

## Why I Approve of Training by Correspondence

(Continued from page 13)

And in the majority of cases he is paying his own way out of the money that he earns as he goes along—in a great number of cases the money that he has been shown how to earn by the very same training which he is taking. And I know from experience that a man will be much more sure to get the proper results from his studies if he knows he is paying for it out of his own pocket.

When we stop to consider the enormous amount of money required for the upkeep of our resident schools and colleges—money which must be spent to keep them beautiful—to keep wonderful campuses and athletic grounds in good condition—to pay for classroom facilities for each and every student, it is not hard to understand why the well-chosen correspondence school can give much more education for the dollar expended than schools of the other type.

I think that one of the most valuable conditions which exists in the case of a correspondence school student lies in the fact that

he is not mingling with class mates and he is not close to his teacher. When a problem presents itself that appears a little hard he cannot ask his classmates the answer—he cannot go to his teacher and ask for an immediate solution—just to pass the examination. No, the correspondence school student is many miles from his teacher—and the result is that in nine cases out of ten he will work out the problem for himself—which not only impresses that particular problem more forcibly on his mind, but gives him a priceless characteristic—“Confidence.”

The fact that corporation presidents—men whom we poetically term as “merchant princes” endorse correspondence training should be sufficient proof of its value. I will always look with pride to the fact that my most remunerative education was derived from three great educational institutions, by correspondence, the National Radio Institute of Washington, the Capitol Radio Engineering Institute of the same city and the International Correspondence School of Scranton, Pennsylvania.



**\$1800 “EASY MONEY”    \$1100 PROFIT IN 4 MONTHS**

\$

I want to thank you for that beautiful DIPLOMA I just received from you. When I enrolled, I didn't know the ground from the aerial, but after four months of the training I made all kinds of money. I picked up \$1800 while taking the course, and I call that easy money. To tell you that I am more than satisfied is putting it very mildly. Otis Denton, Cleveland, Ohio.

Article	Page
I Went to Chicago.....	2
Your Alumni Association.....	2
Service Contracts.....	3
A Chat with the N. R. I. Director.....	4
Performance Counts.....	4
Service Data—RCA-Victor Radiolette R-5.....	5-6
Trade Notices.....	7
Eliminating Interference in Auto Receivers.....	8-9
The Chief Gives a Few Words of Advice.....	10
Service Data—Clarion Models 61-70.....	11-12
Why I Approve of Training by Correspondence.....	13
I Accept the Office.....	13
Goes Into Manufacturing Business.....	14
The Mail Bag.....	15
\$1800 Easy Money.....	16
\$1100 Profit in 4 Months.....	16

\$

Since getting my Diploma, which has been about four months ago, I have been doing service work and retailing Radios and supplies. I recently took stock and found my net profit to be eleven hundred dollars. My advice to the young fellow of today that wants to make a success is to enroll with the N. R. I. at once. I consider Radio the coming profession. A. B. Hopkins, Shreveport, Louisiana.



VOL. 4—NO. 2

WASHINGTON, D. C.

SEPTEMBER, 1931



THE NATIONAL RADIO INSTITUTE BUILDING  
Is Also the Executive Office of The N. R. I. Alumni Association

**ALUMNI ASSOCIATION  
NUMBER**

# My Own page



## I Went to the Chicago Show

THE general impression at the Chicago Radio Show is that Radio is due a year of prosperity.

There were exhibits by the old line manufacturers as well as a number of new concerns. Nearly all the companies are bringing out new sets this year and the trend is to Superheterodynes.

There must have been several hundred N. R. I. graduates at the Show. I met a great many of them at the Western Electric Company including Philip Elliott. They employ about 24,000 persons at present. I also met Graduates Finnie, Coon, and Balsamello at the Scott Transformer Company; Mr. Reifenberg and Mr. Reed, field representatives for Atwater Kent; Albert Bombe, with General Electric; Howard Skeele, who is in the Radio business in Toledo; and William West, now Chief Operator for KMOX, a 50-k.w. station, the largest on the Columbia chain.

It was a pleasure to run into Mr. C. E. Brigham, a former N. R. I. instructor, Chief Engineer for Kolster.

Every year the Radio Show gets bigger and better. It pointed out the future trend in Radio development: addition of short wave facilities and television attachments to the new receivers; perfection of automatic signal control for broadcast and television receivers, all of which we may expect to see in practical use before very long.

Efficient methods of merchandising, a more business like system of credits and increasing recognition of the value of the thoroughly trained Radio man serve to stabilize the Radio Industry and make it better year by year.



## Your Alumni Association

IN October, 1929, the National Radio Institute Alumni Association was started at a convention held in Washington, D. C., the first and only Alumni Association of a home study school that we know of. Just as N. R. I. was the pioneer home study school of Radio Instruction, so were its graduates pioneers in this particular type of Association.

From a charter membership of seventy, in one year and a half, the Association membership has grown to over eight hundred. Its members are in all parts of the world.

This growth is remarkable when we consider that up to the present time little active work has been done to secure memberships. Most of the time was used in getting organized and making plans for the future.

The Alumni Association has been directly responsible for securing National Radio News as its official organ and for the increase in size and general improvement of "The News." We, of the Institute, were only too glad to lend our aid to the utmost, as soon as it was proven to us that the Alumni Association was in earnest, was here to stay, and was going to do some real work in living up to the wonderful constitution under which it was organized.

The Association is now ready to enroll new members and will make a determined effort to build up its membership. You graduates who are not yet members, will want to get your names on the rolls right away. The Association officers have plans to offer applications to every student of N. R. I. on the day he graduates. Fight through to that diploma, fellows, its your introduction to the N. R. I. Alumni Association, as well as to the Radio Industry.

J. E. SMITH, President.

# SERVICE CONTRACTS

By GORDON BIRREL

Office Manager and Merchandising Expert



Another special article of interest to all Radio-Tricians, particularly those in business for themselves, in spare or full time, and those who contemplate going in business.—EDITOR.

WE hear of this subject under various names, such as Service Clubs, Radio Clubs, and others. However, they are all essentially the same, with the details worked out to suit the class of customers with whom you deal.

To the firmly established Radio organization, as well as the Radio-Trician just starting to get a foothold, service contracts offer a good means of earning money.

For the larger concern it is a means of keeping old customers on the books, selling them service and holding them for the resale of sets. The smaller company or the individual makes it a system to build up a business, primarily for the service profits.

Every Radio owner is a prospect. Contact them, by a systematic house-to-house canvass or by mail followed up by a personal call within a week. A good letter for this purpose is the one used by Mr. Degener in his article in "The News" for June entitled "Telling the World." Rewrite it if necessary to suit conditions.

In dealing with the prospect it is not wise to refer to "Service Contract." "Contract" has a legal sound which frightens the prospective customer. Call it a "Service Agreement."

No form which could be presented would serve everywhere "The News" will be read. Conditions differ greatly, but the form printed here gives a good general idea what should be covered. If in doubt as to any particular items, ask your banker for advice.

As soon as you have sold a single contract, you are a business man, with responsibilities, which must be carried out. You must make inspections regularly, be courteous and always on the alert to sign up new business to replace that which may be lost by people moving, etc. Be prompt. If you are due at a home on a certain day of the month—be there, and as near a standard time as possible. You sell customers this inspection service as being very important; keep them sold.

Arrange inspection and service calls so that a certain amount of each day is devoted to following up new prospects. And whenever there

(Page 7. please)

### BLANK'S RADIO SERVICE

Phone North 1161      RADIO SERVICE AGREEMENT      Service Hours 8 AM to 9 PM

Received from \_\_\_\_\_  
Address \_\_\_\_\_  
the amount of \_\_\_\_\_ dollars and \_\_\_\_\_ cents,  
which entitles the above person to the following service on a \_\_\_\_\_ Radio, number \_\_\_\_\_ for a period of \_\_\_\_\_ months from the date below.

1. A complete inspection of the equipment, between the \_\_\_\_\_ and \_\_\_\_\_ day of each month, unless otherwise requested by the customer.
2. Any adjustments found necessary on these regular calls which are of a minor nature and do not require more than 30 minutes.
3. Free delivery, and installation at 5% less than list, of any tubes or accessories, the installation of which does not require more than 30 minutes.
4. Discount of 10% from our regular rates for time and 5% discount from list for parts required on service over 30 minutes.
5. Free transportation to and from our shop and the same discounts as in section 4 above, when shop work is necessary.
6. A special price of \$7 for removals\* within the city limits, which removals consist of taking down set and all equipment (including aerial, if any), transportation and installation of same on the new premises.

This service agreement is made in consideration of the payment of the amount specified above and the service to be rendered. It is void when any person, company or corporation other than BLANK'S RADIO SERVICE makes any repairs, adjustments or replacements on the set or equipment.

BLANK'S RADIO SERVICE

Date \_\_\_\_\_ By \_\_\_\_\_

The wording of this blank can be altered to meet local conditions.



## A Chat With the N. R. I. Director

*A thousand words will not leave so deep an impression as one deed. Henrik Ibsen.  
—which means in everyday business language  
“the job well done is your best form of advertising.”*

IT is my earnest belief that the success of Radio-Tricians is in a great measure due to this very principle. Starting in a small way, lots of times with a good knowledge of Radio and determination, they succeed while others fall by the wayside.

For truth of this contention let's glance at the files of N. R. I. To quote student Ralph Garbutt of Barnesborough, Pennsylvania, just getting started in Radio work, “. . . and I have repaired a number of sets that others have given up.”

And there is the case of F. Deede, Carrington, North Dakota, in the July Mail Bag, who is practically putting one of the old-time Radio men (?) out of the running by fixing sets properly which the other fellow passes up.

All too many people, I regret to state, have lost sight of the value of customer advertising. They forget repeat business in their desire to make money quickly. They are blinded by the near dollar. “Do the job—collect and let the

customer hold the bag,” seems to be the motto.

Let the hay-wire Radio men do that kind of work if they wish. Let them forget that their slight technical knowledge must be re-enforced by good business judgment if they are to get any place and in the meantime the Radio-Trician will be establishing a firm foundation in his community as a result of the impression he makes by the jobs well done.

Needless to say that his advertising starts the minute he does a good job and continues to put dollars into his pocket just so long as he does not lose sight of his governing principle—“the job well done is the best form of advertising.”

E. R. HAAS,  
Vice President and Director.

### “PERFORMANCE COUNTS”

'Tis an age of catchy phrases,  
And of mottoes brave and bold;  
But the thing that most amazes,  
Is the untruth some do hold.  
They are even advertising,  
On the azure of God's sky;  
And our view is mutilated,  
By the signs that we pass by.  
But there's one that has a meaning,  
And to very much amounts;  
When you analyze our motto,  
Just the phrase, “Performance Counts.”

Maybe you're the President,  
But probably you're not;  
Only just a manager,  
The business end to plot.  
Perhaps you're selling radios,  
And now that times are slack;  
Cursing Fate, and wondering why  
For you last month was black.  
Take up our little catalogue,  
And there you'll find account;  
Of the secret you are seeking  
In the phrase, “Performance Counts.”

You may be but a janitor,  
Cleaning up the muck;  
Which slipshod, thoughtless workmen,  
In corners dark have stuck.  
It matters not just what you do,  
So you bring to it your best;  
For by that record only,  
Will you pass the final test.  
So, when you seek prosperity,  
In large or small amounts;  
Join forces with the N. R. I.,  
And you'll find, “Performance Counts.”

Submitted by  
WM. DRESSLER,  
Huntington Park, Calif.

# RADIO-TRICIAN SERVICE SHEET

REG. U. S. PAT. OFF.

COMPILED SOLELY FOR STUDENTS & GRADUATES

## RCA VICTOR RADIOLETTE R-5

The RCA Victor Radiolette R-5 is a two-tuned circuit R.F. type Radio receiver. Compact construction together with good sensitivity, selectivity and high output are features of this receiver.

The receiver uses four Radiotrons, two UY-224, one UX-280, and one RCA-247 Power Output Pentode. Referring to Figure 1 and tracing a signal through the various stages we find the following action taking place.

The antenna and ground are connected to each side of a 20,000 ohm potentiometer. The moving contact of the potentiometer is connected to the primary of the first R.F. transformer through a .00013 MFD. condenser, the other side of the transformer being connected to ground. The action of the potentiometer, reducing the voltage applied to the grid of the first R.F. tube, constitutes that of a volume control. The secondary of the R.F. transformer is connected to the grid circuit of the R.F. Radiotron UY-224, which is tuned by one unit of the gang condenser. The plate circuit of this tube works into the primary coil of the 2nd R.F. transformer.

The detector is of the regenerative, grid bias type and its output is coupled by means of resistance coupling to the output Radiotron RCA-247. The regenerative feature of the detector is unusual in that it uses two regeneration coils. One of these resonates at a low frequency and improves the sensitivity at that end, while the other has but few turns and brings up the sensitivity at the high frequency end.

The output stage uses the RCA-247 Output Pentode which gives a high undistorted output—2.5 watts—together with a high gain in the stage.

The grid bias for this tube is obtained by using a portion of the drop across the reproducer field. Due to the fact that the plate current of the RCA-247 represents the greatest portion of the total plate current, using the drop across the

field acts as a semi-self biasing arrangement.

Plate and grid supply to all tubes is supplied through the use of Radiotron UX-280. The filter is of the “brute force” type. The reproducer unit field coil functions as the reactor. One electrolytic 10 MFD. capacitor and one paper 2 MFD. capacitor act as filter capacitors.

### Line-up Capacitor Adjustments

Two adjustable capacitors are provided for aligning the two tune circuits at the high frequency end of the scale. The following procedure may be used for making any readjustments that may be necessary.

A. Procure an oscillator giving a modulated signal at exactly 1400 K.C. Also procure a special socket wrench such as RCA Victor Stock No. 3007.

B. An output indicator is necessary. This may be a current squared thermogalvanometer connected to the secondary of the output transformer in place of the cone coil or other types of output indicators.

C. Turn the station selector until the knob reads exactly 0. Then remove the chassis from the cabinet, being careful not to disturb the setting of the dial. The gang condenser rotor plates should be fully meshed with the stator plates. If not, then the dial drum must be adjusted until such a condition exists. Replace the chassis in the cabinet.

D. Place the oscillator in operation at exactly 1400 K.C. and couple its output to the antenna lead. Set the dial scale at 85 and place the Radiolette in operation. Place a soft pad on the bench and turn the instrument on its side. Now with the special wrench, adjust each line-up capacitor until maximum output is obtained in the output meter. Be careful to adjust the volume control or oscillator output so that an excessive reading is not obtained. Go over each adjustment a second time to compensate for any interlocking of adjustments.

# NATIONAL RADIO NEWS

Volume 4 No. 2 September 1931



Published monthly in the interest of its students and graduates, by the NATIONAL RADIO INSTITUTE, Washington, D. C.  
 J. E. SMITH, President. E. R. HAAS, Director.

## SERVICE CONTRACTS

(Continued from page 3)

is a shortage of service to take care of, devote that time to building up your customer list.

Make your customer list as large as possible—up to the point where you can still give good service, for the larger it gets the more rapidly it will grow. As soon as you find it impossible to do this—get another Radio-Trician to help you. Dealing with so many will enable you to buy your accessories in larger quantities, at a better price which goes into your bank account as profit.

An important class of business is new sets under guarantee. Don't pass these people up and forget about them. Experience has proven that the majority of dealers are more interested in sales than in giving service. You cash in on their mistake.

When you visit a set owner who gets free service from Jones' Radio House, find out all you can about the transaction. If possible see the set, get the date of purchase. By careful inquiry, you can figure out just when this free service period expires.

Copy down the information you obtain on a card and file it away as a valuable business possession. Arrange this file to be under your close observation every day. At the time of the expiration of the free period sell your service contract before someone else beats you to it.

Don't figure too strongly on the payment of the contract price as your chief source of revenue. It is merely an incidental expenditure

(Page 10, please)

# Trade Notices

The trade notices are published only for the information of readers. No responsibility is assumed in passing this information along—and all transactions and correspondence must be with the firms direct.

## RESISTOR REPLACEMENT GUIDE

The International Resistance Company, manufacturers of Metalized Resistors, announces publication of the second edition of their Service Man's Replacement Guide. This manual, in pocket size, can be obtained free of charge on an order for ten resistors, or can be bought for \$1.00. This charge includes additional sheets and service helps issued monthly. A color code chart will be given with every order for a replacement guide. Write International Resistance Company, 2066 Chestnut Street, Philadelphia, Pa., if interested.

## NEW DUBILIER CATALOG

General Catalog No. 120 of the Dubilier Condenser Corporation, 4377 Bronx Boulevard, New York City, is off the press. It covers the Dubilier line of mica and paper condensers for general Radio and electrical purposes. A copy will be supplied any Radio Service man requesting it.

## AJAX AUTO-RADIO

Considerable interest is attached to the announcement of the new 1931 AJAX AUTO-RADIO made by the COMMONWEALTH RADIO MANUFACTURING COMPANY of 847 W. Harrison Street, Chicago. Through the use of "Litz" bank-wound coils this receiver is extremely sensitive. It operates by remote control from control panel mounting on steering post. The six-tube chassis is carefully shielded to eliminate all motor noises and outside interference. It is easy to install and comes complete with all accessories.

## RADIO MAGAZINES

The Universal Subscription Club, 1109 Erie Boulevard, Sandusky, Ohio, state they are able to save N. R. I. men quite a bit on the regular subscription price of the popular Radio Magazines. Address correspondence to Mr. Al. Johnson.

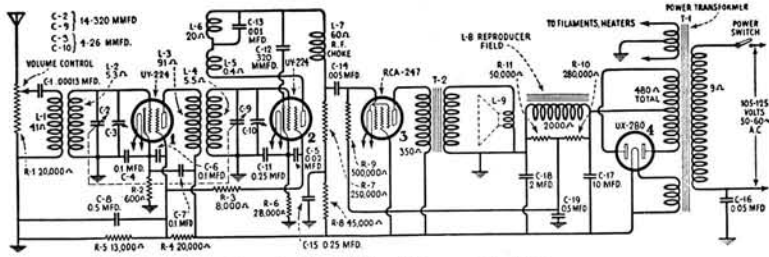


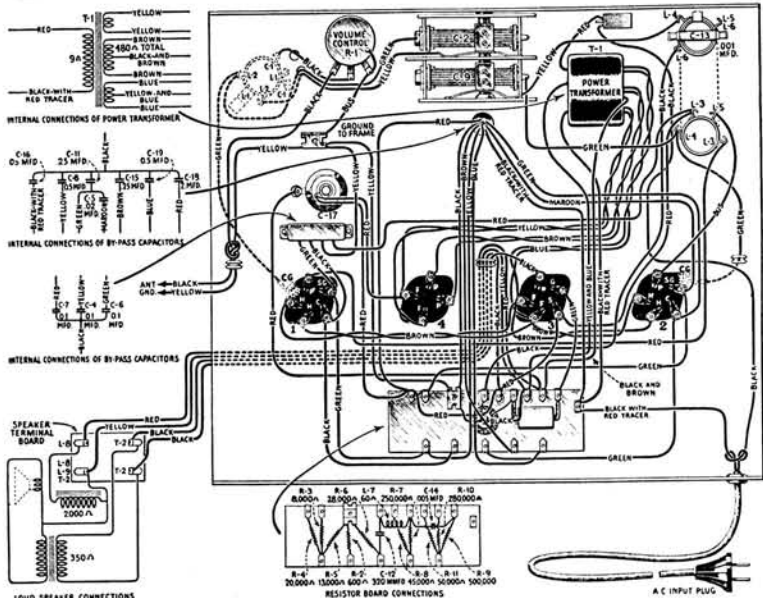
Figure 1—Schematic Circuit Diagram of Model R-5

## SOCKET VOLTAGE READINGS

110-VOLT LINE

These are readings obtained with the usual Set Analyzers and are not true readings of the voltages at which the Radiotrons operate.

Radiotron No.	Heater to Cathode Volts	Cathode or Filament to Control Grid Volts	Cathode or Filament to Screen Grid Volts	Cathode or Filament to Plate Volts	Plate Current M. A.	Heater Volts
1	3.0	3.0	85	225	4.0	2.2
2	7.0	7.0	65	100	0.25	2.2
3	—	2.0	225	215	30.0	2.2





# ELIMINATING INTERFERENCE in AUTOMOBILE RADIOS

By DON B. LOONEY, N. R. I. Consultant

*National Radio News acknowledges with thanks the assistance rendered, in the preparation of this article, by the "Call Car" Automotive Service, Washington, D. C., and Mr. C. W. Headden of the Washington Battery Company, official Philco Transitone Service Station.*

IN order to understand the methods used in eliminating interference in automobile receivers, it is first necessary to understand, in a general way, the causes of the interference. In the first place the ignition system of an automobile is a miniature spark transmitting station. When the ignition system is in operation, the high tension wires which carry high tension current to the spark plugs and the distributor, radiate energy just as the aerial of a transmitting station radiates electric waves.

This energy is induced into the low tension wiring in the automobile and also into any metallic rods or parts situated in the engine compartment, and may in turn be picked up by the radio receiver. These high tension wires and metallic objects are, in most cases, surrounded by the engine hood, radiator, cowl and engine partition which act as a shield surrounding and confining the powerful magnetic fields set up in the engine compartment. In this case the use of standard spark suppressors and condensers will eliminate all the interference, especially if the receiver is placed outside of the engine compartment.

It sometimes happens, however, that the interference will be induced into low tension wires or cables running out of the engine compartment to other parts of the automobile. In this case, the interference may be radiated from the low tension wiring system outside of the engine compartment and picked up by the receiver antenna system. On the other hand, modern automobiles have numerous rods such as heater adjusting rods, choke rods, and oil pipes running through the engine partition. These too may have induced in them interfering currents which eventually may reach the receiver.

It will be seen from this that the most convenient and effective method of preventing any transfer of energy from the motor compartment to the receiver is to separate all the low tension wires of the car as far as possible from the high tension wires of the ignition system. In some automobiles, the manufacturers group

the low tension wires leading to various accessories, such as the horn and windshield wiper within the high tension manifold, thus making an easy and neat installation. This practice will, in all probability, cause trouble if a receiver is placed in an automobile. In such cases if the ordinary methods of eliminating interference as explained in the following paragraphs do not eliminate all the interference, it may be necessary to separate the high tension leads from the low tension wiring as much as possible.

In all ordinary installations, interference originating at the spark plugs can be eliminated by the use of spark suppressors consisting of high resistor units of approximately 20,000 to 30,000 ohms, connected directly to the spark plugs as at A in Figs. 1 and 2. It is also generally necessary to connect a 1 mfd. condenser (C in Fig. 1) in series with the "high" side of the ignition coil to the frame of the car and a resistor (B in Figs. 1 and 2) in the lead from the coil to the distributor head as shown in Fig. 2. A second condenser (D in Fig. 1) of from 1 to 4 mfd. capacity is connected between the generator and the frame of the car. This is the standard method of interference elimination and it will be found successful in practically all cases.

Some radio service men are under the impression that a condenser should be placed across the breaker contacts in the ignition cir-

cuit. While this practice would eliminate practically all interference, in nearly all cases it would interfere with the operation of the automobile, especially at high speeds.

In case unusual interference is encountered, it may be necessary to bond or ground the various rods and wiring which run out of the engine compartment. In case of wiring which does not have a metallic covering, it will be necessary to place the wire in a metal conduit or use shielded wire. The shields of all such wires and also any other metallic rods should be grounded. This is done by soldering a short piece of flexible wire to the rod or shield and grounding it by carefully soldering to the frame of the car. This ground connection should not be over 1½ to 3 inches long as otherwise it will act as a miniature transmitting antenna and radiate an interfering wave

which will be picked up by the receiver. In very obstinate cases, it may be necessary to place these ground connections every 6 or 8 inches along the rod or cable which is radiating the interference. This may probably give the impression that all metallic rods and all shielding should be grounded at several points. This is not always the case as it sometimes happens that too many grounds will do more

harm than good. The proper grounding method can only be determined by experiment.

The Radio-Trician will find that placing the receiver outside of the engine compartment, that is, placing the receiver itself on the side of the cowl next to the driver, will greatly reduce the amount of interference picked up by the set. In fact, it is never advisable to place the receiving set inside the engine compartment if it is possible to place it elsewhere. If it is absolutely necessary to put the receiver on the engine side of the cowl, then it should be placed as far as possible from the high ten-

sion coil and all high tension leads. In some instances, particularly the Model A Ford, it is best to change the location of the coil, placing it as far to one side of the engine compartment as possible, keeping the receiver near the other side of the compartment.

The best type of antenna installation is that type in which the antenna is placed in the top of the automobile. The condenser plate type of antenna is very easy to install but it will not pick up as much energy as the antenna which is placed in the top of the automobile unless the receiver is especially designed for this type of antenna. It also has the disadvantage in that it will pick up slightly more interference. In placing the antenna in the top of the automobile it is best to use a shielded lead-in wire leading from the antenna proper to the receiving set. This shielded wire should not be the ordinary type of shielded lead-in wire used in everyday radio installations. Such lead-in wire as is ordinarily used does not have high enough insulating value and will allow considerable energy to escape, especially if the lead-in comes near any heated portion of the automobile. For this reason, only the best grade of insulated wire is used. Special shielded cable can be obtained or ordinary water-proof insulated wire can be used by placing a shield over it. The shield covering can be taken from the ordinary shielded lead-in wire and should be put over the special lead-in.

The shield must be very securely grounded where it is connected to the antenna and also (Page ten, please)

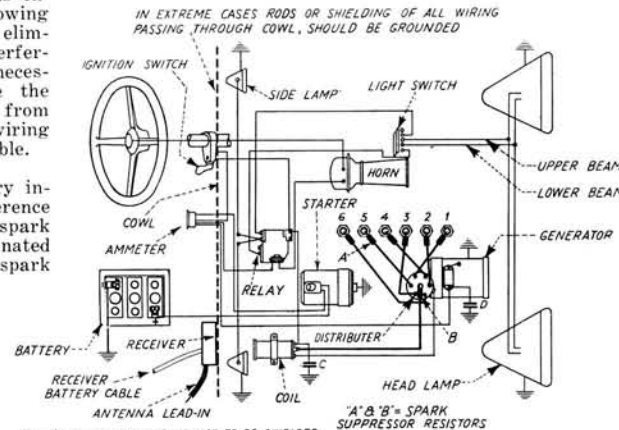


Fig. 1—Illustrating common methods of interference elimination in a standard automobile radio installation.

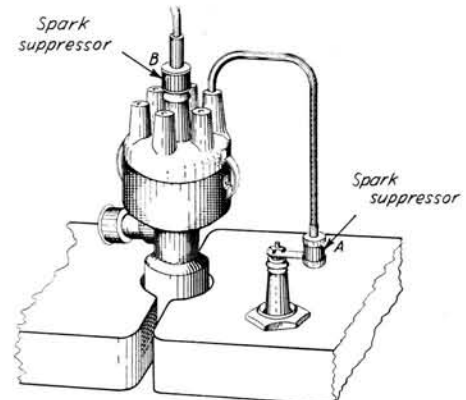


Fig. 2—Showing the use of spark suppressors on the distributor and spark plugs.

## ELIMINATING INTERFERENCE IN AUTOMOBILE RADIOS

(Continued from page 9)

next to the receiver. Care must, of course, be taken to see that the antenna itself is not grounded. The antenna should not come in close proximity to any of the wiring in the automobile and a space of 3 or 4 inches should always be allowed between the antenna and any grounded object or any wires or lights, such as the dome light of the automobile. In extreme cases it may be necessary to shield the battery cable of the receiver and ground it at several places.

It is well for the Radio-Trician to understand that no two automobile installations are alike. An installation may be made in one car without any trouble at all while in the very next installation in the same model of car, very obstinate interference may be encountered.

It is by no means necessary to go to the trouble and expense of carrying out all of the above suggestions for every installation. Any one suggestion may enable the Radio-Trician to eliminate practically all interference while on the other hand it may be necessary to follow out practically all of the ideas just given.

## MORE "RESULTS CONTEST" PRIZE WINNERS

A person in my town bought a high priced radio receiver a short time ago and the dealer installed it and left. Later, I was called in to see if I could correct a terrible hum which was in the set.

I found that the set had been installed directly over the power line meters, and after experimenting for about fifteen minutes, decided that the set should be moved into another room. This I did and there was no further difficulty.

In addition to paying for my time the customer offered me a \$20.00 bill. I could not understand the high pay until he told me that three service men had been working on that set and had given it up as a bad job. It surely pays to KNOW.—Michael Figlar, Delawanna, New Jersey.

Knowledge gained through N. R. I. training enabled me to pass the Government proficiency test for a first class certificate. I base all my advertising on this fact. As a result, and by reason of the good work I do, I get plenty of business to keep me going. All my Radio work is guaranteed or money refunded. I can afford to do this because my N. R. I. training has made me capable.—Herbert Jenkins, Waldeck, Canada.



J. A. DOWIE  
Chief Instructor

## The Chief Gives a Few Words of Advice

The reason a Radio-Trician is of such vital importance to the Radio industry is because he keeps nearly fifteen million radio receiving sets throughout the country performing at peak efficiency.

He is the actual contact man between the industry and the public.

By reason of his knowledge of radio and his experience with different types of receivers, he is accepted by the public as an adviser whose word is taken in confidence and relied upon in any instance.

The public expects a salesman to be biased but they do not look upon the Radio-Trician as a salesman and from him they expect to receive unbiased opinions. Therefore guard this trust zealously. It should be beyond you to recommend anything that you know is not the best. The few cents more profit made on an inferior piece of merchandise should not turn you from giving the consumer a superior article.

## SERVICE CONTRACTS

(Continued from page 7)

which you require of the customer to keep him dealing with you. Your chief source of income will be in the service and parts which are found necessary from time to time. You can reasonably figure to make a profit of 40% on the parts and tubes which you install. But do not overcharge. Remember you must keep your customer.

The price charged may range from \$3 to \$10 a year, depending on conditions and service given. It will not take you long to get the routine of your business worked around to a point where you will find it a simple matter to handle from three hundred to four hundred service contract customers, making two calls a month on each, and still have time to be on the lookout for new business.

# RADIO-TRICIAN SERVICE SHEET

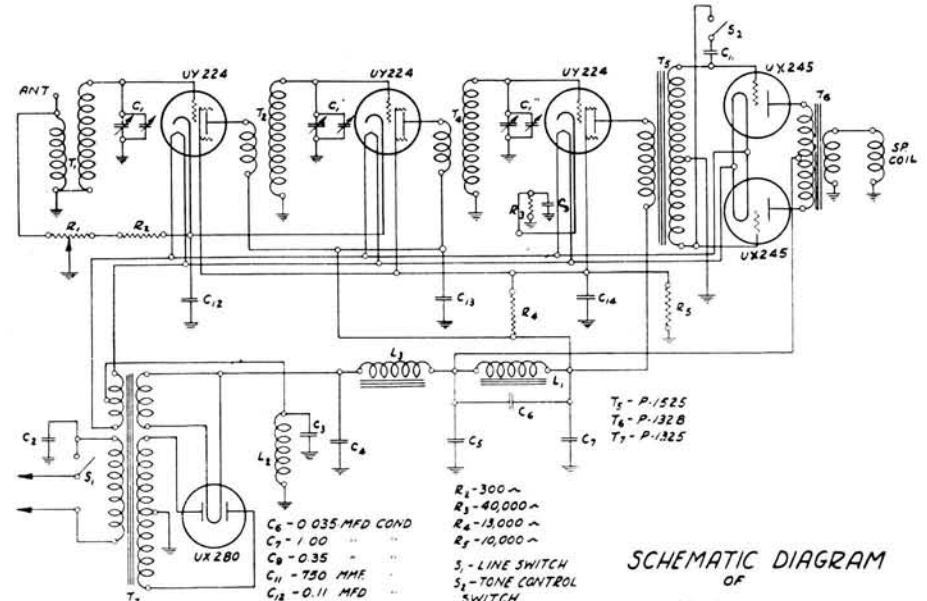
REG. U. S. PAT. OFF.

COMPILED SOLELY FOR STUDENTS & GRADUATES

## Voltage Table of Clarion Model 61—Line Voltage 115 Volts

Position	Tube	Fil. Volts	Plate Volts	Grid Volts	Screen Grid Volts	Cathode Volts	Normal Plate M.A.
1st R.F.	224	2.40	260	3.2	100.0	50.0	4.3
2nd R.F.	224	2.35	260	3.2	100.0	50.0	4.3
Det.	224	2.40	260	8.0	100.0	42.0	0.200
A.F.	245	2.42	290	53.0			34.0
A.F.	245	2.43	290	53.0			34.0
Rect.	280	5.00					

280 Fil. to Gnd.—320 Volts D.C. L1 & L2 Center tap to Gnd.—300 Volts D.C. End of Choke L2 to Gnd. 260 Volts D.C.



### DESIGN DATA

C<sub>1</sub>, C<sub>1</sub>', C<sub>1</sub>' - 410 MMF 3 GANG  
VARIABLE CONDENSER  
C<sub>2</sub> - 0.05 MFD COND  
C<sub>3</sub> - 0.35 " "  
C<sub>4</sub> - 1.50 " "  
C<sub>5</sub> - 1.50 " "

C<sub>6</sub> - 0.035 MFD COND  
C<sub>7</sub> - 1.00 " "  
C<sub>8</sub> - 0.35 " "  
C<sub>9</sub> - 750 MMF " "  
C<sub>10</sub> - 0.11 MFD " "  
C<sub>11</sub> - 0.25 " "  
C<sub>12</sub> - 0.25 " "  
C<sub>13</sub> - 0.25 " "

L<sub>1</sub> - P-1363  
L<sub>2</sub> - SPEAKER FIELD  
L<sub>3</sub> - P-1362  
R<sub>1</sub> - VOL CONT, 12,000 ~

T<sub>5</sub> - P-1525  
T<sub>6</sub> - P-132 B  
T<sub>7</sub> - P-1325

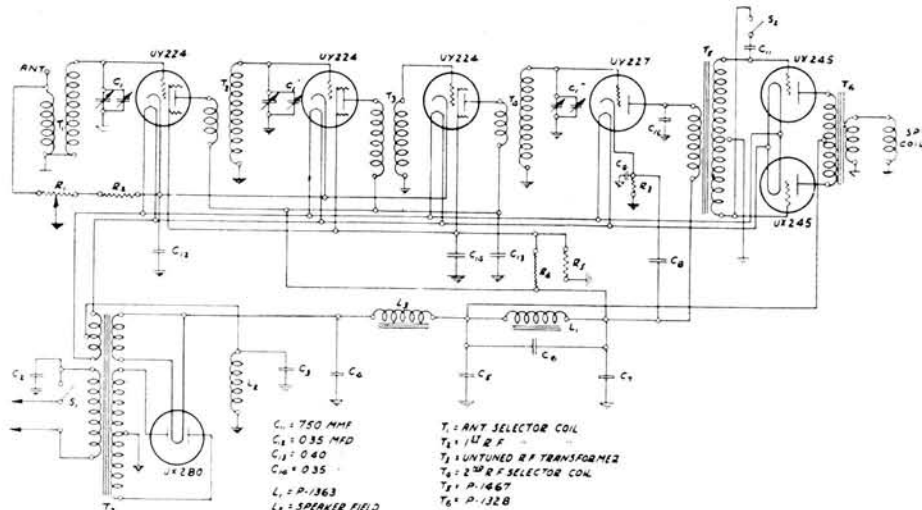
### SCHEMATIC DIAGRAM OF

CLARION  
MODEL-61

## Voltage Table of Clarion Model 70—Line Voltage 115 Volts

Position	Tube	Fil. Volts	Plate Volts	Grid Volts	Screen Grid Volts	Cathode Volts	Normal Plate M.A.
1st R.F.	224	2.37	250	3.0	90	50.0	4.0
2nd R.F.	224	2.30	250	3.0	90	50.0	4.0
3rd R.F.	224	2.30	250	3.0	90	50.0	4.0
Det.	227	2.38	250	20.0		33.0	1.00
A.F.	245	2.42	290	53.0			34.0
A.F.	245	2.43	290	53.0			34.0
Rect.	280	5.00					

280 Fil. to Gnd.—320 Volts D.C. L1 & L2 Center tap to Gnd.—300 Volts D.C. End of Choke L2 to Gnd. 250 Volts D.C.



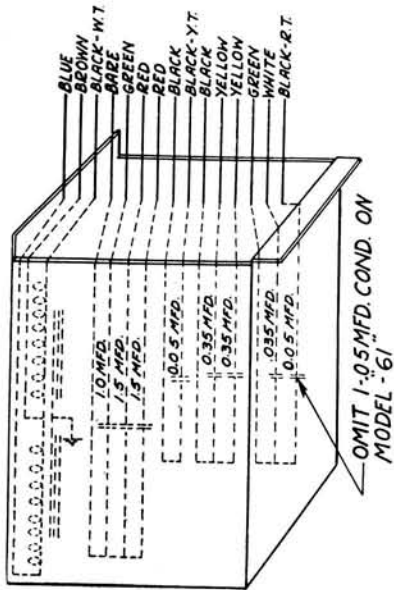
DESIGN DATA

- C<sub>1</sub>-C<sub>10</sub> = 0.10 MFD 35 VOLT VARIABLE CONDENSER
- C<sub>11</sub> = 0.035 MFD
- C<sub>12</sub> = 0.05 MFD
- C<sub>13</sub> = 0.05
- C<sub>14</sub> = 0.35
- C<sub>15</sub> = 1.50
- C<sub>16</sub> = 0.05
- C<sub>17</sub> = 0.35
- C<sub>18</sub> = 0.35
- C<sub>19</sub> = 1.50
- C<sub>20</sub> = 750 MMF
- R<sub>1</sub> = VOL CONT, 12000 Ω
- R<sub>2</sub> = 200 Ω
- R<sub>3</sub> = 20,000 Ω
- R<sub>4</sub> = 15,000 Ω
- R<sub>5</sub> = 10,000 Ω
- L<sub>1</sub> = P-1363
- L<sub>2</sub> = SPEAKER FIELD
- L<sub>3</sub> = P-1362
- S<sub>1</sub> = LINE SWITCH
- S<sub>2</sub> = TONE CONT. SWITCH

- T<sub>1</sub> = ANT SELECTOR COIL
- T<sub>2</sub> = 142 P
- T<sub>3</sub> = UNTUNED RT TRANSFORMER
- T<sub>4</sub> = 2<sup>ND</sup> RF SELECTOR COIL
- T<sub>5</sub> = P-1467
- T<sub>6</sub> = P-1328
- T<sub>7</sub> = P-1325

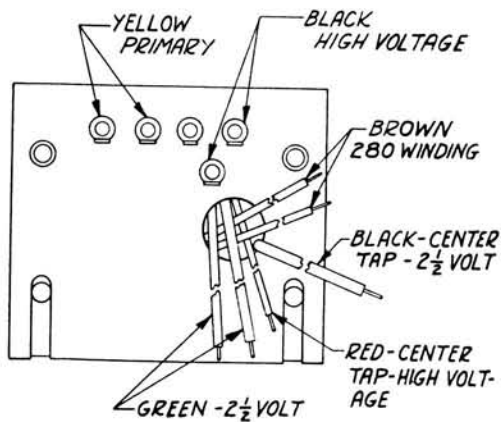
SCHEMATIC DIAGRAM OF

CLARION MODEL 70



60 CYCLE FILTER BLOCK

MODEL "61" & "70"



60 CYCLE POWER TRANSFORMER

# N. R. I. ALUMNI News



## Why I Approve of Training by Correspondence

By M. J. REEFF,  
Radio Engineer  
(Member N. R. I. Alumni Association)

**B**YOND a doubt reputable resident schools do a world of good. They deserve all the credit they have ever been given and more because education is the basic foundation upon which the economic structure of our nation is built.

But what of the great number of men and women who for any of dozens of reasons are unable to go as far as they would like in their education? What of the young people who leave school all too early and after laying definite plans find that they need more education?

They cannot always quit their employment and go back to school. What is left for them to do but to attend one of our great "Universities of the mail?"

In my estimation correspondence instruction is the ideal form. The correspondence school student is not troubled with the many social and athletic activities which play such a prominent part in our resident schools and colleges. He is not laboring through a course of education which some fond parent has laid out for him and for which the same parent is paying. He is studying what he likes—what he has decided upon as his future. He will naturally progress much more rapidly in a line of his own choosing than one selected for him by someone else.

(Page 16, please)

## I ACCEPT the OFFICE



P. J. MURRAY

Mr. Murray, long known to students and graduates of the Institute as Manager of the Employment and Graduate Service Department, has been elected to serve as Corresponding Secretary for the Alumni Association. Mr. Murray will continue his regular duties at the Institute as in the past.—Editor.

**I**T'S the rule, I believe, in cases of this kind, to make a speech. Put yourself at ease—I'm going to break that rule.

I'm not going to make a speech and I'm not going to preach a sermon.

You fellows have shown a confidence in me in electing me Corresponding Secretary of the N. R. I. Alumni Association, which I greatly appreciate.

Since the organization of this Association, in October, 1929, I have been greatly interested in its progress. At the convention, when the Association was started, I was elected an honorary member, and I've tried to lend a helping hand. I guess I know the details of the Association sufficiently well to be of assistance.

My regular work as Employment Manager at N. R. I. keeps me pretty busy—but if I can't find time to take care of everything during office hours, I'll gladly devote a few hours each evening to the work of the Association.

Why?

Because I think the N. R. I. Alumni Association is one of the greatest plans you fellows ever started. It has all the earmarks of being a big help to its members and whatever helps

(Next page, please)

## I ACCEPT THE OFFICE

(Continued from page 13)

an N. R. I. graduate is "top notch" with me.

I have seen the plans for the next year for the Association. I want every N. R. I. graduate to back his Association by joining and keeping up his membership. I want every student to apply for membership immediately upon graduation. Be proud to carry a membership card in the world's first Alumni Association of a home-study school.

The first year of the Association was primarily devoted to organization, but now we're ready to sail—we're ready to do things for the benefit of each and every member. Let's put it over with a bang. If you fellows stick with me, I'll do my darndest.

## REPLYING TO "THE COMPLAINT"

I believe our Washington Friend is just a bit selfish. Continue the "MAILBAG." The only criticism I have to make is there is not enough of "How They Do It" as it is always very interesting to know how the other fellow has worked out some service problem and passed it on.

Here is a little problem that came up with a Crosley using type 45 tubes. The set would work fine for something like an hour and then get very noisy and power transformer get smoking hot. This was overcome by replacing the type 45 tubes, these tubes after heating up would short out and when placed in tube checker showed no emission.—I. M. Davidson, Petersburg, Tenn.

## The Office Pup says:

THINK IT OVER—THEN  
PUT IT OVER!



Fall and winter are right ahead of us. They bring the best Radio Season. Prosperity is returning for the fellow who'll go after the business. Sets will need reconditioning—there will be a lot of them traded in for new ones. Get after it now if you want some of these profits.



JOHN WICKERY

Goes Into  
Manufacturing  
Business

"A merited praise withheld is a wrong done," writes Graduate John B. Wickery of Ulster, N. Y.

So he proceeded to give us the story of his Radio career—an inspiration for young men and men who don't give up despite middle age. On November 12, 1928, John Wickery, without any knowledge of Radio, signed an enrollment blank with N. R. I.

Invincible determination plus conscientious study are characteristics with friend John. He mastered his course—made good grades—but above all, he made definite plans for his future. No hit or miss methods for Wickery.

Having plenty of time for study it is not surprising that he completed his training in March of 1929. This in his case would be equivalent to about a year or slightly more—to the average "spare time study student." This proves thoroughness in his case—he did not skimp lessons and hurry. Complete mastery of the course was part of his program.

His course completed, his diploma earned, Graduate Wickery began the second lap of his plan—that of building and marketing a "better grade" Radio receiving set. He calls it "The Manhattan"—we didn't ask why but maybe it's because Manhattan is part of what New Yorkers term "The world's greatest city." And don't forget, John is a New Yorker. We've seen the set—which is a beautiful job and worthy of praise.

The Manhattan Engineering Company is the result of this graduate's plans. It is not a large organization—because John intends to keep it small, but it does a good business. He does all his own servicing and employs a Sales Manager for distribution. He does not sell through dealers or jobbers, feeling that the "Direct to User Plan" gives Quality and Service at a fair price and reasonable profit.

Wickery cleared \$10,000 on his past year's business. Not a bad profit. Congratulations, John.

The meeting  
place for  
Radio-Tricians"Tell it  
in  
The Mailbag"

## SPARE TIRES NEXT?

□□□□ Reading in the June "News" "Look Out Fords," by Mr. Krupka, prompts me to tell the fellows while they are after Ford Coils to get the vibrating horn also. For the coil of the old vibrating horn makes a good static reducer. Connect one side to the aerial lead-in and ground the other terminal.—E. M. Duffin, Fort Smith, Ark.



## O'GRADY SAYS—

□□□□ I've made \$600 in spare time, aside from my regular service job. My success as a service man was directly due to the N. R. I., as you obtained the job for me in the first place. The success I've made is due to your training.—John C. O'Grady, Frankfort, N. Y.

## MAKES GOOD IN SMALL TOWN

□□□□ When I started the course I was out of work. There was no work to be had around here. You soon showed me a way. I had only completed a few lessons when I was able to go out and do service work. From that time it gradually increased. I soon quit wondering how my family was going to pull through.

Looking up my books, I have a clear profit of \$599.35 while training; that is, after I had paid for my course, bought my tools and equipment, a stock of tubes and accessories, and two second hand receivers to lend out, when I bring others in for repair.

This alone, I think, shows the wonderful training I have received from N. R. I. Wainwright is a very small country town. There are three dealers in Radio, who do their own servicing. It proves that I had my share of the work.—G. Morley, Wainwright, Canada.

## HERE'S A TIP

□□□□ Upon being called to a house to service a set the other evening, I was confronted with a complaint that every time anyone walked across the floor the set would fade out and come back again as soon as they stopped or went into another room.

After a thorough test and search I found by accident that a water pipe was rubbing against a brick wall. This pipe was clamped to the cellar ceiling and when anyone stood on the floor above this wall it would cause the set to fade completely out.

This might help some other student so thought I would pass it along.

By the way, I stopped this by chipping away the brick around the pipe.—P. Joseph White.

## THANKS, SEIPMANN

□□□□ When I receive my monthly copy of "National Radio News" the first thing that I do is to see what the "Mailbag" has in store for me. It always has many good ideas and therefore in turn I am going to pass one on that some of the servicemen may have overlooked in one of the late Radio periodicals. It is an idea for soldering in close places where a soldering iron cannot be used. The only parts that are necessary are three small battery clips, two lengths of wire (length to be decided by the individual) and a small carbon rod from a flashlight battery. This should be tapered off to a point at one end. On the other end one of the wires should be taped. The tape also forms a good handle. The clip on the other end of this wire is connected to one terminal of the storage battery, to the other terminal is connected one clip from the other wire. When ready to solder, the clip not in use should be clipped near place of connection and the carbon rod placed on place of connection. After it has rested there for a short time the solder may be applied and the result is a lot of worry off your mind and a good connection.—Hubert E. Seipmann, Iowa City, Iowa.

## McGREW WANTS TO CORRESPOND

□□□□ Before I enrolled for your course I absolutely did not know anything about a Radio, I didn't know a condenser from a rheostat, but since I enrolled I've certainly got my share of repair work. I am sound motion picture operator at the War Department Theatre here at Camp Knox, and I certainly give N. R. I. the credit for getting the job.

I just can't see how N. R. I. can put out a course in radio for \$97.50.

If any students or graduates care to drop me a line, you'll find me right here at Company "B," 11th Inf., Camp Knox, Ky., or if there's any students and graduates here in Kentucky that would like to give me a call—my phone number is 135, and call for the address given above, and I'll certainly appreciate the call.—Estill T. McGrew, Camp Knox, Ky.

PART OF HIS SPARE  
TIME

□□□□ Why shouldn't I have a good word for N. R. I.? I've made about \$200 in my spare time at Radio work. Could have made MUCH MORE but I only used PART OF MY SPARE TIME.—Gilbert Austin, Hartford, Conn.



□□□□ Few men have strength to honor a friend's success without envy.—Aeschylus.