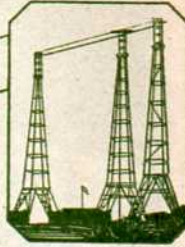


NATIONAL

RADIO

NEWS



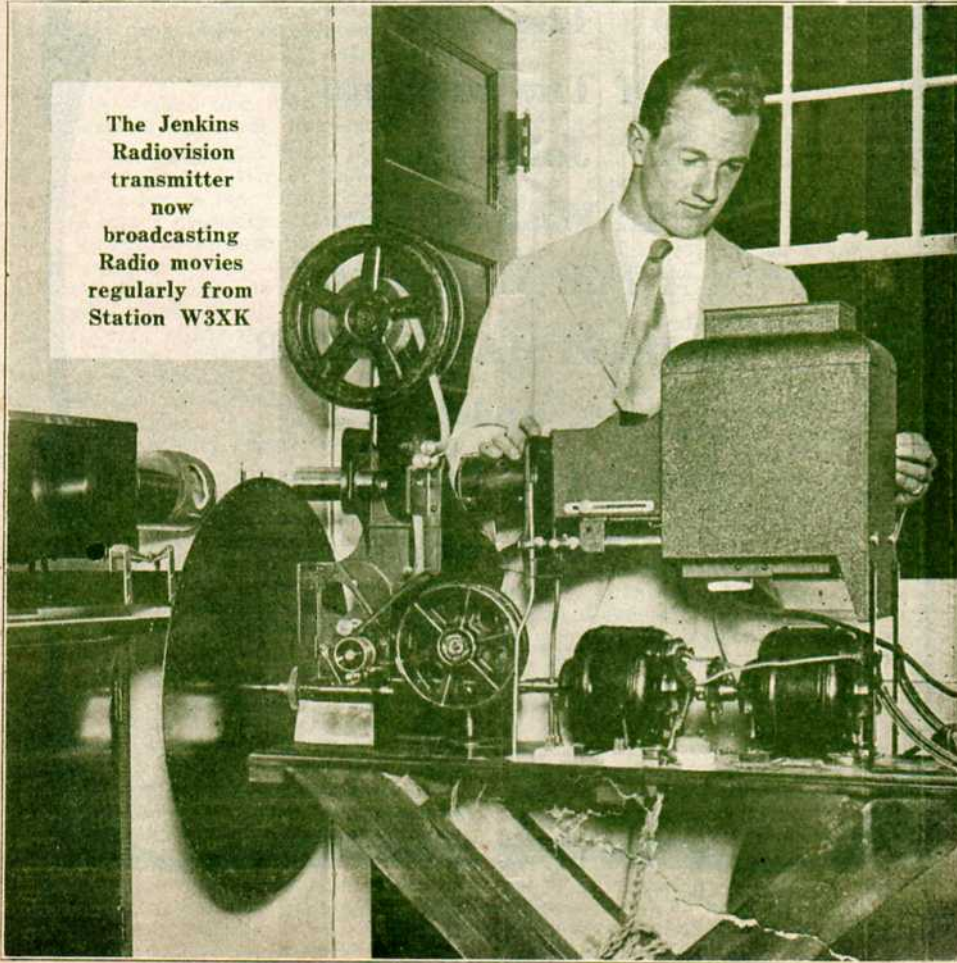
FROM N.R.I. TRAINING HEADQUARTERS

Vol. 2—No. 5

WASHINGTON, D. C.

DECEMBER, 1929

The Jenkins
Radiovision
transmitter
now
broadcasting
Radio movies
regularly from
Station W3XK





Christmas Greeting

The Staff
Of The Institute
Joins Me
In Wishing You
A Full Measure Of
CHRISTMAS CHEER
And A
Bountiful, Prosperous
NEW YEAR

J. E. Smith

Vice President Curtis Lauds Radio's Progress

*Speaks at Opening of
Washington Radio Show*



IT WAS less than 10 years ago that Radio was first introduced to the public of the United States. Most of you remember the early days of broadcasting; the limited and unsatisfactory entertainment; the crude, home-made sets.

What a change has taken place. We have seen the evolution of Radio from a novelty, a toy, a fad, into a luxury, and thence into a necessity of our daily life; it is an epic of modern business growth. As I stand here tonight, in the midst of a show displaying the latest perfection in Radio receiving sets I marvel at the development of the radio industry. Even in the United States, where we are becoming accustomed to rapid industrial growth and advancement this progress is breath-taking. And yet Radio is still in its infancy with greater developments still to come.

We are hearing much these days to the effect that modern inventions are destroying American home life. This is not true of Radio. It holds a unique place in that it is returning us to our firesides, bringing to the home the best in entertainment and educational information.

In radio broadcasting's first few years of existence, entertainment was paramount. While I believe that entertainment always will be paramount in Radio programs, yet I also believe that Radio is an indispensable medium for disseminating timely information and a means of instruction on topics of general interest.

Because the Radio penetrates to hearth and home, it is the most personal medium of public communication of which I know. It has tremendous possibilities for good.

I am very glad to say that the great broadcasting companies of today have kept it on a high level; have kept it clean; have kept it worthy of our great Nation.

Radio knows no distance. For it State lines are meaningless; borders between nations no longer exist; the seas no longer separate continents. Radio is bringing the people of our great Nation closer to each other; promoting better understanding between the people of the United States and foreign nations.

We marveled at the first national hook-ups for Radio programs, and now international broadcasting is not far distant—in fact, it has been accomplished. In the recent speech of Great Britain's prime minister, James Ramsay MacDonald, we had an excellent example. This envoy of peace and good will spoke to you over the Radio the other night and his voice was broadcast not only throughout this nation, but throughout the world.

The possibilities of international broadcasting, the interchange of Radio programs between America, England, France, Germany, and other countries of the world is established; its full benefits will be felt in the not far distant future. It will help us realize that when we speak of the other nations of the world, we are really speaking of individuals much like ourselves. I am looking forward to the day of the international program, for I know that when that time comes a new era will dawn.

Radio has played an important part in our life for the past 10 years; it will play a still greater part in the days to come—this is demonstrated in the latest products of manufacturers as shown on display in this room.

HINTS ON LEARNING

By GRADUATE VICTOR L. OSGOOD



IT IS probably more customary to entitle such an article as this, "Hints on Studying," but it is my wish to differentiate between the two in this case and offer

a few suggestions to NRI students that I have found very helpful in my advancement of Radio knowledge. Studying without learning that which is studied is quite easy; studying and learning at the same time is a little more difficult; but learning without studying is a long and tedious process and it is doubtful if anyone, except a genius, could even keep up with the advance of the art by learning in this way.

The N. R. I. offers the best of advice on how to study the course and having completed it myself, I am in a position to say that it is entirely comprehensive enough to fit anyone, who will LEARN it, for a good position with one of the numerous radio companies in the country.

To study, memorize and be taught is not nearly as satisfactory a method of fixing facts in the mind as that of conceiving and visualizing the why and wherefore of a statement of fact or formula. Take for granted the truth of a statement made by one who KNOWS, but don't be satisfied until you have seen, in your mind's eye, why it is true. As a simple example, Ohm's law says, in effect, that the current through a resistance varies directly with the voltage across the resistance when the resistance remains constant. No doubt about it, but if you will think over to yourself, when you read that

Graduate Osgood has written a number of interesting technical articles for the New York Sun Radio Section and other publications. He has gladly written this article specially for the "News." Read it—it contains some worthwhile information from a fellow N. R. I. man. J. E. SMITH.

$$I = \frac{E}{R}$$

that the current is the result of the voltage and SHOULD, therefore, increase or decrease in value with an increase or decrease in the voltage value (a case of "cause and effect") then the formula ceases to be only a mathematical way of stating a fact, and becomes a logical statement of common sense.

The process by which I have found electrical terms to be very understandable is to think of them in terms of their mechanical equivalents; because each one HAS its physical analogy, and these physical analogies are all familiar to us in our everyday life. They are listed below:

- | | |
|-----------------|----------------------------|
| Electrical. | Physical. |
| Voltage..... | Pressure, or force. |
| Current..... | Velocity, or speed |
| Resistance..... | Friction |
| Inductance..... | Mass, or weight. |
| Capacity..... | Compliance, or flexibility |

Weight is not really mass, though they have the same ratio to each other for all objects on the surface of the earth. But an article weighing five pounds, more or less, on Mars, yet the mass would be the same on either planet. That is, at a given rate of speed it would strike the same blow, when stopped suddenly, on Mars or on the earth. But we are not going to Mars and so we may consider inductance as being the equivalent of the more familiar term, weight.

We have a one hundred pound object on the floor and we exert a force against it to slide it along. If that force remains constant and the friction with the floor remains constant, then the speed of the object will also be constant.

But if we double (or triple) the force, the friction still remaining constant, we will double (or triple) the speed. On the other hand, doubling the frictional resistance would cut the speed to one-half under a constant pushing force.

This is Ohm's law illustrated mechanically and in a way with which most anyone is familiar. Substituting the electrical equivalents will readily show you why the law applies to electrical circuits.

Imagine a weightless steel bar mounted in such a manner that one end is rigid while the other end may be moved by flexing the steel. Here we have a capacity which offers infinite reactance to a constant motion in one direction (considering the spring to be unbreakable). It moves through a short distance and

(Continued on page 15)

National Radio News

Published monthly in the interest of N. R. I. students and graduates, by the NATIONAL RADIO INSTITUTE

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

J. E. SMITH, Publisher. E. R. HAAS, Editor.

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Washington, D. C. December, 1929



E. R. HAAS

THIS—the Christmas Season—is one of the happiest times of the year for us here at the Institute. Mr. Smith, "Chief" Dowie and I get together and check back over the accomplishments of the year, look over the records of students and graduates, the jobs you are holding down, the step by step progress you are making, and the opportunities right ahead of students just starting in the course.

Year in and year out we have seen men come into our student body, study hard, master Radio and graduate into promising positions in a new, fascinating field. Before us there is a sort of parade of men from the ranks of the unskilled, the lowly paid and untrained on to the field of Radio opportunity equipped with the weapon of specialized training ready for a Radio career!

Now, isn't that enough to fill one with joy? Nothing gives more satisfaction than being able to help others achieve big things—to live richer, more successful lives.

To those of you who have not yet graduated we are looking ahead with you to the time when you will be full-fledged Radio-Tricians. There are better times ahead for you. There are times ahead when an hour's study now may mean hundreds of dollars to you! There are times ahead when you will be called upon to make important decisions, solve problems and do other high-grade professional work. So let me urge you to



Drawn for the "News" by Student Allen of Wayzata, Minn.

carry on in the traditional N. R. I. spirit. Master your work step by step, carefully, thoroughly, so that during the coming year you, too, may take advantage of Radio's big opportunities! E. R. HAAS.

"The great need at the present time is for men who are really trained and who will think."—Thomas A. Edison.

Every man is knocked down at least once—it is the getting up that counts.

To earn more, learn more.

IMPORTANT

When you write in for Consultation Service we want to give you a quick, accurate reply. You can help us serve you better by stating your problem clearly and fully. For instance, if you want to know something about a certain set or want some advice on repairing a certain circuit—be sure to tell us the name of the set, the model, the number and type of tubes used, etc. We have to know those essential facts before we can give you accurate, rapid Consultation Service. J. A. DOWIE.

MORE THAN 67,000,000 copies of newspapers in the month of September, 1929, alone, carried publicly on Radio-Tricians and the N.R.I. A dozen or so clippings are shown below. Notice the headlines. Notice how the editors "play up" the N. R. I. and the service its graduates are rendering. All this publicity means big value to N. R. I. men. It means that the public is learning more about the N. R. I. and the type of ambitious men it trains. There's no other training organization in the world that we know of that is giving its graduates such valuable publicity backing. Tell the people in your community that you are a Radio-Trician—a member of the N. R. I. organization that's getting so much newspaper attention. Cash in on all this good will!

—EDITOR.

12 MONTHS AHEAD
Salesmen look forward to the month of October, November, and December. These three months are the best of the year for the National Radio Institute of Washington, D. C.

Government Interest in Radio Grows as Federal Jobs Development
Aircraft Expected Soon Be Required for Carry Radio Equipment

SERVICE MAN IS BIG SALES AID
Radio simplicity of operation has brought radio intricacy as regards servicing.

WORLD MARKET PUT AT 200,000,000
The saturation of the world market for radio sets is being estimated at 200,000,000 by the National Radio Institute.

35,000 RADIO SETS PER DAY, COUNTRY'S OUTPUT
Thirty-five thousand radio sets per day is the estimated output of this country's radio factories for September, October, and November.

TELEVISION SERVICE TO APPEAR SOON
The unexpected and steadily increasing demand for radio trained men by marine and air radio, broadcasting, production, merchant and serving organizations, has caused the demand to exceed supply.

REMOVAL OF REMOTE TUNING IS PREDICTED BY SMITH
According to J. E. Smith, president of the National Radio Institute in Pittsburgh, Pa.

MONEY THAT RADIO BEACON AIDS GROWTH OF AIRCRAFT
Radio Institute President

IS FIRST IN RADIO OWNERSHIP
Recent press dispatches with leading the matter of radio sets with 412,115 sets to be produced in 1929.

AS JOBS PERTS AND

TO APPEAR SOON

TO APPEAR SOON

Skilled Service Men Demand for Radio Work
Paradoxical as it may seem, the simplicity of operation of a vacuum-tube radio set has been followed by corresponding developments in the mechanical layout of the National Radio Institute, Washington, D. C.

RADIO TRAINED MEN IN BIG DEMAND, SAYS INSTITUTE PRESIDENT
The unexpected and steadily increasing demand for radio trained men by marine and air radio, broadcasting, production, merchant and serving organizations, has caused the demand to exceed supply.

Marine, Air Service Draw Students; More Needed in Future
The unexpected and steadily increasing demand for radio trained men by marine and air radio, broadcasting, production, merchant and serving organizations, has caused the demand to exceed supply.

Telephone Service to Ocean Stations More
The unexpected and steadily increasing demand for radio trained men by marine and air radio, broadcasting, production, merchant and serving organizations, has caused the demand to exceed supply.

Radio in Need of Well-trained Men
Three times as many requests for trained radio men were received by the employment department of the National Radio Institute in the first six months of 1929, as were received in a corresponding period in 1928.

Radio Beacon Aids Growth of Aircraft
Radio Institute President

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Radio-Trician's Service Manual

on the Earl Receivers, Models 21, 22, 31, 32 and 41

The Earl receivers, Models 21 and 22, use a neutrodyne circuit having three '26 type tubes as Radio frequency amplifiers, one '27 type tube as a detector, one '27 tube as the first audio amplifier and two '71 type tubes as a push-pull amplifier. The schematic diagram of these receivers is shown in Figure 1.

Models 31 and 32 are also neutrodyne type of receivers using three '27 type tubes as radio frequency amplifiers, one '27 tube as a detector, one '27 as the first audio frequency amplifier, and two '45 type tubes in a push-pull amplifier. The schematic diagram is shown in Figure 2.

Model 41 is practically the same as Models 31 and 32, with the following exceptions: Model 41 has an additional stage of R. F. amplification using a '27 tube. In Models 31 and 32 the neutralizing condensers are connected from the grid to a tap on the secondary winding of the next R. F. transformer. In Model 41 the neutralizing condensers are connected from the grid to a special neutralizing coil connected to the plate coil of the same tube.

The power supply of Model 41 is the same as the power supply used in Models 31 and 32.

Removing Chassis From Cabinet

- Remove aerial and ground connections.
- Disconnect the attachment cord from house lighting socket.
- Break the A.C. connection to the speaker by removing friction tape and unsoldering leads. (Note: This step is eliminated when inductor dynamic speaker is used.)
- Disconnect speaker leads from chassis.
- Dismount switch from cabinet.
- Remove tuning and volume control knobs.
- Remove bolts holding chassis to cabinet.
- Chassis may then be removed through rear of cabinet.

When placing chassis in cabinet, care should be taken to see that the tuning

and volume control shafts are properly centered.

Special Service Notes

In testing the continuity of the circuits the ordinary B battery and high resistance voltmeter method may be used. Careful study of the schematic diagram will enable the Radio-Trician to determine the approximate voltage reading that should be obtained when making such tests.

Such continuity tests, however, will not always reveal the source of trouble. The information contained in the following paragraphs will cover practically all cases of trouble encountered in servicing these receivers.

Incorrect Voltages

Low Filament Voltages—

- Defective power transformer.
- Poorly soldered connections in filament circuit.
- Grounded filament circuit.
- Defective tube or tubes.

High Plate Voltages—

Open 15000 ohm resistor or open connection between detector tap and ground.

Low Plate Voltages—

- Defective rectifying tube.
- Defective power transformer.
- High resistance leak in plate circuit or power supply.

No Detector Plate Voltage; All Other Plate Voltages Low—

Short-circuited wiring in detector plate circuit.

No Detector Plate Voltage; All Other Plate Voltages High—

Open 25000 ohm resistance.

No R.F. and Detector Plate Voltages; All Other Plate Voltages Low—

Short in radio frequency plate circuit.

No R.F. and Detector Plate Voltages; All Other Plate Voltages High—

Open 4000 or 5000 ohm resistance.

Set Will Not Neutralize—

- Open by-pass condenser in R.F. plate circuit.

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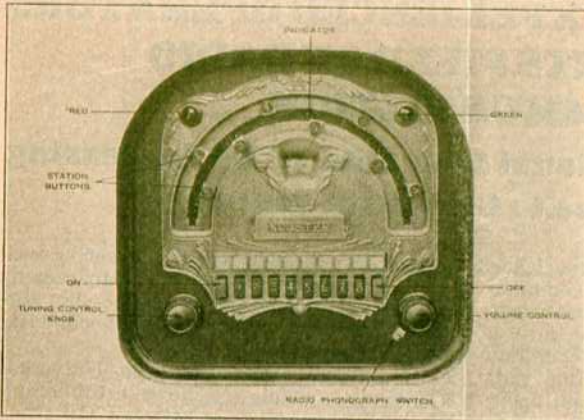
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Automatic Control on side of Kolster K-45

Remote

Remote control is gaining in popular favor. Keep awake to its opportunities. You'll like the "Chief's" article. Read it. J. E. S.



room, or other convenient locations in the home, it can be accomplished by the use of a small and compact remote control unit, scarcely larger than a man's hand. This contains all the miscellaneous equipment for actual remote control.

Power, Station, and Local Control

It is first necessary to apply power to the receiving set, and this is accomplished by pressing a small button on the control box marked "Start." Power is thus automatically applied, all the vacuum tubes in the receiver are lighted and the set is ready for operation. To show that the set is ready for reception of programs, a small red jewel is illuminated on the control box and another one is indicated at the set.

A choice of stations is next desirable, and the selection of eight different buttons for control is available between the minimum and maximum wavelength ranges. Selection is obtained by pressing a button marked with the call letters of the station desired, and almost immediately the receiver is responsive to that wavelength. In other words, during this short interval, the radio receiver has been automatically and exactly tuned to the selected station, and the receiver is now responsive to volume control, either at the set or from the remote control unit, by turning a small knob just as it is done on other sets.

Operation is not limited to the remote

Control of a Receiving Set

By J. A. DOWIE, Chief Instructor

point, for all controls are also available at the receiving set where complete manipulation of the receiver is conveniently arranged.

In the side of the cabinet, out of sight in a recess, a control panel is easily accessible, on which are mounted the necessary lever buttons, knobs, and indicating lamps for the proper and complete operation at the local point.

In order to operate the radio set from the local position, a similar procedure is followed as at the remote point. The two operations can be performed independently, that is, manipulation of the set at the remote point is not dependent upon any adjustments being left in the proper position at the local point.

Pushing a momentary "start" button at the local places power on the receiver, illuminates a red indicating light on the panel, and lights a corresponding red jewel at the remote control box.

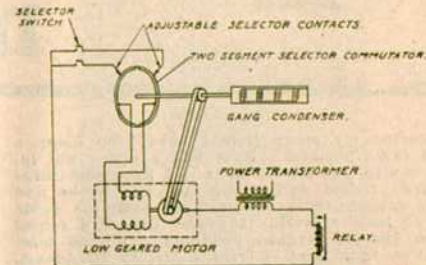
Selections of stations are similarly controlled by pressing a button marked with the call letters of the desired station, and waiting a few seconds for condensers to revolve and tune in the station. In addition to the automatic selection obtainable by the use of the eight buttons, a manual control is provided

on the panel which can be stopped at any point. That is, by turning a knob, complete and select tuning is obtained throughout the entire kilocycle range. A marked scale is provided etched with numbers and kilocycle readings.

The use of a "stop" button automatically disconnects the power from the receiver, and the red indicating lamps go out.

Technical Description of Remote Control

The selection of stations is obtained by the proper setting of brush contact buttons on the control panel in the receiver.



Fundamental diagram of Automatic Tuning Method of Kolster K-45 Receiver.

If, for example, a certain broadcasting station is desired, the receiver is tuned to that station by turning the manual control knob on the panel. Then, all that is necessary is to set one of the brush contact buttons on an insulating segment located on a moving drum. Thus, the setting of the stations is a simple adjustment.

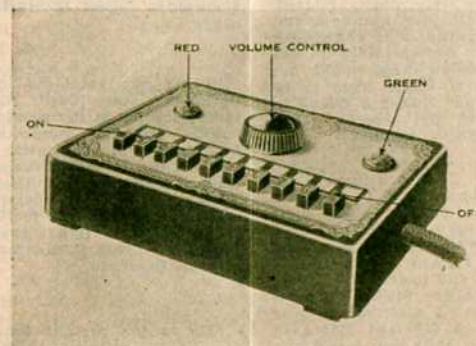
Construction

The construction of the automatic tuning unit is comprised principally of a low-g geared reversible motor, one double-pole locking relay, one double-pole double-throw locking relay, one double-pole momentary relay and a solenoid motor clutch.

The driving motor, when a selector button is depressed, is automatically and mechanically connected to the gang condenser and to a commutator drum with two insulated segments. The variable selector adjusts making contact on the revolving commutator complete the selec-

tor circuit through this device which controls the period end direction of the motor operation. The variable selector contact positions, which are in series with the selector buttons, are adjusted on the commutator so as to reach the insulator sector and thus open the motor driving

(Continued on page 16)



Remote Control Unit

The STUDENTS mailbag

"During my spare time I have been doing a good radio business. Have had a phone put in, and a sign put on my house. I have sold three Sparton radios during the last two weeks and have enough radio prospects to keep me going for at least a week. I expect to sell a school seven Sparton Radios, including a \$795.00 combination radio and victrola."—Mr. E. M. Adams, 5620 Plymouth Rd., Hamilton, Baltimore, Md.

"I know you will be glad to hear that I have secured a job with Thos. Goggon and Brother, Houston, Texas. They have eight of the most popular Radios on the market to offer the public. Your N.R.I. course helped me get the job, too."—Mr. Lannie B. Fruge, R. F. D. No. 1, Box 543, c/o N. R. Phillips, Port Arthur, Texas.

"I would not part with my course for \$100,000 and I tore up the Money-Back Agreement that you sent me. I've been so busy servicing sets around this district, that I've not had an hour to call my own for the last two and a half months since I came out here to Wyoming."—Mr. Frank Kleindienst, Box No. 129, Superior, Wyo.

"Well, Mr. Dowie, I never was lucky enough to have a brother, but you really seem that near to me. You are taking so much interest in me that it seems as though we were closely related. I certainly do appreciate all your kindness and as far as the N. R. L.'s guarantee is concerned, I've destroyed it long ago. You certainly do not need any guarantee. A fellow who would not be pleased with your service would have to be a professional CRANK. I am always a friend to Mr. Dowie, Mr. Smith and Mr. Murray."—Mr. George F. Dearing, West Fork, Arkansas.

"Just a line to let you know that I'm getting along just fine. I've rented a nice place right in the heart of town. I have a nice room where I display all models of Atwater-Kent Radio sets. In the rear of this room I have a large workbench with different testers and tools. My income for the month of September was \$490.00 on sales and \$120.00 on repair jobs. I distributed those cards which you sent me in different places in town and I advertise in one daily paper and one weekly paper, also advertise over radio station KDLR every day. In that way I get all the work that I can take care of at present."—John D. Fandrich, 829 4th Ave., Devils Lake, N. Dak.

"Man is never too old to learn. I am nearly 44 years old, and knew absolutely nothing about the fundamentals of Radio, until I started your course, and after finishing 23 lessons I have built a Radio complete, that operates O.K., and repaired nearly every Standard make of receivers on the market, also Power Units, Loud Speakers,

and B Eliminators. That if a fellow can read, and will use his brain and eyes, there is no reason why he should not learn Radio, as taught by you."—J. B. Fountain, 117 Patten Heights, Lakeland, Fla.

"I have been doing all kinds of Radio work since enrolling with you. The spare time jobs commenced coming in shortly after I began the course."—C. C. Wilcox, Route 4, Osceola, Mo.

"I have charge of the Radio Department of the L. & L. Tire and Battery Company, this city. We are distributing the Kellogg and Erla lines in Kentucky and Southern Indiana. For the convenience and assistance to our dealers in Louisville, we added a service department headed by another N. R. I. graduate, Francis E. Travins, and equipped the department with the most up-to-date service and testing equipment. Each day I find new uses for the knowledge gained through the study of your course which is proof that it is practical."—R. E. McConnell, 816 Sutcliffe Ave., Louisville, Ky.

"I have not had as much spare time as I would have liked, have; however, I have repaired a few sets and have installed some so that I have made about \$300.00 in my spare time since I enrolled."—Carl L. Mattson, Box 506, Ft. Benning, Ga.

"I am now employed by the local jobbers of "Radiola" and "Earl" Radios, and I am also selling Radios in the evenings, thanks to you, Mr. Smith, and the wonderful encouragement and cooperation of the entire N. R. I. You know, Mr. Smith, it seems funny when I started this course many of my friends said I was very foolish, as it was impossible to learn Radio by mail, but if that was foolish, I want to continue to be foolish as it has proven very profitable for me."—Mr. Louis C. Harder, 3451 West 36th Ave., Denver, Colorado.

"Up to the present time I have not had one dissatisfied customer, and I have had two sets that were sent to other shops and sent back with the information that they could not be fixed."—B. G. Clothier, 529 Railroad Ave., Santa Maria, Calif.

"I am in business for myself now. I do a lot of repairing and also sell the Philco Radio in my spare time. I made \$200.00 in one month besides my other work. I must hand it to the N. R. I. for that Radio work is great. I would not take \$10,000 for my course."—Earl L. Smith, 113 Straub Ave., Orwigsburg, Pa.

HINTS ON LEARNING

(Continued from page 4)

stops when the counter force has become equal to the applied "push." Now the condenser is charged and the amount of displacement is the amount of charge, but there is no more current (velocity). If it should break, we have a punctured condenser.

If we apply a back-and-forth motion, however, we may keep up the motion of the bar, and the higher the frequency of that back-and-forth push, the greater will be the velocity of the bar. This illustrates the varying reactance of a condenser with frequency and why alternating current is not blocked off by the condenser though direct current is.

Also, if the bar is at rest in its mean position and the push is applied suddenly, the velocity of the bar is greatest just as it starts out and diminishes as the bar comes to a stop in its sprung position, at which point the counter force is greatest. Since the velocity (current) was ahead of the counter force (voltage) we have a phase difference, with current leading the voltage.

Let us next imagine the bar with its normal weight and not rigidly mounted, but lying in the hand. We apply a force to it and it starts to move, slowly and then more rapidly, and the larger the bar the less rapid will be the increase of speed with a given force applied. But now that it is started, it wants to keep on going, even pulling our hand with it; so that it applied a counter force both when we started it and also when we stopped it. The counter force also was greatest just as it was starting and stopping, though the velocity was small at those points.

This illustrates inductance in a circuit, which tends to prevent decrease or increase of current by setting up counter voltages, the value of the voltage depending upon the size of the inductance and rate at which we try to vary the current value. Also the counter force (voltage) was leading the velocity (current) in this case, instead of lagging it.

Mount the bar again in its first position and consider it as having both its weight and compliance. If it is pulled to one side and released, it vibrates for a while and stops; which illustrates the oscillating current in a tuned circuit, whose frequency is determined, in either case, by the weight and compliance (inductance and capacity).

Any of the familiar everyday occurrences may be translated into equivalent electrical actions, and if the habit be developed of performing those translations, a much sounder foundation will be laid for future electrical understanding and knowledge.

Student Finds Time to Study on World Cruise



Student J. B. Andrata who is also attending the U. S. Naval Academy at Annapolis kept up the old N. R. I. spirit while making a wonderful world cruise last summer. He visited Barcelona, Naples, Rome where he saw the world famous St. Peter's Cathedral, the Coliseum, Forum and the wonderful art galleries, the ruins of old Pompeii and the crater of Vesuvius and other places that we'd all like to visit were taken in. Gibraltar was also on the list of places visited. Then up to England where Buckingham Palace, Parliament and the London Bridge were objects of interest—places frequently visited by Radio operators who experienced the thrill of world travel.

Student Andrata writes that "during the three months we were at sea each one of us had various duties to keep him busy. But in spite of the little spare time we had to ourselves, I always found it a pleasure to sit down in any vacant space, whether under a turret or whatnot and read my N. R. I. lessons now and then. In every port we were in I always got something from N. R. I., be it a letter or my returned lesson sheet which speaks, I should say, of the efficient service given by N. R. I. to her students." Now, isn't that the N. R. I. spirit for you? Pleasure, travel and work—but still there was a little spare time for studying his Radio lessons and preparing himself for his life ahead.

—Editor.

Tomorrow is too late—we must do our best today.

Dear Mr. Smith: "Radio is so very fascinating, one can not help keeping at it. I eat, sleep, think and talk Radio. I feel that with you and Chief Dowie behind me I can tackle and lick anything. And how nice to have the cash coming in. Thanks so many times for your encouragement." Edwin T. Phillips, 15106 Chapel Ave., Detroit, Mich.

The best day for doing your best is every day.

Remote Control of a Receiving Set

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circuit at any point on the dial corresponding to the frequency of the desired broadcast station. When a station selector is depressed and the motor is in operation, the current flowing through a series momentary relay temporarily closes a D.C. circuit supplying the exciting voltage for a solenoid motor clutch, thereby engaging the driving motor and the gang tuning condenser. This automatic clutch device is necessary in order to keep the inertia of the motor armature from turning the condenser gang after the selector or motor circuit has opened. The same relay also closes contacts which short circuits the voice coil of the loud speaker, thereby eliminating the possibility of any sound being heard until the motor stops operating and the desired signal properly tuned in.

The double-pole-single-throw locking relay is for the purpose of conveniently starting and stopping the set from a remote or local point. A momentary pressure on the button is sufficient to either start or shut off the apparatus. The remaining double-throw locking relay, one coil being in series with each of the starting buttons, automatically changes the effectiveness of the volume controls to either remote or local points. This relay permits only one or the other control to be in the circuit thereby eliminating any reaction between them.

PUBLIC ADDRESS SYSTEM



ABOVE—A general view of the arrangement of loud speaker horns of the public address installation at the world famous Madison Square Garden, New York City. Public address systems are but another branch of the big Radio field. Auditoriums, hotels, schools, skating rinks, amusement parks are all prospects for special installations. Several N.R.I. men are already getting in on these profits. Student H. W. Solomon, Meaford, Ontario, Canada, wrote recently: "I have landed a contract for \$500 to install and supply a powerful amplifier system for the ice skating rink here. Also in the last three weeks I have sold and installed \$1156.00 worth of Radios." Watch next issue of the "News" for a big scoop in Public Address work that another N.R.I. man made.

J. E. S.

