

# BUILDING ON REPUTATION

Harry S. Wagner and his brother Karl have built up a fine, modern Radio Service organization.

In a town with a population of less than 1000 persons, they did a business of \$18,000 in 1930 which brings out two important points. Their N. R. I. training enables them to do good work—work which is respected and brings repeat business and also that it is possible to make money in Radio in a small town by bringing in work from the surrounding country.



Quoting direct from a letter to President J. E. Smith, Mr. Harry Wagner says: "I am enclosing a picture of our shop and showroom with myself (at the left) and my brother Karl, one of your students. After taking your course we made enough money to build this modern show room and in less than two years built our business up to \$18,000 in 1930. It is your excellent course of instruction which started us on the road to big money."

-----TEAR OFF HERE AND MAIL-----

## Will You Spend Two Minutes To Help Your Friends?

Be a real friend. Share your good habits with others. Give us the chance to point out to them what N. R. I. is doing for you—for ambitious men everywhere; how it is raising incomes by fitting men and young men for good jobs in Radio. List a few names and addresses below, of people interested in Radio, or who are dissatisfied with their present jobs. Your name will not be mentioned, when writing to them.

Each man whose name and address you list will receive a free copy of National Radio News. And if the names have not already been received from some other source, you'll receive a \$5.00 commission for each one who enrolls.

Your Name: \_\_\_\_\_

Your Address: \_\_\_\_\_

Your Student Number: \_\_\_\_\_

Mr. \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_  
 Occupation \_\_\_\_\_ Age \_\_\_\_\_  
 Interested in:  
 Amateur Radio     Service Work  
 Set Building         \_\_\_\_\_

Mr. \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_  
 Occupation \_\_\_\_\_ Age \_\_\_\_\_  
 Interested in:  
 Amateur Radio     Service Work  
 Set Building         \_\_\_\_\_

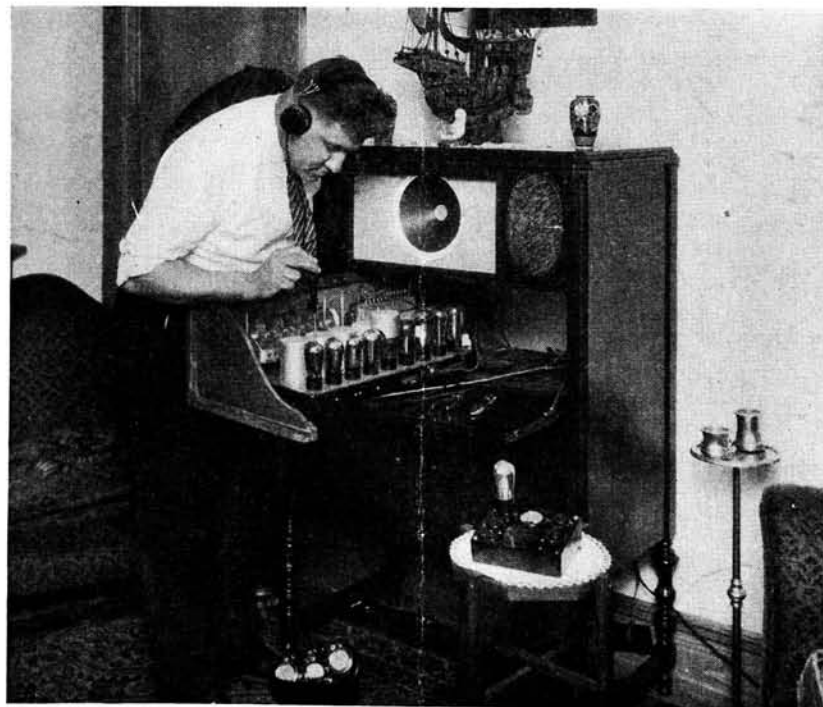
Mr. \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_  
 Occupation \_\_\_\_\_ Age \_\_\_\_\_  
 Interested in:  
 Amateur Radio     Service Work  
 Set Building         \_\_\_\_\_



VOL. 3—NO. 9

WASHINGTON, D. C.

APRIL, 1931



### RADIO SERVICING NUMBER



J. E. SMITH

## The PRESIDENT'S PAGE

IT'S hard to predict what Radio will "get into next."

The United States Department of Agriculture now fights fires with the aid of Radio and a motor truck.

Recently the Weather Bureau converted a motor truck into a weather station on wheels for use in its fire-weather-warning service in California. Equipped with Radio and meteorological instruments, this truck responds to every important forest fire call in the State.

A weather observer accompanies the truck as near to the fire as it is possible to go. He receives weather reports broadcast hourly from the district headquarters at San Francisco. He determines local weather conditions which influence the fire and keeps the fire fighters informed of weather prospect.

This rolling weather station was credited with saving the Forest Service a \$5,000 expense in controlling one fire last summer. After a large force of fighters had attempted for several days to put out a raging fire the blaze steadily gained headway. The director of the force of fighters was on the point of sending for a reinforcement when the meteorologist advised him of a change of weather that would favor the fighters. He withheld his request and a few hours later checked the fire.

During a season's service the truck proved a success and it is likely that similar service will be extended to other fire-weather districts of the west—another forward stride for the Radio Industry.

THE class of "old-timers" in Radio, who like to pull in stations from distant points is being rapidly enlarged by a new generation of D.X. fans.

What was termed a "fad" in the early days of broadcasting, is now becoming an important feature in the design, sale and maintenance of Radio receivers.

While it has been stated that distant reception is only popular where local broadcast facilities are inadequate, there is an ever increasing demand for sets of super selectivity and power. The average set owner is proud to be able to hang up better D.X. records than his neighbor and this is a very healthy condition for sharp tuning receiving sets.

The more sensitive and selective a set must be, the greater is the necessity for periodical adjustments by a competent service man. The best sets manufactured will develop mechanical and electrical difficulties due to wear, weather and other conditions.

Every Radio receiver, especially those intended for distant reception, should be checked twice a year.

Consider a receiver which should bring in a station a thousand miles distant. The tuning will of necessity be within a very few points on the dial. Condenser and coils in each R.F. oscillator and intermediate stage must be matched one with the other, with hair line precision. Mechanical wear on the tuning device could easily throw the condensers off sufficiently to cause no end of dissatisfaction. On local reception where tuning is more broad, naturally this trouble would not be so noticeable.

Radio service men will find a ready market for their services through the growing popularity of D.X. receivers.

Next month I will tell you about tone satisfaction.

## RADIO OPPORTUNITY FIELDS

### Radio Servicing

By P. J. MURRAY, Manager  
N. R. I. Employment Department



L. M. Bell, Zanesville, Ohio, obtained a Radio Service position while still taking the course. Also earned \$2000 in spare time Radio Service.



Homer F. Saville, Blanchester, Ohio, has already cleared over \$2000 from Radio Service not counting what he has made on sales.

into consideration the service forces of factories, jobbers, and independent service organizations, we can see the job opportunities for the capable, trained Radio service man.



Harold Oppenheimer, Corona, N. Y., credits \$841. Radio Service earnings in nine months entirely to N. R. I. training.

There are 13,478,600 Radio Receiving Sets in the United States. The number increases daily. Every Radio set shipped from the factories is a potential job for the Radio Service man. Not even a remote possibility exists that any Radio manufacturer will ever develop his product to such mechanical and electrical perfection that it will not require service.

It is true that recent developments at the factories have given the trade Radio sets which are far more rugged than formerly. This, however, is more than offset by the apparent complications in the newer sets which discourage repairs by the owners, as was the case in the simpler forms of Radio in days past. Hence the greater majority of the service falls to the qualified service man.

Radio Service is interesting and profitable. Every service job presents a new problem—something slightly different. There is little chance for the work to become monotonous. There is no cut and dried remedy for each set which will put it in perfect condition. We are mighty glad that this condition exists; it places the work of Radio servicing where it belongs—with the trained Radio-Trician.

Every Radio dealer has Service work to handle for his customers. He must either have his own Service organization or contract with a Radio Service man to take care of the work. Radio factories and the larger jobbers also maintain corps of Radio Servicemen, to repair or recondition sets returned to them, and as a help to their dealers. When we consider there are between 34,000 and 40,000 dealers in the U. S. alone, not taking



From a garage at low wages to \$10,000 earnings in Radio is the credit James Ryan, Fall River, Mass., gives N. R. I. training.

business of his own. Practically no capital is needed—good Radio training being your principal asset. Determination and willingness to work for success will aid to a great extent.

The rising popularity of various Radio products, aside from the home receiver is enlarging the money-making opportunity of the Radio service man. For instance, automobile receivers are coming into demand more and more. The very nature of their construction and use makes frequent service an essential to good operation. Tone controls, remote controls—many other new features—saleable features, may be classed as a branch of Radio service.

We do not need to theorize extensively to prove the opportunity in this field. We can look at it from a decidedly practical angle. The men who have succeeded—N. R. I. students and graduates who have climbed the success ladder—point the way. A few letters reproduced with this article are typical of hundreds of others on file to show the money making advantages in Radio Servicing.

## National Radio News

Published monthly in the interest of its students and graduates, by the  
NATIONAL RADIO INSTITUTE

16th and U Streets N. W.  
Washington, D. C.

J. E. SMITH, Pres. E. R. HAAS, V. Pres. & Director.

Vol. 3—No. 9

April, 1931

### SQUIRREL SHOOTING

Down in North Carolina they tell a yarn about an old gray haired darky who had a knack for killing squirrels.

Uncle Henry's squirrel gun was about the same calibre as a dozen others in the village, and he didn't use up any more shells than the rest. In fact, he was at a disadvantage because he was pushing on seventy years old. His eyes were not what they used to be.

But Henry always came home with more squirrels than anybody else. A direct question regarding his ability brought this reply:

"Squirrels is got to be studied jes' like anything else you wants to know 'bout. They got likes and dislikes. When chestnuts is ripe you find 'em 'round chestnut trees; other times messin' 'round oak trees.



E. R. HAAS  
Vice President and Director

"Squirrels has a habit of watchin' you from between leaves—or keeping the tree between them an' you; an' you can't shoot through a tree. So you got to know that they's curious. Throw a stick in a tree where they's hidin' an' most times out they come to see what the fuss is. Then you shoot fast an' straight.

"I know 'bout how far to shoot in front of a squirrel that's a runnin' or jumpin'—know 'bout how much to figger for the wind—jes' how far the old gun will throw shot. Sort of larned them things by studyin' 'em out."

We don't know much about squirrel hunting so we can't say how much of Uncle Henry's story is accurate, but his philosophy is good and sound.

It's the fellow who studies—the fellow who plans ahead—knows what causes things to act the way they do, who comes home with his pockets filled—be it with squirrels or Radio Profits.

### WANTED—A JOB!

"I want a job."

"Have you a trade—Radio-man, Machinist, Tool Maker, Carpenter?"

"No."

"Any office training?"

"No."

Automatically the applicant is placed in the army of unskilled workmen. Such dialogues are daily occurrences in every employment department.

Victims of wasted and neglected years are brought face to face with the reality of a life of common labor—stripped of the many advantages open to the skilled man.

What have these men done to themselves? In these days of good schools for young and old—of opportunities for learning a trade. What have these men done with their time?

It is deplorable that so many men have permitted themselves to ignore opportunities of fitting themselves for a better chance in life's battle.

However, they still have a final opportunity to escape the monotonous routine of common labor. The road runs through studying, thinking, conscientious application to duty, and a determination to reach higher levels.

Many a man has thus rescued himself, and risen to the heights.

It is possible for any man to rise if he has the backbone, persistence and ambition.

*The man of today who laments his inability to make a good living deserves no sympathy. He blames the world but I blame him.—Milt Parsons.*

The best angle from which to approach any problem is the try-angle.

# RADIO-TRICIAN SERVICE SHEET

REG. U. S. PAT. OFF.

MAJESTIC SERIES 30

COMPILED SOLELY FOR STUDENTS & GRADUATES

### MAJESTIC SERIES 30

#### COLOR CODE Power Transformer

Brown (Small Solid) Primary	Red (Small Stranded) Center Tap G-45
Brown (Small Solid) Primary	Green Anode
Blue Filament (2) G-45	Bare C. T. Anode
Blue Filament (2) G-45	Green Anode
Red (Heavy Solid) Heater (3) G-24	Orange Filament (1) G-80
Red (Heavy Solid) Heater (3) G-24	Orange Filament (1) G-80

#### FILTER UNIT Condenser

##### From:

Orange	2 mfd. condenser
Blue	3 mfd. condenser
Green	1 mfd. condenser
Red	1 mfd. condenser
Yellow	.035 mfd. condenser
White	.10 mfd. condenser
Black	condenser common

##### Connect to:

G-80 Socket (Filament)
Junction of Speaker Field and Choke
Start of Primary of Input Transformer
Free end of 2360 ohm resistor
Free end of 2360 ohm resistor
Junction of Speaker Field and Choke
Ground

#### Choke

Orange  
Blue

G-80 socket (Filament)  
Junction of speaker field and choke

#### Caution

Under no condition, attempt to use a ground connection on the antenna binding posts. Be certain that the antenna and ground wires are on their respective posts.

Under no circumstances should a gas pipe be used for a ground.

#### Table of Voltages

Stage	Tube	Fil. Volts	Plate Volts	Grid Volts	Cath. Volts	Normal Plate M. A.	Screen Volts
1st R. F.	G-24	2.35	180	3	3	3	90
2nd R. F.	G-24	2.35	180	3	3	3	90
Detector	G-24	2.35	225	10	10	3.3	90
1st Pwr.	G-45	2.35	250	37.5		25	
2nd Pwr.	G-45	2.35	250	37.5		25	
Rect.	G-80	4.80	358			40	

NOTE: All Plate, Screen Grid, Control Grid, and Cathode Voltages are measured from Ground (chassis) with a standard 1,000 ohm per volt, voltmeter.

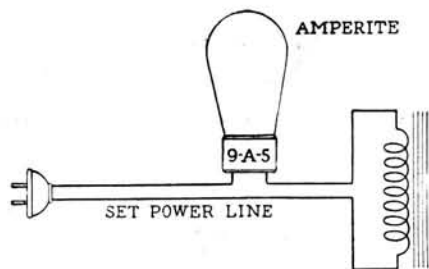


# AUTOMATIC LINE VOLTAGE CONTROL

By J. A. DOWIE, Chief Instructor

One of the most valuable devices ever added to an A.C. receiver is the Glow Tube, which makes the receiver modern and helps improve Radio reception.

A survey of the power systems throughout the country discloses that fluctuating line voltage is widespread and commonplace. According to the findings of *Electrical World*, there are wide line voltage variations in every



Control tube connected in line.

State. The fluctuations are as great as 30% of the rated power house voltage or three times greater than the 5% plus or minus specified by tube manufacturers in guaranteeing the operation and full service life of their products. Such variations are also detrimental to the proper operation of power packs in the usual socket-power radio sets.

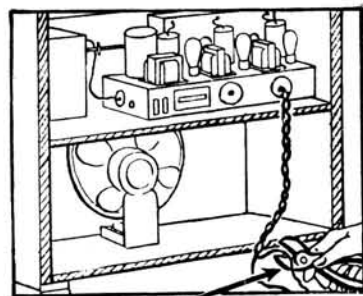
It has been proved conclusively that undervoltage causes fading, diminishes volume, loss of power and sensitivity and generally poor reception, whereas overvoltage results in tube burnouts, tone distortion and blasting,



J. A. DOWIE

power pack breakdowns, tube noises and lack of selectivity. In order for an A.C. set to operate properly the A.C. line voltage should be maintained within 5 volts plus or minus of the rated voltage. This is the range maintained automatically by the Amperite glow tube line voltage regulator, irrespective of the variations of line voltage. This tube works on the rapid effect that temperature has on special resistance wire; when the temperature of the filament wire is increased the resistance increases, when it decreases the resistance decreases, causing an even line voltage to be applied to the power unit of the set. One might think that placing a heavy duty six ohm rheostat in series with the A.C. line and the primary of the power transformer would be satisfactory but this would only offset the voltages in excess of 110 on the supply lines, and as line voltage fluctuations are very rapid it can be seen that a manually operated device would not be suitable for this purpose.

The automatic line voltage control (Glow Tube) may be installed without changes in the receiver beyond simply disconnecting the plug of the power supply cable and cutting one wire of the power supply cord to the set



Cut one lead of the power supply line or cable at any place between the set and the house socket plug.

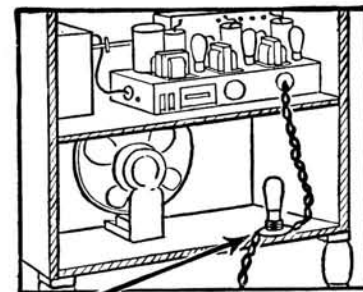
at any place between the set and the house socket plug. The two cut ends are then connected to the two terminals of a special adapter socket, or they may be connected to two opposite terminals of an ordinary UX type socket, leaving the remaining terminals blank. The adapter or UX socket may be mounted at any convenient place in a set. When this is finished all that is necessary is to insert the proper line voltage control tube in the socket and inserting the plug of supply cable in the house socket then the receiver is ready for operation.

There are two special amperite tubes manufactured—one, known as the "10 series," designed for use with primaries of 90-95 volts. The other is known as the "5 series" which is adaptable to any type of A.C. set with its existing primary and when once installed, automatically controls line voltage between 100 and 140 volts. However, it is well to state the set model of the receiver when ordering any of these tubes as they are specially designed for all types of receiving sets. Should you have trouble in a varying A.C. line voltage you will find these tubes helpful in overcoming your troubles when servicing sets.

Fluctuating line voltage is a widespread evil. It is a problem in areas served by hydro-electric power plants, as well as in those supplied by steam power plants. It is a problem in rural districts with long and frequently inadequate transmission lines and transformers, also in crowded metropolitan areas with their sudden and severe loads thrown on the power line.

The power company may claim to maintain a constant line voltage. To them, line voltage means the potential available according to meter readings at the power house. This makes no allowance for inevitable differences, such as long and short transmission lines, light and heavy loads, etc. But to the Radio owner, line voltage means voltage at the socket, where connection is made for the supply of power to the set. Even if 110-volt cur-

rent supply is available at the very doorstep of the home, the voltage available at the socket supplying the Radio may fall short of that potential due to various causes. Electrical appliances placed on house wiring, reduce the available socket voltage materially. Therefore an automatic or self-adjusting line voltage regulating device becomes essential in most cases as a Radio receiver is such a sensitive instrument depending for satisfactory operation on so many delicate, finely adjusted devices.



Mount the socket at any convenient place inside the cabinet. Insert the proper Amperite.



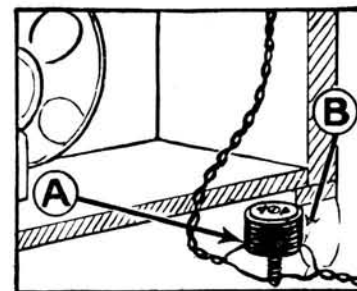
## RADIO SCARECROW

Finding that a scarecrow was of little avail in keeping predatory birds from his orchard, an Englishman conceived the idea of connecting a loud speaker back of the scarecrow to his radio set and the birds soon deserted the orchard, reports *Popular Mechanics*.

It might interest you to know that Radio is good in Lexington, Va. Last week 17 Radio receivers were sold by my force including one salesman and myself. Thanking you.—A. G. Curtis, Lexington, Va.

During the last five months and while going to high school I have earned over \$411. The course certainly has paid for itself.—Tim A. Carr, Vallejo, Calif.

Graduate George Hausmann, San Francisco, Calif., is Transstone Auto Radio Serviceman for Julius Brunton & Sons, Company, distributors.



Connect these two cut ends to the terminals of an Amperite Socket as shown by lines "A & B."

## Purchasing

By

CARL WEBER

N. R. I.

Purchasing  
Agent



*Another article in a series of particular interest to Radio-Tricians in business for themselves, or contemplating starting such a business.*

Low purchase price has a direct bearing on profit. Too many small or new organizations are prone to sidestep the issue and allow purchasing to become more or less a matter of fact affair.

This is quite natural. The man at the head of a small business is usually the chief workman. He is the expert of the organization. His time is taken up with service, sales, collection, installations.

Nevertheless, he must find time to see that he gets dollar for dollar value. It will enable him to meet competition, make larger profits and has a great bearing on sales.

While price is an important factor—he must not overlook quality. When price reduces quality below a safe point—it ceases to be economy.

Most small Radio organizations, before they are on a financial footing to handle a franchise, buy from the Radio mail order houses.

A good practice is to have a shelf or a book-case to store all catalogs received. When new issues are obtained—remove the previous catalog of that company. Don't keep a lot of dead catalogs—they waste your time.

You will find some firms from whom you'll buy tubes. You'll get your transformers from another concern. Other parts and supplies may be obtained elsewhere. A tab on each catalog, to show what is of particular interest to you, will save you time in ordering.

Consider service as very important. Buy where you get materials promptly—where clerks do not substitute "some-

(Please turn to page 15)

## SOME RECENT RADIO TUBE IMPROVEMENTS

(Continued from page 7)

One hardly dares mention quick-heating. There have been many disappointments with quick-heating tubes. Nevertheless, during the past year an entirely satisfactory form of ceramic has been developed which meets all the severe service requirements encountered in the A.C. tube cathode. This ceramic may be greatly reduced in bulk while retaining the necessary electrical and thermal strength. By notching the ceramic tubing at regular intervals along its length, even exposing the filament in places, in accordance with the DeForest patent, the thermal inertia and consequently the heating time is reduced to a minimum consistent with reliability and full service life. Tubes with a ten-second heating time are now being produced as a routine matter, without even directing attention to this feature because of the many disappointments heretofore associated with so-called quick-heaters.

In the case of the -24, the mutual conductance and amplification constant have been increased. It is now possible to obtain an amplification of 60 per stage, as contrasted with 30 for older tubes of this type. Decreased grid-plate capacity permits greater stability or a minimum of regeneration in pushing the amplification gain to the utmost, and also makes for better tonal quality. Decreased grid emission moves more positive the point at which the tube draws grid current, permitting the handling of more powerful signals without distortion. The -24 type has also the advantage of the new notched ceramic insulator tubing, fully shielded cathode, decreased gas content, higher emission, and a full one thousand hours of peak performance, followed by a slowly tapering performance.

All in all, the four standard A.C. tubes — -27, -35, -24, and -80, have been subjected to many improvements and refinements. The standard characteristics are being maintained within limits heretofore believed impossible in regular, economical, practical production. The tolerances regarding gas content have been tightened far beyond the fondest dreams of engineers a year ago. The improvements and refinements are being made available in tubes produced during the past few months. In the case of tubes produced a year or more ago and taken from large stocks or inventories, it is

(Please turn to page 14)

# RADIO-TRICIAN SERVICE SHEET

REG. U. S. PAT. OFF.

COMPILED SOLELY FOR STUDENTS & GRADUATES

## STROMBERG-CARLSON MODELS 10 AND 11 RECEIVERS

### Oscillation

**TUBES.** Tubes which cause instability (oscillation) are generally at great variance with standard characteristics. Tubes other than those specified for the receiver quite frequently cause such trouble. Check by the substitution of standard tubes in the R.F. section.

**GROUND.** Make certain that the ground is of the right type, and that the circuit is clean and firm in its contacts.

**LOOSE TUBE COVER.** Make sure that the tube section cover is in place and firmly screwed down.

**DEFECTIVE BY-PASS CIRCUITS AND APPARATUS.** Carefully check all by-pass condensers and the connections thereto. Check the wiring for breaks. Check also the Resistor  $R_2$ , which, in addition to being a hum control, is also a radio frequency by-pass for the UY-224 heater circuits.

By-pass capacities are most easily checked for loss of capacity (open) by shunting them with a like capacity. On capacitors having but one apparent terminal, the shell or case is the other terminal.

**POOR GROUND CONTACT TO ROTOR PLATE BEARINGS.** Grounding of the rotor plates, aside from the end bearings, is accomplished through the clip springs which slide down over the rotor shaft in each compartment. Make sure that these springs are in place and are firm and clean in their contacts.

**INCORRECT PLATE OR SHIELD VOLTAGES.** Check these voltages

against the voltages furnished in the table.

### Special Cases of Faulty Operation

**RANGE CONTROL SWITCH INEFFECTIVE.** Occasionally it will be found that setting this switch to the "Local" position does not have the desired effect. Check the 1st R.F. tube by replacing it, the ground (external), the switch contact, and the associated condenser.

**RANGE CONTROL SWITCH TOO EFFECTIVE.** This condition ordinarily would be due to a short in the associated condenser so as to completely short circuit, or ground, the incoming signal. It may also be due to the fact that the incoming signal is relatively weak, under which circumstances there is no point to using the "Local" setting.

### Removal of Chassis and Loudspeaker

After the Radio-Trician has assured himself that the cause of faulty operation lies in the chassis, the chassis and loudspeaker should be removed from the cabinet for further inspection and test.

**NOTE:** Do not test the chassis without the speaker properly connected to it. Either the speaker should be removed with the chassis or the Radio-Trician should provide himself with a four conductor extension cord which will connect the speaker connector plug to the connector socket in the rear of the chassis. If such a cord is made up, proper insulation should be provided for the high voltage present in the field supply conductors.

### Removal of Chassis

Disconnect antenna and ground leads. Remove speaker cord plug from its socket at the right rear of the chassis.

Remove A.C. supply cord plug from its socket at the left rear of the chassis.

Remove three control knobs from front of receiver by a steady outward pull.

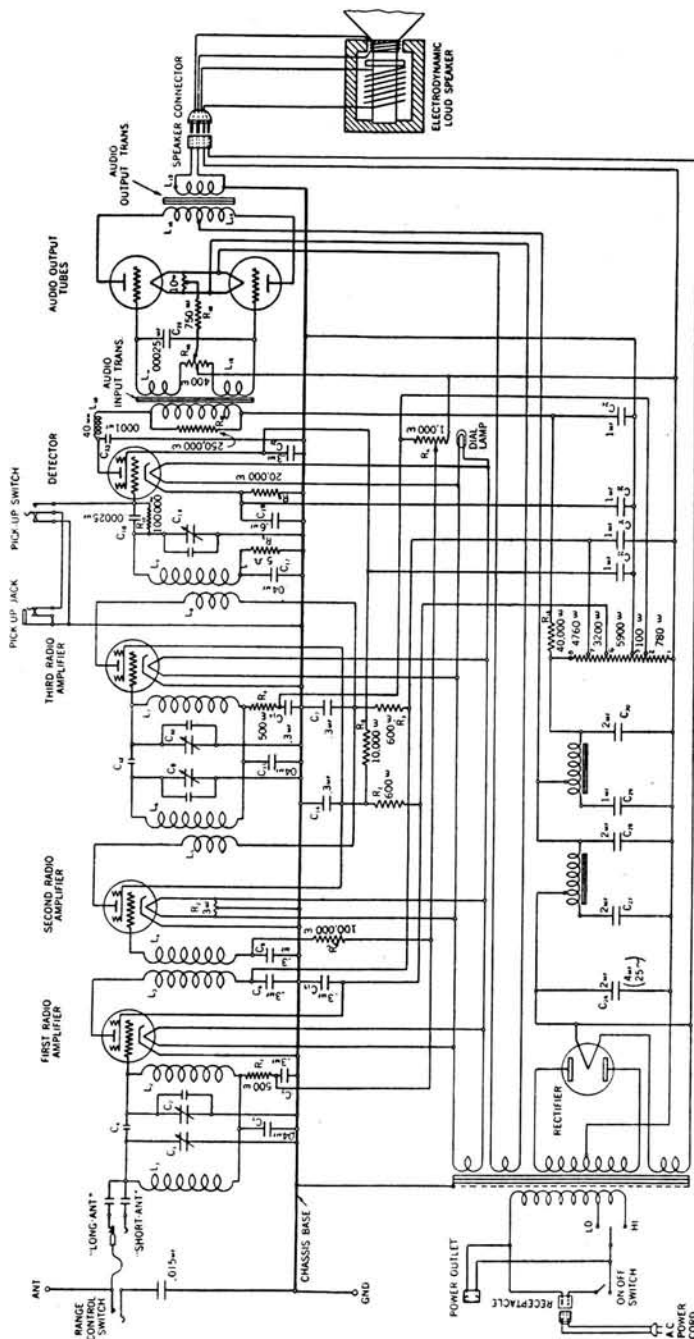
Unscrew the three large machine screws from each end of the under side of the shelf which supports the chassis in the cabinet.

Slide chassis from cabinet.

## TABLE OF VOLTAGES

Line Voltage 120—Voltage Tap High

Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space GD+	Normal Grid-Screen GD+
224	1 R.F.	2.4	135	2.5	80
224	2 R.F.	2.4	135	2.5	80
224	3 R.F.	2.4	135	2.5	80
224	Det.	2.4	200	----	75
245	PP-AF	2.4	235	----	45
245	PP-AF	2.4	235	----	45
280	Rect.	4.8	-----	----	----



Schematic diagram—Stromberg-Carlson Models 10 and 11.



### THANKS, BAILEY

Here is some dope I want to pass along to other N. R. I. students. It is especially useful on Philco 96 and 97 chassis. R.F. oscillation can be caused through coupling in the cabling, and is eliminated by using a double cord across the filament lead of the '224. In some chassis such as Fada, R.F. oscillation is present through strays being present in the audio amplification tube after the detector. An R.F. choke in series with the grid lead will kill this oscillation.—A. L. Bailey, Hamilton, Ont., Canada.

### BUSY

Business depression? Not so you can notice. I have been darn busy servicing. Everything is breaking with a bang right my way, so that I wish the days were longer.—John Small, Brooklyn, N. Y.

### NICE HOLIDAY, FRANK

Here is my record for the holiday season business with the Ozarka Radios. Sold eight regular Ozarkas, profit \$180; sold eight Ozarka Vikings, profit \$215, total \$390. Add to this about \$50 worth of service work and you'll see what my holidays netted me. This was in addition to handling my regular job as engineer on a B. & M. locomotive during which time I traveled about 3500 miles. My spare time was very limited as you can see, but I really drew in the money.—Frank McClellan, Troy, New York.

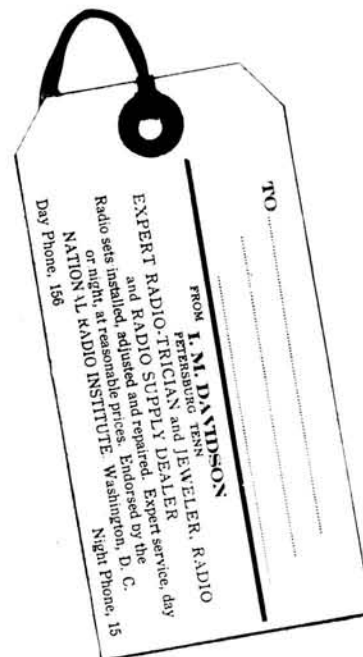
### A PENNSYLVANIA BOY SAYS

I have made enough to pay for the course six times—just from service work. I can go out and bring in fifteen dollars in four hours. If I hadn't answered your ad I'd still be in the same old rut. So I want to say this—that I owe all my success to the National Radio Institute.—Frank Yavoroski, Jr., McAdoo, Pa.

### A SERVICE IDEA

Elmer Sutters sends the "Mailbag" a good service idea which due to lack of space on this page is printed on page 14.

### DAVIDSON'S IDEA



Graduate Davidson attaches this special shipping tag to sets leaving his shop. After delivery attach the tag to the back of set so the customer will know where to call for service.

### WHAT MURPHY DOES

Graduate Murphy says the ideas in the Mailbag are well worth keeping. He clips out each idea printed and pastes them in a scrap book. From time to time he reads them over and applies them to his business.

### INDEXES SERVICE SHEETS

How many of you fellows are saving the Radio Service Sheets published in National Radio News every month? Every issue carries two good Service Sheets that are mighty helpful when you are working on jobs.

I take my Sheets out of the News every month and put them in an indexed, looseleaf file. When I go out to do a service job, I take it with me. Gradually your file of Service Sheets will increase and you'll find very few Radios on the market that can't be handled with the use of them.—Harry R. Glead, Mohawk, New York.

### GOOD WORK, PAILLE

Since I enrolled with the N. R. I. I have serviced over ninety Radio receivers—both A.C. and D.C., in my spare time.

I have made enough money in spare time Radio work to pay for the course and to buy myself a Sterling Tube and Set Tester.—Wilbrod Paille, Attleboro, Mass.

### IT'S "THE STUFF"

If business keeps up like it's going right now I'm going to have to get into Radio on a full-time basis.

The owner of a RCA Radiola had me put in a new set of Radiotrons the other day, and by-the-way, there's a nice little profit in tubes, isn't there? Then I convinced him that he didn't have the proper aerial, and he admitted that the stations overlapped, so I erected the right kind of antenna and he told me this morning that his favorite programs came in fine. And right this minute I've got two calls that I can't get to until tonight. I'll tell you right here, old sport, that your course is,—well,—it's "the stuff."—Wm. L. Thames, Angier, North Carolina.

While completing my course I have made as much as \$115 a month, a total of \$3150, which is all credited to my N. R. I. training. My regular salary is \$235 a month. I wouldn't give my N.R.I. training for the price of a hundred courses if I could not get another just like it.—E. B. McDonald, Jacksonville, Fla.



# A MAN MAY BE DOWN—

... but he's never out, so long as he is of the real, honest-to-goodness, he-man material which characterizes Radio-tricians.

Most of us are familiar with the case of N. R. I. graduate Vearrindy who studied the N. R. I. course and made a success while practically blind.

Now we have the story of a student—a war veteran, who does Radio Service work from his bed.

He is George J. Senkbeil of Clarksville, Ga. On his 16th lesson in the course, George has cashed in to the tune of several hundred dollars in 4 months. We wonder what this fellow would do if he could be up and about. Nothing could stop him.



The News takes the liberty to speak for every N. R. I. man and say "Good work, Senkbeil, we're proud of you."

## A Service Idea

In Atwater Kent Battery sets the most common difficulty is a shorted by-pass condenser. In model 37, "no plate voltage" usually means a filter condenser broken down. If plate voltage is low on the 2nd A.F. and reception is choppy, or none at all, replace speaker filter condenser. The models 40, 42, 44 may develop choppy reception from same cause.

No plate voltage on detector tube—replace detector resistor. If tubes fail to light in these models tighten nuts on old power pack connections. Nuts being loose may also result in weak reception with all tubes lit, but with abnormal A.C. hum. In screen grid models and sets with dynamic speakers "cutting off and on" will almost invariably be found to be due to the voice coil leads which break under the tissue on the cone.—Elmer Sutters, Marshalltown, Iowa.

## SOME RECENT RADIO TUBE IMPROVEMENTS

(Continued from page 10)

Obviously impossible to expect the recent advances scored in the radio tube art. However, as the large tube inventories are depleted and the current production becomes generally available, the important developments of the past few months may be enjoyed by everyone.

## SPECIAL NEWS ISSUES

We hope you like these special numbers of The News, such as Police Radio and this Radio Servicing issue. Watch for more special issues. Broadcasting, Aviation and Television numbers are scheduled to appear soon. Many students and graduates have expressed approval of this system. Let's hear from you about it. Address letters to Editor, National Radio News.

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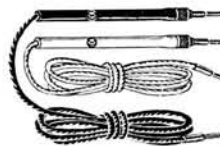
## Handy Service Equipment

The requirements of Radio-Tricians and dealers are ingeniously met in a kit of neutralizing, balancing and aligning tools developed by the Insuline Corp. of America, 78 Cortlandt St., New York City.

These Neutralizing Tools have to recommend them, extreme compactness, broadest utility, and low cost in spite of high quality. The tools telescope, not only for ready portability but also for maximum convenience, the screwdriver fitting inside the duplex socket wrench. The kit comprises: a large and small socket wrench, fully insulated, for making critical adjustments under operating conditions on all standard makes of radio sets; an insulated screwdriver, and a special magnet steel for picking up and placing screws, bolts, nuts, washers, etc. The tools incorporate the finest quality insulating materials and are finished with highly nickel-plated brass nibs.



Neutralizing and aligning tool kit.



Test leads.

Test Leads are a convenience to the Radio-Trician and Radio dealer.

They are especially applicable to the testing and the tracing of trouble in sets, in conjunction with the usual meters. These test leads are made of Insuline tubing, solderless plugs and the best grade of wire. They are supplied with red and black tubing for positive and negative identification. Two types are available, one with tips and the other with spades.

## PURCHASING

(Continued from page 10)

thing similar" which isn't what you want at all. Prompt service is as important as price and quality.

Give full information in all orders to mail order houses. Remember—the fellow who fills your order has hundreds of other orders on his desk. He is going to give preference to those he can handle quickly. Order by catalog number wherever possible. It eliminates doubt.

If, through financial inability to carry a franchise, you are unable to obtain parts for a set, and the parts cannot be secured through the mail order houses with which you deal, endeavor to obtain them from a local dealer. Even if you have to pay the retail price, you will have the advantage of satisfying your customer. Make your profit off of the time you spend on the job, in these cases.

Careful purchasing ties in with practically every phase of the business. While frequently overlooked, it should be given much consideration. If this is done, your purchasing handled with as systematic care as you handle your sales and service, it will reflect to a very interesting degree on your bank account.

## This Month's Cover

Student Louis Giannone, Jr., of Hawthorne, N. J., down to brass tacks on a service job. Student Giannone believes in getting all he can out of his service work. He says "earn as you learn" and cashed in to the tune of \$395 for service work in four months and \$575 from the sale of sets.



The Office Pup says:

You fellows who live near the coast, or any place where there is plenty of water, don't want to overlook the possibilities of selling Radios for motor boats, launches, yachts, etc.

It's a simple matter to install them, the ordinary automobile Radio will serve the purpose, and people who own boats have the money to pay for them.