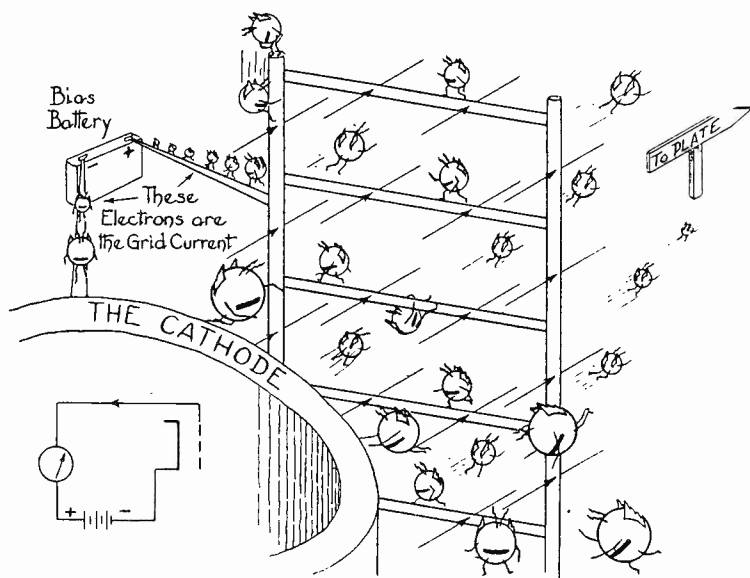
LIKE Charges REPEL and UNLIKE Charges ATTRACT



Typical illustrations from Rider's latest book "Inside the Vacuum Tube."

estingly as possible. Just to give an idea of what these illustrations are like, we are showing a couple of them here. In the later chapters of the book, this type of illustrations gives way to the more prosaic and conventional characteristic curves and circuit diagrams, but even there sometimes opportunity afforded the introduction of these cartoon-like characters.

At the moment we can tell you neither the number of pages in this book nor its price; however, we can say that it will be off the press before hot weather and that *Inside the Vacuum Tube* will be a book that you'll want in your radio library. You know by now that Rider's name on a book means a comprehensive treatment of the subject and surely if there is one component of a radio receiver that a radioman should know thoroughly, it is the vacuum tube! Watch for further announcements. . . .



# Successful SERVICING

Reg. U. S. Pat. Off.

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## RADIO SERVICEMEN HAVE OPPORTUNITY

**T**HERE is no doubt about the fact that the ultimate destination of many present-day radio servicemen, will be some branch of the armed forces. In other words, the forthcoming draft is going to embrace many of those who are fixing radio receivers today. Furthermore, it seems to make sense to visualize the placement of these men in one particular branch of the Army of the United States, namely, the Signal Corps. Many of the men who were servicemen in the past are to be found in that branch today.

Strange though it may seem, considering the nature of the work which these men did in the past, many have been found lacking in basic radio theory, with the result that it took much longer than should normally be required to train such men so as to fulfill army requirements. And by training we don't mean in military tactics, but rather basic radio as the Army wants it.

Not to benefit by what information is thus made available to those not yet in the service, would certainly be an extravagant waste. Accordingly, we recommend to those who feel that sometime in the near future they will be wearing olive drab with crossed signal flags designating the U. S. Signal Corps, that they become more familiar with basic radio theory; such things as Ohm's law; series, parallel, and series-parallel circuits; basic theory of alternating currents; the operation of motors and generators; the manner in which vacuum tubes work, super-heterodyne receivers, oscillographs, super-regenerative circuits, and the like.

One of the things that has been lacking from the general education of the radio serviceman, without any fault of his own, is knowledge relating to transmitters. Radio servicemen have had no occasion to work on transmitters, but in the Army transmitters and receivers are in the same category. A maintenance man, deserving of the top rating, can work on both with equal facility.

It makes no difference where you get this knowledge, what books you buy or whose books you buy, just so long as what you learn is correct.

Many radio men feel that their ability is determined by their knowledge of radio mathematics. Of course, this knowledge is valuable, but is not a basic requirement. You will find it beneficial to understand the application of squares and square root. The amount of mathematics you will experience will be only slightly more than you encountered in civilian life, so that a little effort on your part will provide you with that knowledge which will prove of great value.

It is true that the average soldier going into the service must get certain basic military training; but it also is true that there is a need for trained radiomen in the Army, and that every day saved during such radio training means that the man can get out of school and get to that place where his services are vitally needed so much sooner. From the viewpoint of the individual, it means that he can get his specialist rating sooner, which carries with it increased pay.

JOHN F. RIDER

### Signing Off

With this issue of SUCCESSFUL SERVICING, we are suspending publication of our houseorgan for the duration of the war.

Perhaps you thought that this suspension had already occurred, as you have not heard from us since last summer, but the plain, unvarnished truth of the matter is that we just didn't have the chance to sit down at our typewriter and get out the "copy"—not to mention nursing an issue through the gentle hands of the printer. But now we feel that we wanted to bring certain facts to your attention and so we are sticking to our typewriter nights until we get everything down on paper.

In these days it is necessary for everybody to conserve in any way they can. Now an issue of SUCCESSFUL SERVICING uses a good many hundred pounds of paper and if you multiply that amount by the number of issues published in a year, you can see that it represents a goodly weight. We like to keep you informed as to what we are doing, what books we are bringing out, and all the rest of it, but we'll have to depend upon the regular monthly magazines to do that job.

So, for a while, you will not be receiving this publication. . . . Let's hope the interval won't be very long!

### MEN WANTED

Fifteen men are needed who are sufficiently familiar with radio theory to teach other repairmen. Of special importance is the knowledge of superheterodyne operation and alignment with oscillographs.

These men are needed as civilian instructors to work in one branch of the U. S. Signal Corps. The work is extremely interesting and of great value in this effort to win the war.

Men who are definitely deferred are preferred. Men of any age up to and including 46 are satisfactory. Physical disability, unless it interferes with walking or reading, is no hindrance. Being a citizen is, of course, one of the requirements.

The starting pay is \$2000 per year, with increases as justified. If the technical qualifications of a man rate him higher than that amount under Civil Service standards of qualification, the starting salary will be commensurate with the Civil Service rating. Work will be within the boundaries of the United States.

When you write, state your age, birthplace, naturalization certificate number, if any; technical qualifications; educational background; years of experience. Send your replies to John F. Rider, 404 Fourth Avenue, New York, N. Y.

The Army needs these men. Please let us hear from you promptly.



## NEW BOOKS BY RIDER

### Automatic Record Changers and Recorders

Up until a comparatively short time ago, the most complicated mechanical gadgets that the radio serviceman met in his daily work were dial mechanisms on receivers. Of course, some of these were rather tough to figure out, but when they are compared to the apparently Goldbergian collection of cams and gears and pawls and levers in a modern automatic record changer, they seem simple—as simple as a wheelbarrow compared to a locomotive.

It was because of these mechanical problems, plus the fact that the number of record changers coming to service shops was increasing mightily, that *Automatic Record Changers and Recorders* came into being. It was realized that various types of mechanisms were incorporated in these devices with which the average serviceman was totally unfamiliar and that because of this, a great many men were missing out on a lot of good profits. But a book about record changers had to be something more than a mere explanation of the functioning of the different parts of the devices: it had to give detailed information about all the different changers that are on the American market, any one of which the serviceman might have to work on.

So the first thing was to find out what makes of record changers were used with which radio receiver combinations. All the available data were studied and the important facts about each model changer were noted. These were condensed and arranged in the order of their importance in the functioning of a record changer as a complete unit. For instance, practically all of the changers on the market depend on the phonograph motor for the mechanical power to operate the record changing mechanism; therefore, it was decided that this prime mover—the motor—was the first subject to be considered.

Inasmuch as both d-c and a-c motors are employed in record changers, with the latter incidentally being in the great majority, some explanations of their basic theory have been included as an introduction to their maintenance and the more common troubles that are likely to be encountered. Then as one of their two duties is to drive the turn-

table of the phonograph or recorder, descriptions of the basically different types of turntable reduction drives and speed regulators are given. To give complete and detailed descriptions of all the different mechanical devices used to perform these functions would swell this part of the book out of all proportions so just the basic principles involved have been explained, in order that a man can grasp which type it is he has to work on and can do a better job, even though he does not have the minor variations incorporated in that particular device.

At first thought it might seem strange that any space whatsoever be devoted to phonograph records themselves, to needles for reproduction and recording purposes, to types of pickups and recording heads—yet any one of these, when not functioning normally, may give a clue as to why something else is not working properly. With that thought in mind, a chapter of explanations covering these subjects has been included.

Then we come to the automatic record changers themselves. Although every one on the market can be placed in one of four classifications, yet no two models of the same type are exactly the same, even though they come from the same factory. Be that as it may, it can be said that all the "drop" type changers, for instance, operate on the same general principles, but the mechanical components that actuate the movable record shelves and control the movements of the tonearm, are different. Here again it would be impossible to describe each one in sufficient detail, so a general plan of analysis was worked out which a man can follow and ascertain just how any changer functions. A sample analysis of a typical "drop" type of record changer is given, each step being illustrated with photographs taken in the author's *Successful Servicing Laboratory*.

These basic explanations take up the first portion of the 744-page book, the remainder being devoted to the servicing data on the various manufacturers' record changers and recorders, given in the same form that has been used in all the Rider Manuals. In order to facilitate the use of these servicing data, they have been indexed so that they can be easily located if you know only the model number of the radio combination in which the changer or re-

recorder is installed; or if you know the make of the device and its own model number, you will also find it indexed under that heading.

It so happened that we received some data on new record changers from manufacturers after the publication of *Automatic Record Changers and Recorders* and sooner than leave this material unavailable, we published it in Rider's Volume XIII. However, this is only a very small percentage of the total data that will be found in former book.

All points considered, we have every reason to believe that *Automatic Record Changers and Recorders* has already helped thousands of servicemen to solve some tough problems. And if you have done any considerable amount of work on these devices, you know just how tough some of those problems are to solve. Why do things the hard way? Time is at a premium these days and no one can afford to waste it when they can get efficient help such as is contained in Rider's *Automatic Record Changers and Recorders*.

### Rider's Manual, Volume XIII

As you doubtless remember, every time we have announced a new volume of Rider's Manuals over the past ten years or so, we have always had to admit that we had been unable for one reason or another, to get all the data we had in our files into the current volume. On several occasions as much data as would fill 350 or 400 pages had to be left over until the following year.

But this year it is different!

Due to the curtailment of receiver manufacturing over the past few months, the number of new receiver chassis has been greatly reduced. That has meant that a fewer number of service bulletins were received from the various manufacturers and so that has given us the chance to publish in Volume XIII a great deal of the data that we were forced to omit from Volumes XI and XII. We have no doubts that this will be welcome news to all users of Rider's Manuals.

Another group of schematics that we were able to publish in Volume XIII was of different types of amplifiers—something that we had hitherto hesitated to include because of the lack of space, not because there was insufficient demand for them. However, you will find quite a number of amplifiers

(Please turn to page 8)

# Rolling REPORTER



## HELLO AGAIN

Long time no see, eh? Well, boys and gals, these past few months we've been busier than the proverbial paperhanger or that pussy on the tin roof. . . . There were so many jobs we've had to do around the office and so many of the gang we had to see that batting out this here col. was just out and *wot would S.S. be without this col.????* We asks yuh???? Huh?

## PLATTER DROPPERS

Naw, we ain't talkin' about hash-slingers or dish-washers, we're referrin' to wot youse guys generally mean when yuh say "That headache"—*automatic record changers*. Seems as to how moren more of 'em are being tossed into your shops and in order to alleviate (*howja like that one?*) your headaches, the Boss prescribed a dose of asperin entitled "*Automatic Record Changers and Recorders*." From all that we kin gather here, there, and thither the prescription has been *most successful* . . . if you haven't had your dose, we suggest that you get one and avoid them record-changer blues. . . .

## A.S.A. MAKES FUN

Most folks think of scientific societies as being composed of a bunch of graybeards whose idea of a side splitter is "What is it that expands greatly in the dark?", the answer being, of course, the pupil of the

eye. Well, mebbe this quote will revise *your* idea—it's from an invite to the Acoustical Society of America's May meeting, "The meeting will be held in the Rackham Amphitheatre, an auditorium whose design violates several established recommended acoustical practices, and with no apparent ill effects. The deeply upholstered comfort of this auditorium will be conducive to peaceful slumber on the part of the members during the reading of papers. It is to be hoped, however, that there are many members who will present material of such compelling interest as to produce the desired amount of insomnia unquote. . . .

## BLACKOUT PANELS

Just so as you won't have to knock off work in case of a blackout, one mfrer of test equipment has marketed an oscillograph with numbers wot shine like a cat's eyes at night. . . . *Ain't that sumpin'?* No excuse now for you to quit when the alert goes, that is unless you're an A.R.W.

## THE "INSIDE" STORY

No, this ain't no hush-hush yarn we gonna spill, but it's an *inside* story that every guy who's ever pushed a tube in a socket will wanta read. . . . J.F.R. planted some seed quite a while ago and in a few weeks from when you're readin' these lines, a perennial will bust into bloom that will take First Prize!! (*See wot Spring does to us?*) Oh, yes, the title: **INSIDE THE VACUUM TUBE**. . . . Don't go askin' us how many pages it's gonna have or how much it'll be, for we dunno, BUT (*hold your hats, boys*) no matter wot that there vol will set yuh back, we're **POSITIVE** you'll agree that it was worth that—and *even more*—for you to get the *INSIDE* story of what electrons do when meandering around the grids and plate!!!! *And wait till yuh lamp the pix!!!!*

## ONE FER DE BOOK

Here's a *true* yarn from a U. S. O. club somewhere in the heart o' the sunny south.

It seems as to how Pvt. Joe Doakes was very, very deeply in love with a gal back in the ol' home town, which was quite a trek from where Pvt. Joe was in camp. Well, Pvt. Joe did with the pencil and paper and the gal says okay, she'll come to "somewhere in the sunny south" and marry her soldier boy, the which was swell by him. So for days before her arrival, Pvt. Joe was rushin' thither and yon gettin' a parson lined up, gettin' a ring, gettin' flowers, and gettin' all the things a guy gets at a time like that. Well, a coupla hours before the gal was due in the town near the camp where all the doin's was gonna come off, Pvt. Joe was checkin' things over with a friend, who says to Joe, "Made arrangements at the hotel for your room?" "Sure," says Joe—and then a horrified look spread over his map. "What's the matter, Joe?" asked his friend. Our hero gulped and weakly answered, "I forgot to ask for *overnight* leave!!!!"

## VOL. XIII

She's launched!!! *Rider's Volume XIII* is now ready for service—all set to shoot holes in those problems and let the light in where it's most needed. . . . Them thar *1672 pages* are chuck fulla the latest dope we could get outa the mfrers. Next time you go to yer jobbers, order yours pronto . . . *better get it while the gettin's good!*

## AU REVOIR

Well, this has turned out to be more or less of an *Ave et Vale* colyum. . . . As, mebbe you read elsewhere, yuh won't be hearin' from us for a spell, but keep yer chin up and all that sort of thing. . . . Enyhoo, after we finish battin' this out, we're gonna pull the cover over Qwerty and put her carefully away "for the duration." . . . Mebbe we'll be seein' yuh in our meanderin's thither and yon, but if we don't, well, here's plenty of swell luck to you and *you* and *YOU*. . . . And may the time be not too far distant when we'll be feedin' paper into Qwerty again!!! *Keep 'em perkin', gang, and cheerio. . . .*

## THE ROLLING REPORTER

800,000 record changers are providing an important source of profit for the wide-awake service shops of the country and creating a need for adequate and ready reference data to speed up trouble shooting and repair. Rider anticipated this need and has prepared—just when you need it—a sturdily bound volume containing everything you need know on any automatic record changer or recorder coming to your shop.

Heretofore, the serviceman's prime interest has revolved around the invisible defects which accompany the operation of electrical devices. Mechanics in radio receivers was limited to a lesser degree. However, with the introduction of the automatic record changer, some knowledge of the development of motion by means of gears, levers and cams has become necessary. Hence the birth of Automatic Record Changers and Recorders. Printed on 8½ x 11 paper, the same size as Rider Manuals, the book covers, by means of explanatory text, mechanical and electrical diagrams, all the information you must have to service these high cost instruments quickly and profitably.

### CONTENTS

Chapter I—MOTORS AND DRIVES. D-C Motors. A-C Motors. Universal Motors. Maintenance of Motors. Commonplace Troubles. SPEED REGULATORS and REDUCTION DRIVES. Chapter II—RECORDERS AND PHONOGRAPHS. The Cutting Head. The Groove. Recording Needles. Pick-ups. Phonograph Needles. Chapter III—AUTOMATIC RECORD CHANGERS. Mechanisms. Troubles. Chapter IV—ANALYSIS OF RCA MODEL RP-152-C RECORD CHANGER. MANUFACTURERS' SERVICE DATA.

744 PAGES

BOUND IN BUCKRAM

\$6.00

*Just what the Servicing Industry ordered!*

**RIDER'S**  
"Automatic  
Record Changers  
and Recorders"

by JOHN F. RIDER

**New Books by Rider**

(Continued from page 6)

under Webster-Chicago, Wurlitzer, and others.

In our desire to get the latest servicing data in Volume XIII, we sent letters to all the manufacturers requesting that they send us their latest data. We got the usual whole-hearted cooperation, but in several cases the bulletins covering these newest sets were not yet available when it came time for us to send some particular manufacturer's section of pages to the printer. However, quite a bit of this latest material

came in before the Manual was "put to bed" and so it was decided to run this information and put it in with the double-spread pages in the front of the book. The page numbers run consecutively, so all you have to do is remove these pages which are banded and insert them in their proper places back with the rest.

You are aware what is going to happen on April 22nd. . . . You might think that you have worked on all sorts and conditions of sets up to the present, but just wait until you see what is going to be brought into your shop in the future! The answer is that you need

every bit of information on every receiver that might be brought to you for repair and the only source of authentic information—the kind you need—is the complete set of *Rider's Manuals*.

By the time you read these lines, your jobber will have *Rider's Volume XIII*. It has 1672 pages—one of the biggest Manuals ever published! And you had better get your order in at once, for the first printing is already exhausted and it will be nearly another month before the second run is off the press. Need more be said?

. . . . —

**A-C Calculation Charts**

(Continued from page 3)

of charts will be of enormous assistance to all engineers and others who have occasion to work in the power, audio, supersonic, high-frequency, and ultra high-frequency ranges. The a-c circuit constants embraced by this chart cover a range of frequencies from 10 cycles to 1,000 megacycles. The charts can be read to an accuracy of 1 part in 500. By using two colors in each chart, as well as a dull ink and a dull paper, ease of observation as well as freedom from glare has been attained.

While this collection of charts is not intended for servicemen, those who have occasion to do special construction or installation work will find it very convenient, and a tremendous time-saver. For the engineer, however, it is a tremendously valuable tool.

. . . . —

**Philco Model Numbers**

Please add these data to your Index for *Rider's Volume X*.

In the last issue of *SUCCESSFUL SERVICING* we ran a note that the servicing data on several 1937 Philco receivers also applied to the "38" sets. Here are three more:

Data for	Same as	Rider Manual Page	"Aligning Philco Receivers" Page
38-62	37-62	8-19	22 (Vol. II)
38-93	37-93	8-21	143 (Vol. I)
38-610	37-610	7-45	37 (Vol. I)

. . . . —

**The Cover**

The workmen, shown in the photograph on page 1, are installing deicing boots, which are attached to the vertical tail surfaces as well as the horizontal. These boots insure absolute protection against ice forming on any part of the plane. This picture is reproduced through the courtesy of American Airlines, Inc.

**AFTER APRIL 22nd**

**You Will Carry The Whole Load**



Now you will have to carry the whole load. . . . Not only the sets that require minor corrections, but those which need rebuilding and would heretofore have been thrown away. . . .

Are you prepared to assume this responsibility?

The operation of radio receivers is vital to the welfare of the public — people depend upon you to keep their sets in operating condition and don't forget, there will be no new receivers after April 22nd!

Shortage of competent help, the difficulty of obtaining replacement parts, the elimination of the marketing of new sets — all these will throw a burden on you that you must shoulder. Many of the sets that will come into your shop in the future will be five, six, or even ten years old, so you'll need all thirteen *Rider Manuals*.

**RIDER'S VOL. XIII**  
**Out April 6th**

Order this latest Rider Manual now. It has servicing data on the newest sets off the production lines. . . . sets up to March 1942.

1672 Pages.....\$11.00

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 Volumes VI to V.....\$ 8.25 each  
 Abridged Vols. I to V.....\$12.50



**YOU NEED RIDER MANUALS TO "CARRY ON"**