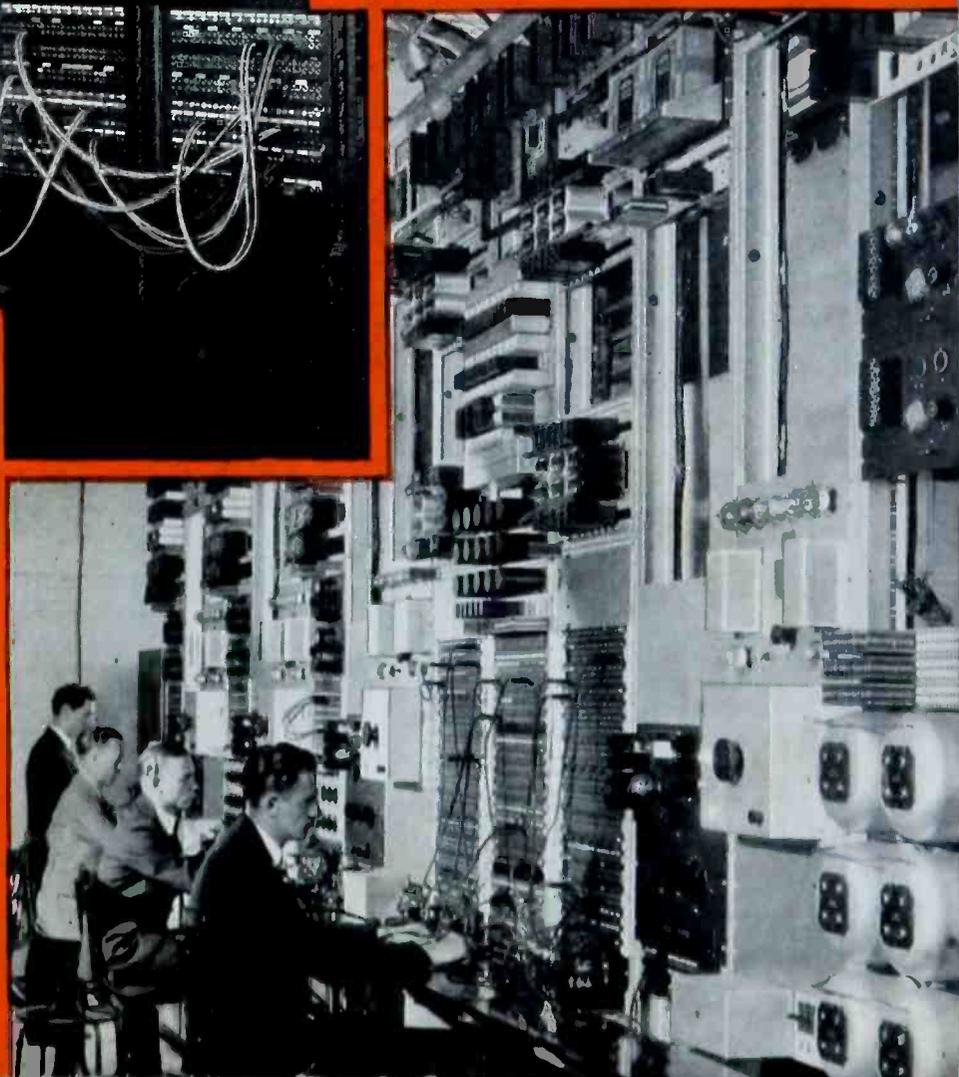
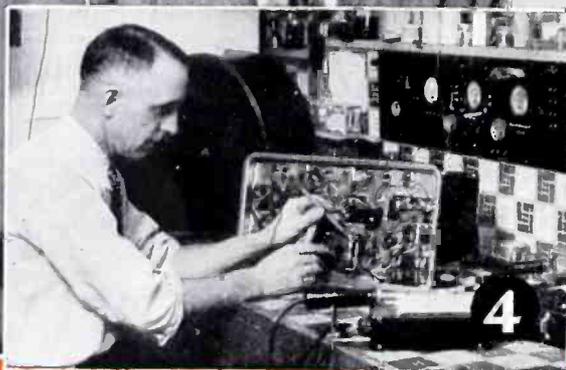
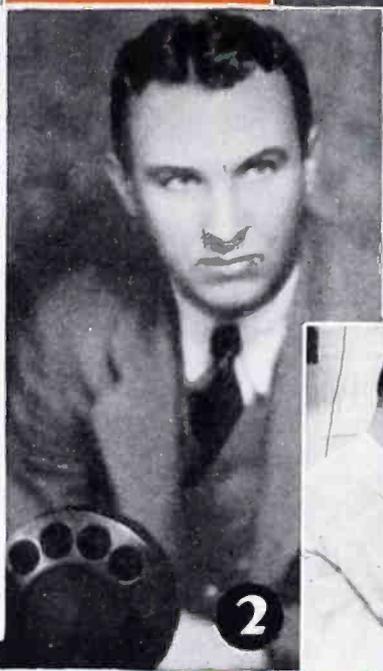




# Rich Rewards in Radio





# HERE'S PROOF

## That I Train Men for Rich Rewards in Radio

*J. E. Smith*

1

**Over \$3,500 a Year**

657-659 Broadway,  
Buffalo, N.Y.

DEAR MR. SMITH:

Just a few lines to let you know that I have not forgotten the wonderful start your Course has given me in the Radio industry. After completing the N.R.I. Course I became Radio Editor of the Buffalo Courier, the largest newspaper in western New York. From there I went to the Federal Radio Corporation of this city, and was in charge of factory service throughout the United States, Canada and Mexico. In this position I believe that I visited practically every metropolitan center in the three countries. After the Federal Radio Corp. went out of business I started a service business of my own and have averaged over \$3,500 a year.

Once again I want to extend my congratulations on your fine Course. I will certainly recommend it to my friends.

Yours very truly,

T. J. TELAAK.

2

**Radio Engineer at WSUI  
"Radio Greatest Field"**

49-B Quadrangle,  
University of Iowa,  
Iowa City, Iowa.

DEAR MR. SMITH:

Upon graduating I accepted a job as serviceman, and within three weeks was made Service Manager. This job paid \$40 to \$50 a week, compared with \$18 I earned in a shoe factory before.

Eight months later I obtained a position as operator with Station KWCR through your Employment Department. From there I went to KTNT. Now I am Radio Engineer of WSUI. I am also connected with Television Station W9XK—the first on regular schedule west of the Mississippi. Radio has en-

joyed a colorful past. It will enjoy an even greater future. It is in its infancy. The field is wide open. Properly trained men, in my opinion, have unlimited opportunities. You thoroughly cover Radio — make it so simple that anyone can understand it.

Very cordially yours,

SYLVANUS J. EBERT.

3

**Went to Top. Thanks N. R. I.**

1781 E. 16th St.,  
Brooklyn, N. Y.

DEAR MR. SMITH:

I am shop manager of the Interboro Radio Service Company, the largest Radio service organization in New York City. I have charge of fifteen men who repair sets of every size and description, amplifiers, speakers, etc., every day. When I started two years ago I was fifth from the top. In eleven months I was at the top, thanks to N.R.I. training. I have earned about \$6,000, an average of about \$40 a week since I graduated.

Cordially yours.

CHARLES SICURANZA.

4

**\$800 to \$1,500 a Year More**

1023 Railroad St.,  
Perry, Iowa.

DEAR MR. SMITH:

My present work is much more congenial and not nearly as hazardous as my previous occupation as a locomotive fireman. My income—from \$800 to \$1,500 a year more than I made before.

My investment in your Course has paid a high rate of interest. I am getting along very well with my Radio business and consider myself fortunate to have had my N.R.I. training in tough times. I don't know how I would have made a living otherwise. Your train-

ing surely has been a great help to me. I am always glad to recommend it.

Yours very truly,

HARRY LABORDE.

5

**Training Has Proved Invaluable**

1324 Main Street,  
Cincinnati, Ohio.

DEAR MR. SMITH:

It is now twelve years since I completed the N.R.I. Course, and I can truthfully say that your training has proven invaluable on countless occasions. I have been able to cover practically all phases of Radio — from engineering, manufacturing, broadcasting, right through to the final merchandising of the manufactured product. Our company, organized less than three years ago, is the largest tube distributor in this territory. We are also exclusive distributors for nationally advertised replacement parts. I mention these things because you are always interested in your students and graduates. N.R.I.'s fame has spread. I received a letter from England saying that my name had been seen in your catalog.

Very truly yours.

E. L. CHAMBERS.

6

**\$1,200 a Year More**

Radio Station WJBY,  
Gadsden, Alabama

DEAR MR. SMITH:

Since securing my operator's license as the result of your training, I have been regularly employed as operator or engineer with various broadcasting stations. I have also served as operator with the Radio Marine, which gave me many experiences in foreign lands. Now I am with WJBY, as engineer, having recently constructed new equipment throughout. My salary has increased \$1,200 a year more than I received before entering Radio.

Cordially,

JULIUS C. VESSELS.

● "Before taking your Course, I was employed by a local store, making around \$18 a week. I had read hundreds of letters written by N.R.I. students telling of the wonderful results they had obtained from your training. I realized that there was no reason why I could not do as well. Your training has been the greatest thing in my life. I came to this town less than three years ago. In that short period I have built up one of the largest service departments in the vicinity. My company is doing serv-



ice and installation work for every store in town selling Radios, with one exception. I have gained the confidence of the people by my ability. In eighteen months my earnings were around \$4,500. I cannot say too much for the wonderful help I received from your training, and from every member of the N.R.I. staff. You can bet that I shall be glad to recommend N.R.I. to anyone writing me."—NOEL W. RAY,  
619 Broad Street,  
Gadsden, Alabama.

**T**HIS book is dedicated to ambitious men and young men who want better jobs. It tells about the opportunities for spare time and full time jobs in a comparatively new industry—Radio. An industry whose colorful growth and history has astounded both business and technical leaders. Engineers and business leaders agree that Radio has enormous possibilities for future growth along many lines; in industry, for communication purposes, in medicine, for educational purposes, for home entertainment—there is hardly a human activity that it does not touch. This book touches briefly on Radio's history to show you what progress and what growth has taken place. It also points out why Radio holds such

enormous possibilities for future growth. It describes the practical, time tested, home study training that is fitting hundreds every year to make more money as Radio Experts. It pictures and describes the pioneer organization of its kind in the world—the National Radio Institute—an institution organized for the express purpose of fitting men with limited time and limited resources to realize their ambition to win greater success and happiness. You are interested in bettering yourself. You are interested in getting into a promising field for your life's work. I, therefore, urge you to read this book carefully. It may bring more opportunity, more happiness, more success to you.

**J . E . S M I T H , *President***

**NATIONAL RADIO INSTITUTE**

**16TH and U STS. N.W., WASHINGTON, D. C.**





*J. E. Smith, President*  
**NATIONAL RADIO  
INSTITUTE**

**Founded by him in  
the year 1914**

**M**EET the founder and President of the oldest home study Radio school in the world. Meet the man who, from a few students, has built the largest institution in the world devoted entirely to training men and young men for good jobs in the Radio industry by the home study method. Meet the man who has trained more men for the Radio industry than any other man in the world. Meet the man who, in addition to his busy days founding and building the Institute, has found time to write many books and magazine articles on Radio.

Meet a member of the Institute of Radio Engineers, a member and past Chairman of the Washington Chapter of the American Institute of Electrical Engineers, a member of the Society of Motion Picture Engineers, a

graduate of Worcester Polytechnic Institute, with a degree of Bachelor of Science, Electrical Engineer. Meet a teacher of a quarter of a century experience, a man who inspires students; brings out their best efforts. Meet J. E. Smith, the President of the National Radio Institute.

I wish you could shake Mr. Smith's hand—get to know him today as the friend he wants to be. Since that isn't possible, meet Mr. Smith through the pages of this book. Read what he has to say about Radio's future and your present and future opportunities in Radio. When you finish reading this book you will know Mr. Smith as I do after our twenty years together at the Institute.

**E. R. HAAS, Vice President.**

# Let me tell you why ..

## YOU SHOULD GET INTO RADIO



**T**O HAVE a job or a business that pays enough to have a home, to have time and money for travel and little luxuries, to have money in the bank and be free from money worries—these are the natural desires of every man.

No man wants to go through life fearing that tomorrow, next month or next year will find him out of a job. Neither does he want to go through life feeling or knowing that he is in a blind alley job—that he is connected with a business which is now paying him all he can ever expect. Young men starting out looking for a good field for their life's work, and men who have been employed for some years, but who are dissatisfied, are urged to read what Radio has to offer them.

### Today's Opportunity

Radio is today's opportunity field—a field that can absorb many more well trained men now—a field that promises much for the future. While many industries have been standing still, and many others have been dropping back, Radio has been expanding, growing. New uses have been found for Radio principles, making new jobs for Radio trained men. I am going to tell you about them in the pages of this book—show you the kind of jobs you can look forward to in Radio.

When hundreds of men with no special talent, no special education, can study Radio for a short time, then step into this field and make two, three, four and five times what they were making before, it certainly proves that money is made easier in Radio than in many other fields. It proves that training is rewarded in a larger measure. Many N.R.I. graduates have been able to do this. Read the letters of some in this book.

### Training Brings Large Rewards

Many people think of Radio only in terms of sets.

They listen to their favorite programs, but fail to realize that back of them, in many and varied capacities, an enormous number of trained men are holding down good jobs, making good money in jobs much better than their own; jobs for which they can get ready quickly, easily, inexpensively, right at home in their spare time.

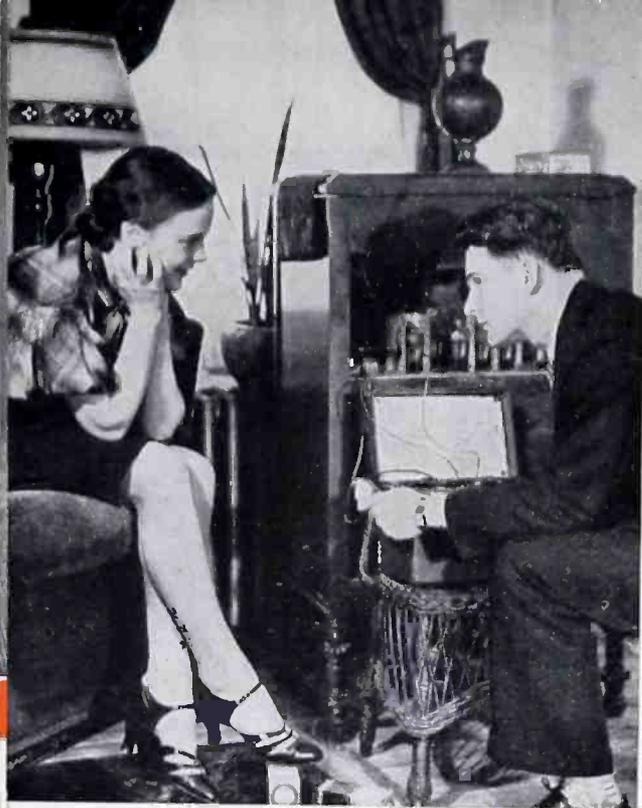
Radio is a world force; it touches almost every human endeavor, invades almost every home. It has created just the type of opportunity that can free you from job worries, money worries. Its opportunities are world wide—in your neighborhood, small towns and large cities. Read this book carefully, it has an inspiring message for you.

**J. E. SMITH, President.**

*These men have interesting jobs in broadcasting stations. Top photo—View of WINS. Lower—Operator at speech input equipment, moving coil microphone and double turntable music reproducer.*

*Courtesy, Western Electric.*





*Servicing sets in homes is interesting and profitable work. Good men get many calls. N.R.I. Training fits you to service all types of sets.*



### Radio Opportunities Limitless

1516 Library Ave.,  
New York City.

DEAR MR. SMITH:

I have earned my bread and butter in Radio since 1929. N.R.I. training gave me the strength to tackle jobs without fear of failure. My first two jobs were with well known Radio retailing concerns. At present I am a member of the main control room of a large broadcasting chain. I have the pleasure of being responsible for the quality of a good many programs, some of them coast to coast.

Your training is thorough and at the same time the language used is understandable. I doubt that I could find an ordinary man who would be at a loss to grasp it. The tuition fee of my Course was covered by repair jobs in my community before I finished the Course. The opportunities in Radio are limitless. More power to you, Mr. Smith, Chief of the pioneer and best Radio school in America.

Cordially yours,

SERGE A. de SOMOV.

# Radio Offers You Good Spare Time

## Many Radio Experts make \$40, \$60, \$75 a week and more

**A**NNOUNCER: "We are in the blue room of the White House, Washington, D.C. The President of the United States is about to address you."

Fifty million people listen in. Such is the magic of Radio. In a few minutes broadcasting stations from the Atlantic to the Pacific, from the Canadian Border to the Gulf of Mexico have been hooked up. In cities, towns, hamlets, on farms, in airplanes, in automobiles, down in mines, millions listen.

### Consider these Facts

Consider the number of excellent jobs they stand for. Think of the opportunities they mean for you. Over 16,000,000 Radio sets in use. Over 50 million people listen to a single program. 600 broadcasting stations send out entertainment, music, education. Over 40 large factories build Radio sets by the millions. Over 3,000 factories make parts for these sets. Over 100 Police

Departments Radio equipped. Airplanes and airports equipped to send and receive messages. Thousands of ships Radio equipped touch every seaport. Talking movies in thousands of theatres, made possible by adapting Radio principles to the movie industry.

### Still More Opportunities

Over 35,000 stores supply the demand for new sets. Thousands of spare time and full time service shops help keep sets in order. About 3,000,000 autos Radio equipped to "entertain while you ride." Millions more not yet equipped. Loud speaker systems wherever people gather, indoors and outdoors. Commercial Radio Stations dotting our coast lines, carrying on communication by Radiophone and Radiotelegraph.

### Plenty of Room for You in Radio

Despite these astounding facts, Radio engineers who know best Radio's



*Dispatcher in aviation ground station talking with pilot in flight. Train for jobs in ground stations and in airplanes. Courtesy, Western Electric.*

*Radio stores offer many opportunities. They employ servicemen, salesmen, buyers, service managers, and pay as much as \$75 a week and more.*

# Opportunities for.. and Full Time Jobs

## Share in the rich rewards of a growing industry

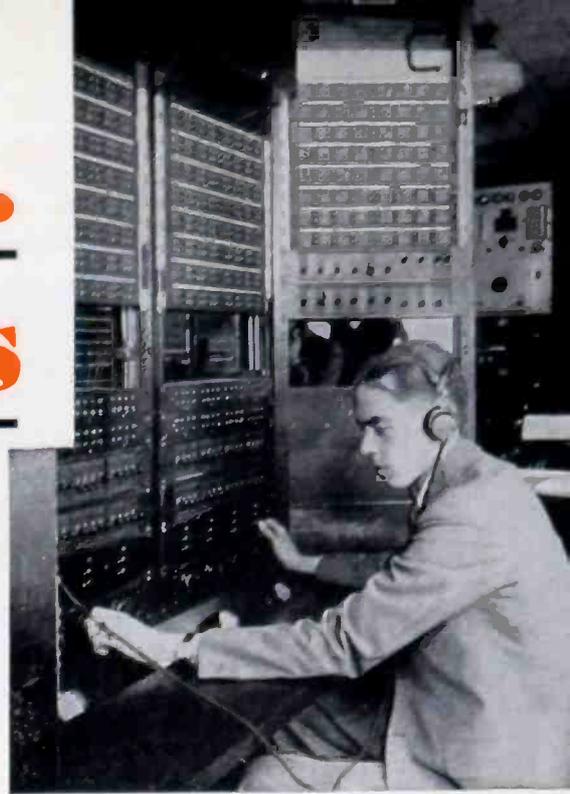
possibilities, tell us this is only the beginning. New jobs are being made by the hundreds every year. Old jobs are becoming more complicated. Men who stepped into them several years ago are now having to step out if they have not kept up with Radio's progress. While only a handful of men were employed in the Radio industry twelve to fourteen years ago, a recent estimate places the number at more than 300,000. A few hundred jobs that paid \$40, \$60, \$75 a week and more, have grown to thousands. The salaries of broadcasting station employees, exclusive of artists, are about \$23,000,000 a year.

### A Giant in Size but Still Growing Fast

It is where you find growth that you find opportunity. Get into Radio—it's growing. Millions of automobiles are not yet Radio equipped.

Millions of homes do not have sets. Millions of sets now in use are obsolete. It is certainly common sense to reason that there will be as many Radio sets as there are automobiles. Yet there are several million more autos. Electronic devices are being adapted to thousands of industrial uses. Hundreds of cities are not equipped with Police Radio systems. Aviation is growing and expanding rapidly, establishing new airports, adding new planes, to be Radio equipped. Television is coming. It will bring thousands of new jobs.

I know of no field that holds out more promise for the future. And you can train for a good spare time or full time Radio job right at home in your spare time. Be a Radio Expert. Get ready to share in the Rich Rewards in Radio. Start now. N.R.I.'s thorough, practical, and up-to-date training makes these opportunities your opportunities. Act now.



Putting a program on the air. Broadcasting stations offer many interesting and well paying jobs. Many N.R.I. graduates have these jobs. Let N.R.I. train you for one too.



Averages \$55 to \$65 a Week

713 N. Fulton Ave.,  
Baltimore, Md.

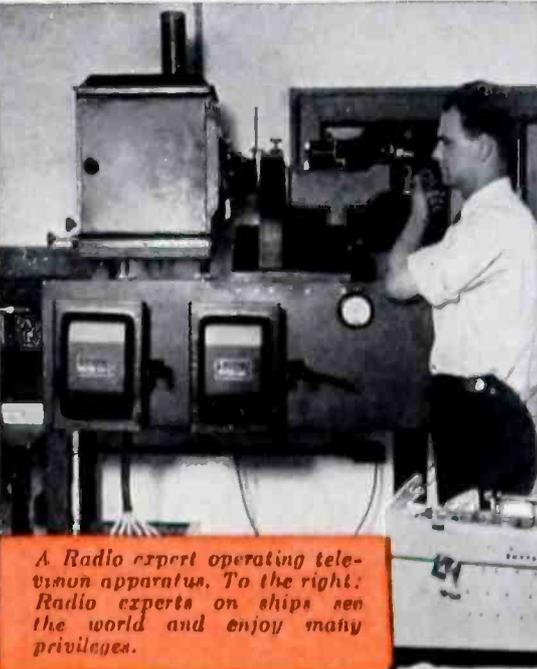
DEAR MR. SMITH:

I am doing lots of repair work on the latest model sets and am getting along splendidly, thanks to you and your N.R.I. training. It surely has helped me to get ahead in Radio. The depression did not seem to hurt me in the least as I have been making on an average of \$55 to \$65 a week. As things look, I will do as well in the future.

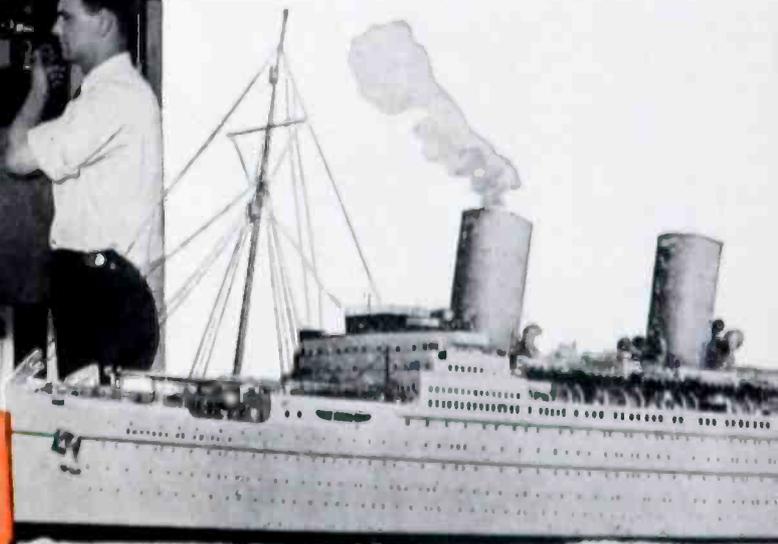
Sincerely,

PETER J. DUNN.

Here is an operator at the master control board of a broadcasting station—a responsible, pleasant job that pays well.



A Radio expert operating television apparatus. To the right: Radio experts on ships see the world and enjoy many privileges.



*I want you to see what*

**DID FOR**



RAY L. WONDERLY

A. T. ALLEN

**"All you say is the truth"**

"I graduated in 1930; made good money, averaged \$500 a year in spare time, then went with Montgomery Ward where I expect to make upwards of \$35 a week. Training—that's what every fellow should get. Practical training is necessary, and that's where N.R.I. comes in. Your advertising does not exagger-

ate; all you say is the truth. A. T. Allen, Manager of the Radio and Refrigerator Department of Montgomery Ward, at the 'mike,' is also an N.R.I. man, and speaks highly of your school."

RAY L. WONDERLY,  
734 North Park St., Casper, Wyo.



**Business Has Grown**

"I was employed as a serviceman for a local music company, but found difficulty in keeping up with new developments in Radio. I decided to enroll with N.R.I. As my knowledge increased, my services were more in demand. This resulted in pay increases. In 1931, right in the middle of the depression, I went in business for myself. My business has grown steadily. I do the service work for six local concerns and have a fine list of personal customers."

J. A. WARREN,  
1147 W. Locust St., Scranton, Pa.

**As High as \$400 a Month**

"I was working in a garage, just another mechanic, with no future in sight. My wife and I decided to put aside enough to pay for your Course. We have not regretted it. I have serviced almost every kind of set; some days I have had as many as seven sets in my shop. I have made as high as \$400 a month. N.R.I. training gives prestige. It helped me make a living for my family of six, when other fellows, without training, were on the dole."

E. G. WOLFE,  
1327 Kinzie St., Elkhart, Ind.

**Y**OU needn't take my word for it when I tell you there are many opportunities in Radio for good spare time and full time jobs. You needn't take my word for it when I tell you that N.R.I. Training fits you for these jobs. Here are the words—right on this page—of graduates who have gotten into Radio. Read what they say about Radio opportunities. Here are the words—right on this page—of fellows who have taken N.R.I. Training. Read whether it fitted them.

**Write Them if You Doubt Me**

If you should have the slightest doubt about the opportunities in Radio, about the value, thoroughness, and completeness of N.R.I. Training, about the facts given in these letters and the opinions expressed in them regarding N.R.I. Training, take a few minutes to write some of these men a letter. I suggest, as a matter of courtesy, that you enclose a stamped, addressed envelope for convenience in giving you a reply. Write to the authors of the letters on this page, or write to authors of any of the many letters given on other pages of this book. Time and again these graduates have told me that they will gladly, willingly, answer letters from fellows who are considering Radio as a career, and N.R.I.'s Course of training.

Notice that in each case I give the name and address. In all but a very few cases I give a photograph of the writer. I want you to know



**Plenty of Room for Qualified Radio Men**

"As predicted some years ago, the day of the 'hit and miss' tinkerer is over. There is plenty of room for the qualified man in Radio, but it is a 'closed' profession to the 'just-picked-up' type of man. I have enjoyed a good sound business lately, having installed several jobs in public places (ball parks, etc.). If anyone is doubtful about the need of training in this highly specialized field, tell him to write me. It is a waste of time to try to get anywhere in Radio without specialized training and equipment such as you offer. I unhesitatingly recommend your Course to anyone who comes to me for counsel."

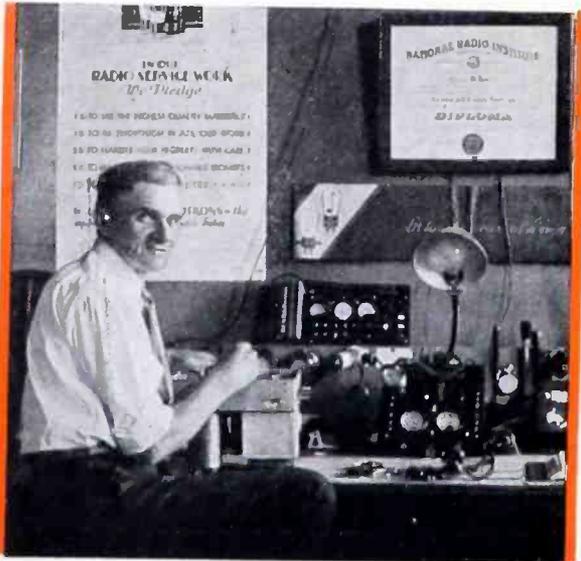
K. W. GRIFFITH,  
4304 W. 25th, Little Rock, Ark.

**\$750 While Studying—Much More Since**

"This is a town of about 1,800 population. When I enrolled with you I was a department foreman in a refrigerator plant here. There are three other servicemen here, who were servicing sets before I enrolled. I made no special effort to get repair work as long as I was in the factory, but when the factory closed for good I went after business. Now I have the repair work of the Majestic, Philco and Crosley dealers. Two of the other servicemen are throwing up the sponge.

"I have serviced practically every make and have had jobs that the rest fell down on. From the start of the Course to its completion I made about \$750. I am more firmly convinced now than ever before that I made no mistake when I enrolled. The drought here made it tough on all businesses, but still my income has kept above last year. It amounted to \$1,685 for eight months. Anyone can stumble along, but a trained man moves surely and swiftly."

GEORGE W. HONERT,  
248 Water St., Ligonier, Ind.



# N. R. I. TRAINING

## THESE MEN



### Has Made as High as \$65 a Week in Dull Season

"I am still mighty glad I picked Radio as my profession. I came to Miami right in the middle of upset conditions in business. In these summer months now when business is dull down here, I have made as high as \$65 a week on Radio repairs. If the winter season brings an increase as it usually does, I'm

going to need more help, and \$100 a week should be easy. Every year I think how fortunate I am to have studied with an Institute that gets you started in the right way and then stands by you."

M. MILO KISSEL,

1756 S.W. 8th St., Miami, Fla.

### Many Doubled and Tripled Their Salaries

that these letters are genuine, that's why I do it. When you write, allow a reasonable time for an answer. These graduates are busy men, and occasionally they change their addresses, which might result in delay in delivering mail.

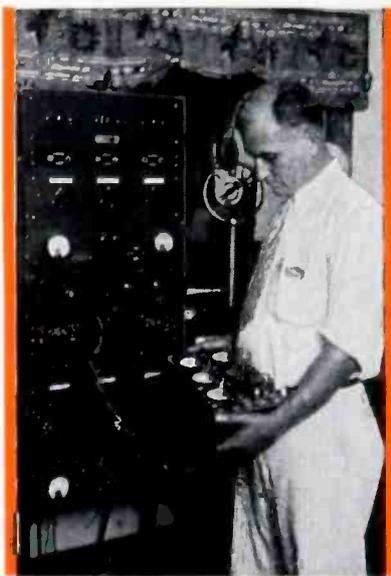
You'll find all through this book that the best things said for the opportunities in Radio and for N.R.I. Training are not said by me, but by those who have gotten into Radio through the N.R.I. Training. It is easy to understand their enthusiasm, why they write me of their success; why they will gladly write you.

Many of them, not long ago, were just barely getting by. Some weren't doing quite that well. They were searching, in many instances, half desperately for a field where honest, meritorious service would be well rewarded. Who wouldn't be happy over increasing his income \$500 or \$1,000 a year; or doubling or tripling it, as some N.R.I. graduates have done?

The letters in this book are only a fraction of the total number I have on file. I have given you enough, however, to show you the kind of success that *you* can reasonably expect to make in Radio if you do your part.

### Follow Their Examples—ACT

As you read through this book, remember that at one time these men were doing what you are doing now—they were reading "Rich Rewards in Radio." It was because they acted—because they enrolled—that they got ahead. Act promptly. Do not delay. You want to make more money—you want a better job. The sooner you begin training for it, the sooner you will realize your ambition. Enroll now.



### Very Substantial Weekly Wage

"I am now working for the largest Radio shop in this city and am getting a very substantial weekly wage with no expense to myself, as the shop handles every kind of Radio part made. We service over 100 sets a month, sell all kinds of tubes and parts. We also have a contract to install and service several kinds of auto Radios. My N.R.I. training has been a blessing to me."

W. O. NAUMANN,

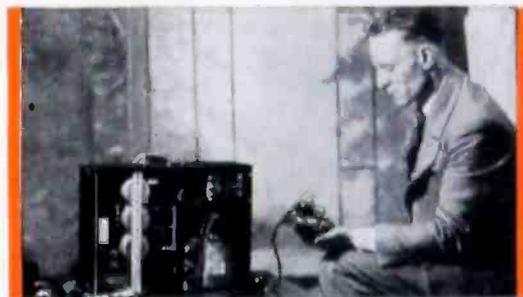
509 High St., Parkersburg, W. Va.

### \$22,794 Total Income for Three Year Period

"It took me five years to realize that the work I had been doing for fun could be made to produce dollars. I made hay during the spring and summer of 1926, by enrolling. My income for the 1926-1927 season was \$2,478 for seven months. Each succeeding year until 1929 my income grew bigger. For a three year period I had a total income of \$22,794, an average of \$7,598 a year. Then I got real ambitious and managed to secure permission to build a broadcasting station. Without ever having been in one, I built my first transmitter and put it on the air. For the past couple of years I have devoted all my time to broadcasting, my station being arranged in such a manner that everything can be manned by one man—hence I am the entire works—owner, announcer, operator, etc."

J. PAT SCULLY,

Station WKFI, Greenville, Miss.



### Has Made \$8,500 Since Enrolling

"Before completing your Course I was Radio Expert for the largest sporting goods store in North Carolina. This store sold and serviced six different makes of sets. A thorough knowledge of the Radio art was essential. Radio work is pleasant and there is a great deal of money to be made in this field either as

a part time or full time proposition. Since enrolling I have made about \$8,500, which I think is a very good return on the cost of the Course. I want to thank the N.R.I. and its able instructors for the personal instruction and help given me."

J. F. HUFF,

109 Pocahontas Ave., Louisi, Ky.

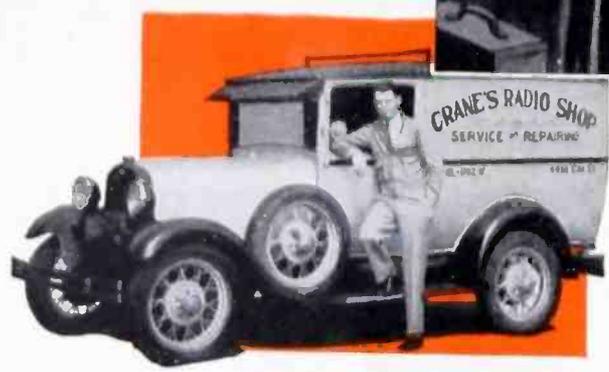


# EARN WHILE

***You're ready to start...  
right in your own neighborhood almost before  
you know it***



*N.R.I. fits you to start servicing sets shortly after you enroll. Many N.R.I. students pick up \$5, \$10, and even \$15 a week in spare time while learning.*



**Made \$500 to \$600 in Spare Time**

"I have been servicing sets ever since I enrolled. Just finished installing a public address system which I built. I am equipping a shop in the rear of my home; also have a truck. If I were to work full time I believe I would be able to make a profitable yearly income. I have done no advertising; work received has been through friends and word of mouth publicity. What money I have made has been reinvested in my shop—it amounts to about \$500 to \$600. I give all credit to N.R.I. for my Radio knowledge. I certainly appreciate the interest you take in your graduates and I hope some day to visit the N.R.I. in Washington."

A. R. CRANE,  
2443 Bancroft St., San Diego, Calif.

There is no need for you to feel that Radio is so mysterious that only men with special talent or with some magic insight into things mysterious can master it. Read the letters from graduates on this page. Read what they say about how easy Radio is to learn—actually fascinating, thrilling.

## N. R. I. Makes Learning Easy

One graduate says: "Before enrolling, to me a vacuum tube was a funny little glass bulb that didn't even give a good light." Other graduates tell me that Radio was as fascinating to them as their favorite novels. Do not misunderstand me. Learning Radio can be hard, if it is not properly presented. Learning it the N.R.I. way, however, makes it easy—we set out to make it easy. We set out to make it easy enough so that students who want to

do it, can begin cashing in shortly after enrolling. That's the beauty about getting into Radio. The fellow with a little get-up—with the ambition and the push to do things—to make money—does it.

## Special Training Fits You for Spare Time Pay

The day you enroll, with the very first assignment of lesson material, you start getting Practical Job Sheets on "Extra Money Jobs and How to Do Them." Read page 34 for more information about this feature of N.R.I. Training. Then read page 35, too. You'll see at once that we fit you to get an early start making extra money; that we give you extensive, practical money-making information on doing Radio jobs common in every neighborhood. The first jobs are easy, to be sure. But they pay. It isn't much of a trick to pick up \$5 or even \$10 a week. Think what that extra money will mean to you—\$200 to \$500 and more a year—you could buy a lot of



**\$200 in Two Months' Spare Time**

"I have been doing so much service work that I haven't had time to study. In two months, I made about \$200 in spare time. Sometimes I tell people that I am not doing any more repairing until I finish my Course, but they bring them in anyway—it's service they want. A short time after I enrolled I received my first outfit, a part of which was an earphone. I got a dry cell, a screwdriver, a pair of pliers. This made up my service kit with which I soon made enough to get a tester and some tools. With the equipment supplied by N.R.I., even a school boy could learn Radio."

STANLEY TULK,  
225 Desmarreau, Montreal, P. Q., Can.



**Four Months' Spare Time Profits—\$400**

"For the past four months my net profits have equaled \$400 in spare time of about three hours a day. Taking your Course was the wisest thing I ever did. All the credit for my happiness and success goes to the N.R.I. I had no experience before enrolling. I have earned enough to buy a Nash, have \$385 in the bank, owe no bills to anyone. All this is the result of N.R.I.'s practical and applied training. The public is well pleased with my work and people say, 'He sure knows his stuff.' I had no experience before taking the N.R.I. Course."

JOSEPH LAJOS,  
30 Bradley St., Lewiston, Maine.



**Was Skeptical. Earned \$10 a Week on the Side. Now Has Profitable Business.**

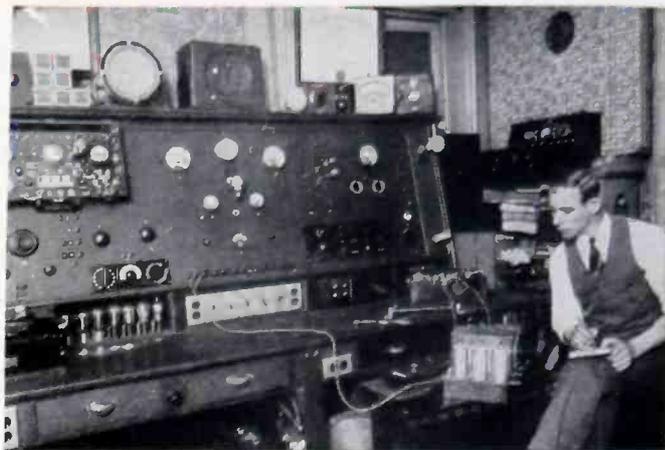
"I can truthfully say that the N.R.I. training has been a blessing to me in more ways than one. It has given me a new lease on life, opened up a broad, fertile field, from which I can reap a large harvest. I will acknowledge that I was skeptical at the time I figured on taking your Course, and I am glad to say now that I am well pleased and found that you fulfilled every promise to the letter.

"When I began the Course I could not do a thing to a set but change the tubes; but after training up to about the fifteenth lesson, I could and did analyze circuits and replace such parts as resistors and by-pass condensers. By the time I had finished the fundamental Course, I was making as high as \$10 a week on the side. Now I have my own shop, employ two men and am doing around \$5,000 repair business a year, not counting sales of sets."

C. D. THOMPSON,  
R. No. 2, Troy, Ala.

# YOU LEARN

**Many N. R. I. students make \$5, \$10, \$15 a week extra in spare time . . . I will show you how to do it too**



things that you have to do without now.

## Two-purpose Training

Make up your mind this minute that you are going to be an Authorized Radio-Trician. First, that you are going to get ready to make some money in your spare time—that you are not going to let another year go by without the advantage of the extra earnings that others are getting and that you should get too. Second, that while you are going along, getting your training and making extra money, you will, at the same time, fit yourself for something bigger and better—for a good full time job. An Authorized Radio-Trician—the exclusive title that only N.R.I. can give you—is a recognized Radio Expert. Earn this title and earn good pay. The letters on this page and throughout this book show you what you should be able to make.



**Picked up \$1,800 While Studying**

"My opinion of the N.R.I. Course is that it is the best to be had at any price. When I enrolled I didn't know the ground from the aerial; but after four months of training I made all kinds of money repairing sets, building and selling them, etc. To tell you that I am more than satisfied is putting it mildly. It is a wonderful study, interesting from start to finish. I consider my Course worth many times its cost to me. I picked up \$1,800 while studying, and I call that easy money. My shop is open to all who care to inspect it; or they may write me regarding N.R.I. training."

OTIS DENTON,

14105 Lorain Ave., Cleveland, Ohio.

## World Famous as "The Course That Pays for Itself"

If you want an idea of the spare time money making opportunities in your neighborhood, estimate the number of sets within a radius of five miles, if you live in a small town or on a farm; and within ten to twenty blocks if you live in a city. You are safe in assuming that you can get a good share of the service work within that area, once you know how to do it. That's the experience of other N.R.I. graduates. Estimate an average of \$3 to \$5 service per year per set. You'll find set owners glad to pay well for good work, and N.R.I. Training will fit you to win a reputation as a competent serviceman. In fact, N.R.I. Training is world famous as "the Course that pays for itself." Get your share of the profits that can be had in almost every neighborhood. Enroll—get started now.



**All He Could Handle Before One-Third Through**

"It is a long time since I have written you, but no one can hold a good cause down. Before finishing one-third of the Course, I had all the work I could handle. Then my work became so good that I decided to open a store of my own. I have certainly enjoyed the pleasure of having my own business and earning a very enjoyable living by Radio. After taking your very clearly outlined Course in Radio, it is no job at all for any man to put himself out in front and say that he can handle the job."

DONALD MOKMA,

450 Washington Sq., Holland, Mich.

## \$1,500 From Spare Time Servicing

"After studying your Course four months I started repairing sets for friends, first for experience, later as work increased, I began to make a charge. My business increased until now I am servicing full time. I charge \$1.25 for the first hour, and \$1.00 an hour over that. In addition to servicing sets, I have repaired amplifiers, changed D.C. sets to A.C., changed sets to use power tubes, etc. Approximate returns are as follows, after deducting all expenses: June 1931 to June 1932, \$1,422. June 1932 to June 1933, \$1,943. Part time servicing prior to June 1931, \$1,500. Total, \$4,865. The returns are for service, not for sales. Above figures are clear, and although in depression years, notice there is an increase over preceding years."

GEORGE E. BACCHUS,  
582 Rogers Ave., Brooklyn, N. Y.



**Averaged \$10 a Week After Two Weeks**

"After taking your Course for two weeks, I started making an average of \$10 a week in my spare time. After graduating, the owner of a hardware and electrical store wanted to start a Radio sales and service department. I was made manager, my starting salary being \$100 a month, plus a commission on sales, which equaled \$35 additional on the average. N.R.I. not only teaches how to service and repair sets, but also how to get the business, which is also important."

MANUEL JOSEPH,  
2220 C St., Sacramento, Calif.

## Earnings Paid for Course Many Times

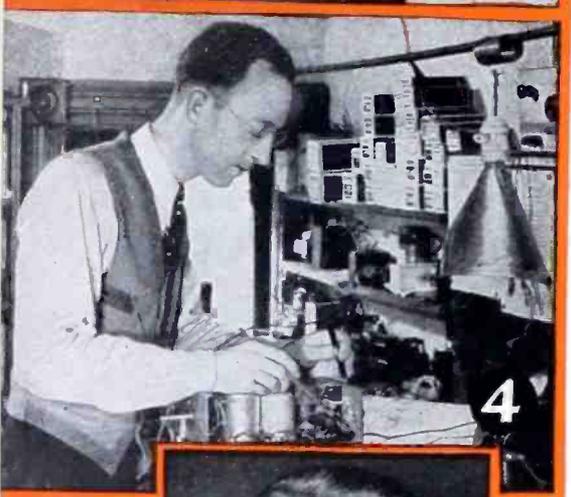
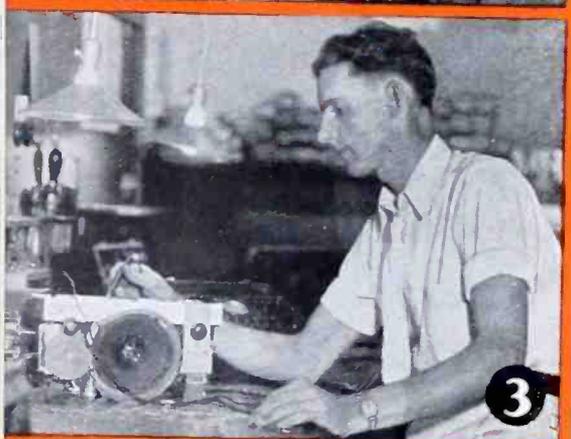
"A vacuum tube to me was just a funny looking glass bulb that didn't even make a good light. Now, after graduating, there is nothing mysterious about a Radio circuit. I have had enough spare time work to pay for the Course many times over. I have been made manager of the Radio Department of our organization. Our district covers the six mountain states. N.R.I. deserves the credit."

B. D. BAILEY,  
Box 431A, R. No. 1,  
Edgewater, Colo.



# There are Opportunities

# Money in a Radio



1

## Built Service Shop Out of Earnings

"Since graduating from N.R.I. I have done considerable Radio service work. I am on my own, have fitted up an up-to-date service shop out of my earnings. I have made a good living during the depression years. Young men of today should take up Radio for the future. I recommend the N.R.I. Course as a pleasant medium for doing so."

A. C. MARTIN,  
2060 Rae St., Regina, Sask., Canada

2

## Runs Service Shop. Has Earned \$4,000 to \$5,000

"I got my start in Radio through N.R.I.—completed about thirty lessons, answered a blind ad for a serviceman, and out of fifty applications, mine was accepted. I worked for three years, being service manager the last year and a half. Then I moved here, started my own exclusive service shop—Lloyd's Radio Service. I think the N.R.I. has a very fine Course. I wouldn't sell it for ten times what it cost. It has been responsible for my success—has made it possible for me to earn at least \$4,000 or \$5,000."

LLOYD V. STENBERG,  
428 Benson Ave., West, Willmar, Minn.

3

## \$200 a Month in Slow Season

"After finishing fifteen of your lessons, I started repairing Radios in my spare time. Not long after this, I had my Course paid for, capital built up, and after graduating had made enough to start a Radio business as a dealer and serviceman. My returns on set servicing approximate \$200 a month during the summer months when servicing is supposed to be slow; about double this amount on Radio sales. Thanks to N.R.I. training, I have plenty of customers."

ALISON A. LOMAX,  
Southern Radio Service, Spencer, N. C.

5

## "Helped me out of dull rubber shop into clean live field."

"In January 1933 I opened my store with \$150 in cash, plus equipment valued at \$150. Three months later I sold a third interest because I needed help to take care of the work. We did over \$9,000 sales and service business up to January 1, 1934. We have one of the best service departments in Akron, valued at \$3,000, and keep three servicemen busy. Thank you, Mr. Smith, for helping me out of a dull rubber shop into a clean, live field, where anyone can get ahead with good training like the N.R.I.'s."

GRAY BARTLETT,  
985 Kenmore Blvd., Akron, Ohio.

## 4 Seldom Under \$40 a Week

"I have a fine business servicing sets and am busy all the time. I am making a good living—seldom have a week under \$40. If it wasn't for good old N.R.I., I would probably be tramping the streets. If anyone wishes to beat 'old man depression,' he should study your Course and be sure of success."

GLENN C. KING,  
815 Lafayette Ave., S.E., Grand Rapids, Mich.

## I'll show you how to open a SERVICE SHOP

I'LL show you how to do it even though you may have no capital now. I'll show you how to do it using money you make in spare time while learning. I'll show you how to start small, if you need to, and build up. Most any other business that you might consider going into would require hundreds of dollars of capital.

### What You Need Most

What you need most to open a service shop, you can carry around in your head. It's training; it's knowledge. Do you know that N.R.I. graduates have started their service shops on as little as \$5?

A corner in your basement, in a spare room, or in the garage—a few tools, many of which you already have, plus simple testing devices for locating trouble in sets, some of which you can build with the Experimental Outfits I give you, and you are ready to start.

### Millions of Service Jobs

Let's look over a few figures. There are now over 16 million sets in the United States. Nearly all these sets require some work every year, or if no actual repair work, a new part, new tubes, a new or repaired aerial—something on which you can make money. Let's be real conservative and say that the average set owner spends only \$3 a year for service and parts on his set. That's an income of \$48,000,000 a year for servicemen.

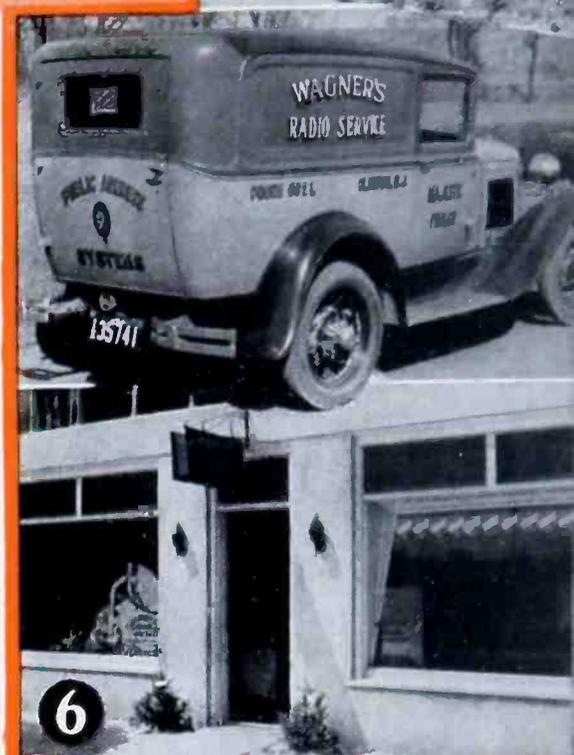
Most N.R.I. students start their service shops as spare time propositions. As their business grows, they build them into full time propositions. With N.R.I. backing you, fitting you to service all types of Radio sets, how can you fail?

But we don't stop with showing you how to do the work. We go much farther. We give you plans that have proven successful in getting set owners to bring their sets to N.R.I. graduates for repair. We even teach you to keep records so you know how much you are making on every service job.

### Other Sources of Profit

The serviceman has many excellent chances to sell parts and earn commissions, replace tubes, put in a new speaker, new part, and make a profit because he can buy at a discount. Radio stores without service departments will, no doubt, be glad to have you install and service the sets they sell. Once you hang out your sign, display your diploma certifying to your training, plenty of service jobs are going to come your way.

# Everywhere to Make Business of Your Own



6

## Annual Sales and Service Net Nice Living

"In a few short years we have built up one of the finest Radio services in this section of the country. All North Jersey talks about the service we give, handling everything from transmitters to public address systems. My new service room has just been completed; it has been made larger for the extra service work, and my brother Carl, who is an N.R.I. graduate, is now in complete charge of the sales and service end of our business. It may interest you to know that all of the sound engineering work at the State Institute here, as well as the schools, is done by us. We have two amplifiers (15 watt output each) and rent them for all occasions. Your excellent Course of instruction and personal service started us on the road to big money."

HARRY S. WAGNER,  
Clinton Radio Service, Clinton, N. J.

7

## Would Have Taken 10 Years' Experience to Learn What You Gave Me in One

"Before I enrolled for the N.R.I. Course, I was just an ordinary Radio serviceman. I thought then that I knew everything about Radio, but now I realize it would have taken me ten years to learn what your Course taught me in one. Since I enrolled I have made \$500 in spare time work, and \$1,800 in full time work."

"For the past six months I have been in partnership with another N.R.I. man, and we have been real busy. We are operating on a systematic basis, and have a reputation for honest, good work and fair prices, that has won favor for us. Who said there isn't money in Radio? The fellow who knows Radio, who looks and works for business, always gets it."

"Two of the many features I like about the N.R.I. are the Consultation Service and Employment Service given to students and graduates. I will gladly recommend N.R.I. to anyone interested in Radio."

JAMES BALSAMELO,  
1245 N. Ashland Ave., Chicago, Ill.

8

## Prospered During Depression

"Thanks to the N.R.I., the depression has not had the effect on me that it had on most others. No amount of money would induce me to give up the knowledge gained from my N.R.I. Course, if I could not regain it. I have equipped my service truck with a public address system which I use to advertise. It brings me amplifier work advertising other businesses. I broadcast political speeches, sports, etc."

L. LYMAN BROWN,  
405 Dickinson St., Springfield, Mass.

## I'll show you how to open a RADIO STORE

WHOM do you envy most? Is it the man who is his own boss—the man who owns and runs his own business? Of course it is. We all envy him. He isn't tied down to a certain number of hours of work every day. He has his fun when he wants it. He doesn't lose his pay when he takes an afternoon off to go to a ball game, to play golf, to go hunting, or on a trip.

He does things the way he wants them done—doesn't have to satisfy one, two or three other people. He makes money on his own efforts and the efforts of others who work for him. Sometimes he has a chance to put over one deal on which his profit is as much as many fellows earn in a whole month.

## N.R.I. Gives the Training You Need

I've told you how we are going to teach you Radio principles and Radio servicing. You will know how to judge sets, what types will be most popular in your vicinity. You'll know how to meet competition because you will be trained to know Radio sets.

And here I come to another important part of N.R.I. Training. It is merchandising. Many a man who knows a lot about Radio would make more profits in a business for himself if he knew more about merchandising. N.R.I. proposes to give you that type of information. We are going to make you a good Radio man—an expert—and if you have any talent for business, we are going to make you a good business man. The two combined should make you a good living.

## More Good Stores Needed

There is a surprising need for good Radio stores almost everywhere. Many homes do not have sets, and many sets in use are obsolete. They will be replaced soon. You will be fitted to sell and install auto sets too. If you decide to have only a one-man business, your rounded out training will have fitted you to do it. If your business grows so that you need employees, again your rounded out training will have fitted you to direct the service work of those who work for you.

## Give Yourself a Chance

Do you believe in yourself? Will you give yourself a chance? Then let me train you at home in your spare time. Training comes first; success follows training. Do not sentence yourself to inferior jobs and low pay for the rest of your life, because you failed to try. Do not cheat yourself out of better pay by failing to act. Act promptly.

Be your own boss

Get all the profit  
Name your own hours  
Make every day pay day

# RADIO STORES

**Employ Servicemen,  
Service Managers, Buyers,  
Salesmen, Managers**

*I'll train you for these jobs*



### Would Have Lost Out. Training Won Promotion.

"I was a piano tuner. The company for which I worked was getting ready to take on Radios. I knew that if I did not learn something about it, I would lose my job. N.R.I. training has been my salvation. I haven't lost a day's work. I was advanced to head serviceman of Gilseman Piano Company, 924 Burgenline Ave., Union City, N. J., and if it hadn't been for N.R.I., I would have lost out. I want to thank you for the way in which I have been helped as a graduate. A man is not forgotten by your organization when he finishes. You are always willing to help. Once a student, always a student—that's N.R.I."

FRED H. ZIEGLER,

789 Lincoln Place, West New York, N. J.

### Manager Service Department, Has Made Over \$3,000

"Before taking the N.R.I. Course, I was a 'flunkey' in a furniture store. The future was none too bright, no chance of promotion, and no chance of getting ahead. Now I have a job as manager of a Radio service department of one of Mississippi's largest furniture stores. Since starting your Course I have made over \$3,000. I feel greatly indebted to the N.R.I. for my success, and wish to thank you for the past services so faithfully rendered."

DAVID J. SHUMAKER,

R. No. 2, Box 105 F, Vicksburg, Miss.



### Wouldn't Take \$10,000 for Radio Knowledge

"I am now Service Manager of the Belmont Electric and Radio Corporation of this city, which merchandises Radios, refrigerators, washing machines, etc. Your training has kept me in employment during the depression and I cannot boost the N.R.I. enough. Your way of training is the easiest way to learn Radio. I would not take \$10,000 for my Radio knowledge. There has been no Radio as yet that I could not repair."

E. A. MATTHIAS,

2031 W. Washington St., Indianapolis, Ind.

### Recently Became 21 but Earns \$162.50 a Month

"I was only an electrician's helper when I enrolled. I went to work for a Philco Radio store immediately after graduating, then to the Philco factory branch at Dallas and finally to my present position as Service Manager for the Philco State Distributor here at \$162.50 a month. That isn't so bad for a fellow who has only recently become 21 years of age. I believe Radio is the most promising and best paying field and would advise any man to get into it if he wants to get ahead. I wouldn't sell my N.R.I. Course for any amount of money."

R. B. CHERRY,

Box 775, Oklahoma City, Okla.



**Hundreds of Radio Engineers • Inspectors • Servicemen • Testers • Salesmen and Radio Mechanics • find Profitable Jobs with . . .**

# RADIO FACTORIES



There are many different types of jobs in Radio factories. Expert testing tubes.



Stewart-Warner sets are made here—a large plant employing many experts.



Testing and inspecting sets before they are shipped—an important factory job.



Main assembly plant of Philco Radio and Television Corporation.



R.C.A.-Victor plant—it gives employment to hundreds of well trained men.

**I**T TAKES large plants, manned by large, skilled organizations of trained men to make and sell two million or more Radio sets a year. That is the approximate number of sets being sold now.

Such concerns as R. C. A.-Victor, Sparks-Withington, Crosley, Stewart-Warner, Philco Radio & Television Corporation, to name some of the larger factories, employ large numbers of trained men in interesting and varied capacities. There is something satisfying, something interesting, about knowing that you have played a part in producing the highly popular sets found in many of the homes you visit.

### Interesting, Absorbing Jobs

Let's take a look inside a factory. Before a set is ready to manufacture, it must be designed by expert engineers. There is so much money involved in making it, that the work is entrusted only to well trained men. Dials, condensers, coils, wiring, tubes, do not fall into their places. A great deal of research work and experimenting is necessary to get a high quality instrument that will sell at a popular price.

Once such an instrument has been designed, it comes under the watchful eyes of skilled production man-

agers, mechanics, assemblers, testers. But simply making the set is not the whole job—only a part of it. It must be sold. This activity calls for salesmen, promotion men, servicemen. A factory with thousands of Radio dealers and many jobbers, in this and foreign countries, you can see at once, requires a small army of people. That, briefly, is the word picture of the making and selling of sets. It is a picture of many different kinds of fine jobs extending all the way from a nook in a large building where the idea of the set is conceived, down to the man who finally buys and listens to it.

### Good Men Get Good Pay

In normal times production managers make up to \$5,000 a year and more, mechanics up to \$50 a week and more, service managers up to \$4,000 and \$5,000 a year. Superintendents and inspectors up to \$4,000 and \$5,000 a year. Engineers as much as \$7,500 a year.

There are about 50 makers of Radio sets, and around 3,000 makers of the different parts that go into Radio sets. It is easy to see, isn't it, that a field as large as this offers many opportunities. N.R.I.'s Training in Fundamental Radio Principles and Advanced Radio Servicing and Merchandising trains men for good factory jobs.



### Job With Philco After 10 Lessons

"My enrollment with the National Radio Institute has been one of the most profitable investments I ever made. After finishing ten lessons I had the confidence to apply for a position with the makers of Philco Radios. I was hired immediately. My work there in the Radio laboratory consisted of constructing and maintaining Radio sets and speaker testing equipment. While there I made at least \$1,000 in my spare time servicing sets in addition to my regular pay. I am now an authorized Philco dealer."

SAUL D. GILLES,  
4734 N. Marshall St., Philadelphia, Pa.



### Service Department of Manufacturer

"I have had the opportunity to examine many courses given by other schools, but none in my opinion can compare with the N.R.I. Course. I believe it to be by far the best. I hold a responsible position in the service department of one of the world's leading Radio factories. I owe my advancement in the service field to the thorough training I received from N.R.I. I have friends in every branch of Radio: operators, technicians, servicemen, in broadcasting stations, talking movies, factories. They are all N.R.I. trained men."

LAWRENCE VANEK,  
113 W. University Ave., Cincinnati, Ohio.

# Making, Installing, Servicing Loud Speaker Systems

*is one of the newest fields of profit for the Radio Expert*

**A**T LAST, the fellow who isn't lucky enough to get a place near the speakers' stand has gotten a break. I can remember the time when considerably more than half of the people who attended the solemn occasion of a Presidential inauguration were unable to hear his acceptance speech.

## Many Opportunities Ahead

Read what a writer in *Electronics Magazine* said: "As to Public Address Systems, I honestly believe that the time is coming, and it is not far off, when no contracting organization will be complete without its expert on Public Address Systems work. Convention halls, manufacturing plants and modern office buildings are all going to be equipped with Public Address Systems. Right now the number of men who understand the technical side of this work, and who are capable of taking charge of installations, are limited."

## It Has Many Uses

Loud speaker systems are one more of the many applications of Radio principles. In this, as in other instances, Radio has made a new field of opportunity for the well trained man.

Installations outdoors, at fairs, baseball fields, football fields, race tracks, skating rinks, in parks; and installations indoors, in schools, auditoriums, restaurants, hospitals, hotels, and so on, are some of the many uses made of loud speaker systems. Some N.R.I. students and graduates make handsome profits by equipping trucks and renting them for advertising purposes.

## Expects to Pass \$10,000 Mark in a Year

"After completing the N.R.I. Course, I was in charge of the Radio Department of a chain store, and out of my earnings paid my expenses in Purdue University. I then came to Richmond and started in business for myself, and have been very successful. We maintain a modern laboratory for the service of public address equipment, Radios and television equipment. We now employ three men



doing sales and service work and with the general pick-up in business, will pass the \$10,000 mark this year. I would not hesitate to advise anyone who intends to enter the Radio field, either for spare time or full time work, to take your Course. I have received more returns from the money I put in the N.R.I. Course than from any other I spent for education."

**BROUSE D. RINEHART,**  
1025 Main St., Richmond, Ind.

## Get Ready for Jobs Like These

When I tell you of a branch of Radio like this one, keep in mind that there are always many different types of jobs in connection with it. The equipment has to be designed, it has to be manufactured, it has to be sold to retail outlets, it has to be installed and serviced.

This is another field for which N.R.I. trains you thoroughly. We don't train you for jobs in just one phase of this field, but for all of them.

Your Authorized Radio-Trician card and Diploma, showing that you have specialized in Advanced Radio Servicing and Merchandising, opens this field to you. You'll be ready to specialize in this work, giving all your time to it. Or if you open a service shop, work for a store or manufacturer, you'll be ready to step in and install or service equipment as the opportunities present themselves.



Speeches by our President, broadcasts of sporting events, etc., draw large crowds to establishments using loud speaker systems.



## \$15 a Day. Radio Equipped Truck

"The accompanying picture tells more than I can write. The cards netted me \$5 each. I also rented my Mobile Public Address outfit to candidates for \$15 a day. Without my knowledge of Radio and sound trucks, I would never have done it. I give N.R.I. credit. My red truck and I are well known in this section of the state, and I am going to make it better known in the rest of the state."

**LEO J. SAUNDERS,**  
P.O. Box 145, Wewoka, Okla.



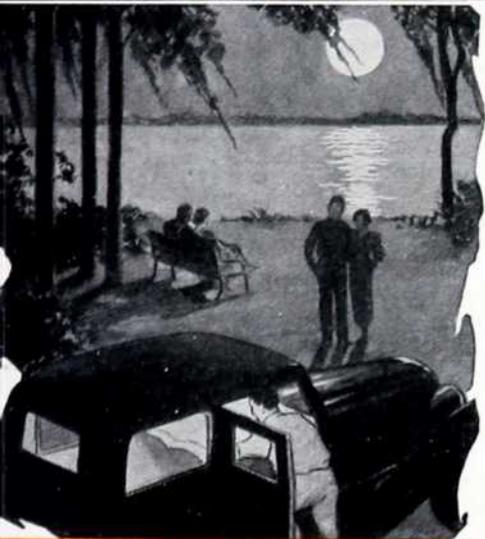
Upper left, a school principal at his desk, speaking to pupils in every room. A loud speaker system makes it possible. Upper right, installing a large loud speaker for crowds interested in a football game. Below, a truck equipped with a loud speaker system.



# Automobile Radio

**Another new field that offers  
you a chance to make**

## Good Money



1934-1,000,000 (Estimated)

1933-724,000

1932  
143,000

1931  
108,000

1930  
4,000

**Sale of  
AUTO RADIO  
SETS is jumping  
ahead fast**

**T**HE automobile industry has put its stamp of approval on auto Radio. Some makers are installing Radio sets as standard equipment in some models. Others are installing aerial equipment. Manufacturers of Radio tubes, sensing the big potential outlet for their products, have introduced new types of tubes, have improved on manufacturing methods, to "cash in" on this market.

### People Want Entertainment

People don't want to miss their favorite Radio programs when they ride. That they want home entertainment is evident by the more than 16,000,000 Radio sets in the United States. But of the approximately 23,000,000 automobiles on the American highways, probably not more than 3,000,000 are Radio equipped. There is a potential market for millions of additional sets.

What does this mean to you? It means opportunity. These sets have to be designed, manufactured, sold, installed, serviced. Each one of these activities calls for trained man-power.

### You Need Good Training

Men who do automobile service work are not equipped to deal with the technicalities of properly shielding auto

sets, suppressing interference caused by the automobile electrical systems and other problems.

Some men in garages and auto service stations write me expecting to learn all they need to know about Radio to cash in on auto Radio business, simply by studying a few lessons. My answer is: "I can give you the directions for doing it, but what good are directions alone? Unless you know the 'why' of what you are doing, of interfering noises, of other troubles that may come up, you will simply be a 'fixer'. Sometimes you will succeed by guesswork, but many times you will fail. What you need is a thorough fundamental knowledge of Radio, plus training in servicing auto sets—a knowledge of the problems involved, and how to solve them."

### N.R.I. Opens All Servicing Branches to You

One of the advantages of N.R.I. Training is that if a good opportunity presents itself you can specialize in any one of many branches of servicing—auto sets, loud speaker systems, television sets, home sets, large and small. If you want to do a broad service business, your N.R.I. Training equips you to handle all types that come your way.



**Made About  
\$12,000 in  
Two Years**

"I started from scratch and while taking your Course earned \$651, over six times the tuition fee. Since then I have devoted all my time to Radio servicing, repairing and selling all kinds of receivers and auto Radios in my own shop. I have made approximately \$12,400 in the short period of two years. All my success I owe to N.R.I., the greatest Institute in the world. I have found that the trained man wins."

FORD R. LEARY,  
1633 Davison Rd., Flint, Mich.

**Auto Radio  
Builds Sum-  
mer Business**



"With the increase in the use of auto Radio, my summer service business has been about as good as the fall and winter business. As Radio advances it becomes more and more of a necessity for the beginner to obtain a very thorough groundwork in theory to properly service the present-day sets. I highly recommend the N.R.I. Course to either the beginner or the man who needs a more thorough theoretical background for his practice."

JACOB G. DUBOIS,  
9 Oak Crescent, Poughkeepsie, N.Y.



**"Auto Me-  
chanic Must  
Have Radio  
Training"**

"I have a garage for auto repair and another part for electrical and Radio sales and service. Here is where my N.R.I. training comes to the front once more—by servicing auto Radios. You may be an auto mechanic, but you must have Radio training to service Radios. Thanks to N.R.I., I have this training. I cleared about \$550 in seven months on sales and service alone, which I know I would not have made without my Radio training."

E. W. NEDERHOUSER,  
Route No. 1, Amsden, O.



**\$40 to \$100 a Month  
in Spare Time**

"I am servicing broadcast, auto Radios and electrical appliances in spare time. My Radio work equals and often exceeds my regular salary. If business keeps up, I will be able to enter on a full time basis with an honest-to-goodness shop and sales room. I have run from \$40 to as high as \$100 a month. My advice to any man interested in Radio is to train, because the day of the magazine serviceman is over."

JOHN J. REIDER,  
536 Dayton Ave., St. Paul, Minn.



*Amazing opportunities ahead in*

# Television

*Be ready when your time comes in this promising field*

**A** FEW years ago a fantastic dream—today a reality, rapidly reaching the point where it will be commercially possible and practical. That's Television. No doubt you've often wondered where and how you could get into something "big." By big, I mean a field that would sweep you ahead, offer possibilities to make really enormous profits. Television is that field. It's the one big thing right ahead.

You know what amazing sums of money were made in Radio when broadcasting "broke." Men who had struggled along for years, just making a living, were started on the way to big success almost overnight. Thousands of new opportunities for jobs sprang up everywhere—so fast that enough competent men could not be found to handle even a small part of the total business.

Television, in my opinion, is going to make over those same opportunities, right before your eyes. Approximately 20 stations are licensed to broadcast Television pictures now. It is still in the experimental stage, to be

sure, but close enough to a practical reality to be recognized as one of the big businesses of the near future. Almost every large set manufacturer that I know of is working feverishly developing Television sets. The large broadcasting companies, National and Columbia, have obtained permission from the Federal Radio Commission to conduct Television broadcast experiments. The men heading those businesses know what is coming—they want to be in on the profits. You too want to make profits—you too see what is coming—act now—N.R.I. will train you to be ready.

### Making Television and Other Sets



"My books show \$3,200 for the year 1933. I made several Radios last year, all-wave battery sets, using two volt tubes, plug-in coils, and they all work on short-wave. At present I am making a six-tube Television receiver and will have pictures this winter. Radio service doesn't come too tough for me now."

J. P. WILSON,  
Box 43, Westville, Okla.

Television broadcasting studio. The man on the left is operating the transmitting scanner.



Console model receiver equipped to tune in television images.



Television demonstrations draw large crowds. A large public demand for sets is expected.



## Radio is a Rich Field for the Experimenter and Inventor

**C**AN you design a simple device for improving existing Radio apparatus? Perhaps not this minute. After you have mastered the fundamentals of Radio, after you know the operating principles of Radio parts, and Radio sets, then, if you have the urge to create, no doubt some ideas will occur to you that can be turned into simple but practical devices.

Perhaps instead of "working on your own" you'd like to line up with the research and experimental staff of a large Radio manufacturer, a broadcasting station, or some other Radio activity. N.R.I. trained men have done that.

Television experiments are receiving wide attention of experimenters and inventors.



Some inventions are accidents. Most, however, suggest themselves because men knew from their training that they could improve on existing designs, then set out and did it. Small inventions sometimes bring large fortunes. Stop to think of this. Aren't the Radio sets of a few years ago mighty crude compared with today's? But didn't we all think they were pretty good a few years ago? Of course we did. Someone, however, worked out something better. Someone is going to develop something better than what exists today. Who knows, perhaps that someone will be you. The opportunity is there.

**I will train you for Thrilling, Fascinating**

# **Jobs in Broadcasting Stations**

**B**ROADCASTING is the trunk of the tree from which practically all branches of the Radio industry have sprung. Its growth has been astounding. Starting from scratch in 1920, when the first broadcast was that of election returns; starting with one small station, the number has grown to 600. Starting with 5 watts, the power has been increased to 500,000 watts. Starting with a handful of listeners with earphones clamped tightly on their heads, the audience has increased to more than 50 million listeners to a single program, seated comfortably in homes, their automobiles, or offices. That's a remarkable record of growth. In fact, the whole Radio industry presents a record of growth that no other industry has matched in the same period of time.

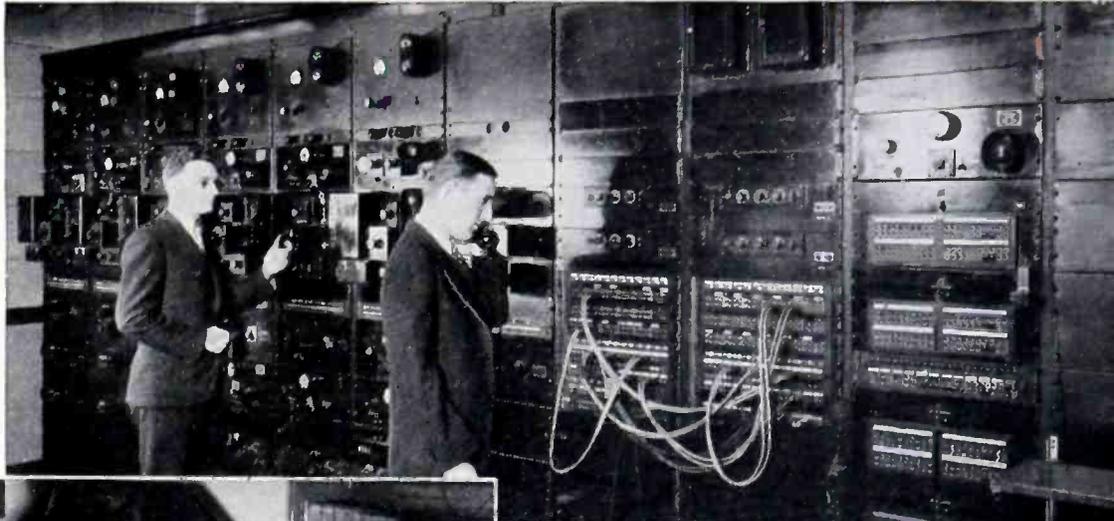
## **Good Jobs—Good Pay**

The larger stations employ as many as 20 to 60 men. Look over this list of jobs: Announcers, program managers, chief operators and operators' assistants at transmitters, chief remote control operators and their assistants, engineers, etc. Men well trained for this work earn good pay, some make as much as \$4,000 a year, and some even more.

How would you like to have the job of setting up the necessary apparatus to broadcast an inauguration, a world series baseball game, a political convention, a prize fight, a football game? Or, how would you like to work in a large broadcasting station and have the opportunity it presents to make the acquaintance of famous people whose influence might be mighty helpful to you in the future?

## **It's Work that Satisfies**

Did you ever do work simply because of the salary it paid you, not because of the satisfaction you got out of doing it? No doubt you have. It lacks that something, leaves you dissatisfied. Well, here's work that is satisfying. It is clean, it's interesting. Every day you go to work, you can look forward to something new and interesting. Over 100 broadcasting stations have employed N.R.I. graduates. Let the institution with a record like this train you. If this is the type of job you want in Radio, specialize in it through N.R.I.'s Advanced Specialized Training in Radio Communications.



*Large photo: master control room, Crosley Radio Corp. Broadcasts over WLW, WSAI, and short wave W8-XAL are carried through this panel. Above: one of seven studios of Crosley's plant. Right: Radio expert operating control room apparatus, W.E.A.F.*



## **Has Operated Broadcasting and Aviation Radio Stations**

"Since graduating I have operated quite a few stations, among them, KGRC, KHMC, KGCI and KTSA. I quit KTSA to take up aviation for two years, but I am back with it again. There is a good field open to the serviceman who can install either receiving or transmitting sets in planes, **CORRECTLY**. A man must have basic training that will give him a good working knowledge of parts to hold a responsible position where thousands of dollars worth of apparatus and hundreds of dollars an hour depend upon his knowledge and skill.

My N.R.I. training has been a foundation on which I could always depend for accurate and exact knowledge, no matter what the problem. I have always found my knowledge equal to any emergency. I wholeheartedly recommend the N.R.I. Course to any person interested in any branch of Radio. It will supply the cornerstone on which to build a successful career in Radio."

**T. L. KIDD,**

P.O. Box 195, San Antonio, Texas.



## **Studio Director Station WFAS**

"N.R.I. training has been instrumental in fitting me for my position as studio director of the Westchester Broadcasting Corporation, operating WFAS. I have general supervision of all technical details, the operation of all our speech equipment; remote amplifiers, telephone lines and equalization circuits come under my jurisdiction. We are undertaking experiments with 5 meter transmission with a view to using this equipment to replace telephone lines in certain kinds of remote control work. N.R.I. training has been the foundation I needed."

**FRANK A. SEITZ, JR.,**

Westchester Broadcasting Corp.,  
White Plains, N. Y.

# Radiophone and Radiotelegraph

## Commercial Radio Stations

### Rival Cable and Telegraph Companies



Ship-to-shore and Transatlantic Radiotelephone technical operators on the job. Here land wire circuits and circuits from the Radio transmitter and receiver join. These operators make such adjustments as are necessary between the two circuits.

#### Has Made as High as \$250 a Month

"I am at present working on short wave and auto Radio sets. I have repaired practically all makes of sets, and besides making good money, it is easy and pleasant work. I have made as high as \$250 a month. I am considering entering the Television field, for the outlook of Television is very good, as well as other branches of the Radio industry. For thorough and complete facts about Radio, there is no better way to learn than by taking your training. I would advise any person interested in Radio to do so, for he will learn more in a few lessons than most so-called Radio men, who never took a Course, learn in a lifetime."

HENRY BOLLMANN,  
Gasconade County, Bland, Mo.

**H**ISTORY tells us of the great sensation caused by the first telegraph message being sent between Washington and Baltimore. Everyone talked about it. A miracle had happened. Then came the telephone. Another miracle.

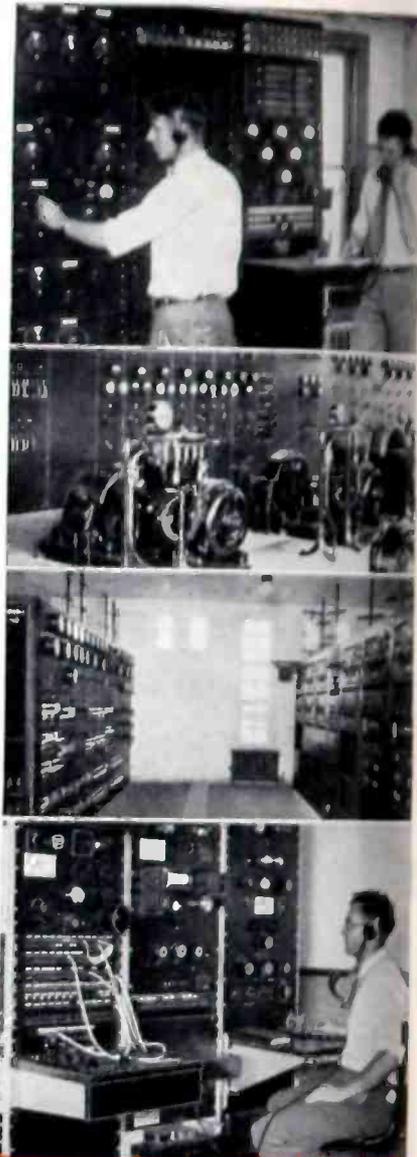
Are we becoming too self satisfied? Or, are we becoming accustomed to miracles? Amazing, sensational developments take place right under our eyes, yet many of us have only a faint idea of their significance, either as a history making event, or as an event opening new opportunities. How many people realize that the cable and telegraph companies have real rivals now in the Radiotelephone and Radiotelegraph?

How many realize what a sensational, amazing accomplishment it is to telephone, without interconnecting wires, across bodies of water. It is quite commonplace today. Telephoning not only to stationary objects, but moving objects, such as ships. And what's behind it all—Radio—the adaptation of Radio principles to new uses. Our coast lines are dotted with commercial Radio stations both for voice and dot and dash communication purposes. Inter-City Radio Communication service has been established, opening a new field of opportunity. Possibilities of expanding this service are enormous.

Need I tell you that activities like these make many well paying jobs for Radio trained men? Jobs in factories making the equipment, in stations that take part in sending and receiving messages, in service capacities maintaining equipment, with engineering concerns, planning, designing and installing equipment.

#### Short Waves Promise Much

Engineers are beginning to master and put short waves to practical use in commercial Radio communication, police Radio, re-broadcasting programs, short wave receiving sets. N.R.I. Training which enables you to specialize in Radio Communications will fit you to enter this profitable field.



From top to bottom: 1. Receiving station at Forked River, N. J., used in ship-to-shore telephone service. 2. Power apparatus room, showing main control switchboard, Drummondville Beam Commercial Station. 3. Short wave receiving equipment for Code service, R. C. A., Riverhead, L. I. 4. Equipment used by Bell Telephone Laboratories for short wave Radiotelephony between the United States and Great Britain.

## Here are Other Opportunities Radio Offers YOU

#### Radio Journalism

Writing for and editing Radio sections of newspapers and magazines.

#### U. S. Government

The U. S. Army and Navy, Coast Guard, experimental stations, airway stations, use Radio extensively. Many N.R.I. graduates are in the Government service.

#### Sound Pictures

Without Radio, "Talking Movies" would not be possible. Well trained Radio men find opportunities in this industry, making new equipment, servicing it, selling it.

#### Electronics

Through the use of Radio principles

man has been able to give machines a new type of brain. Devices have been perfected which match colors, automatically level elevators at floors, assort beans, cigars, discarding the bad and keeping the good, control heat, light, count traffic. Photo electric cells have been adapted to hundreds of industrial uses.

**Thrills, Adventure, Good Pay**

# Aviation *and* Police Radio

*offer you all three*



Top to bottom: 1. Looking through side window into the control department of a Radio equipped plane. A Pan-American Airways System passenger plane, reproduced through our courtesy. 3. Open cockpit plane equipped with Radiotelephone. Nerve center of New York City's Police Radiotelephone system. In the background Radio operator is sending a call. 5. Radio room in Brooklyn, one of the stations in New York City's police Radio system. Last three photos, Courtesy Western Electric.

**D**O YOU remember the machine-like precision with which Lindbergh charted his course from New York to Japan? How he spotted every landing exactly? How he kept in touch with the world when snow marooned him in the Northland? This and other sensational flights, air mail, and air passenger service have proven the value of Radio in taking the uncertainty out of flying.

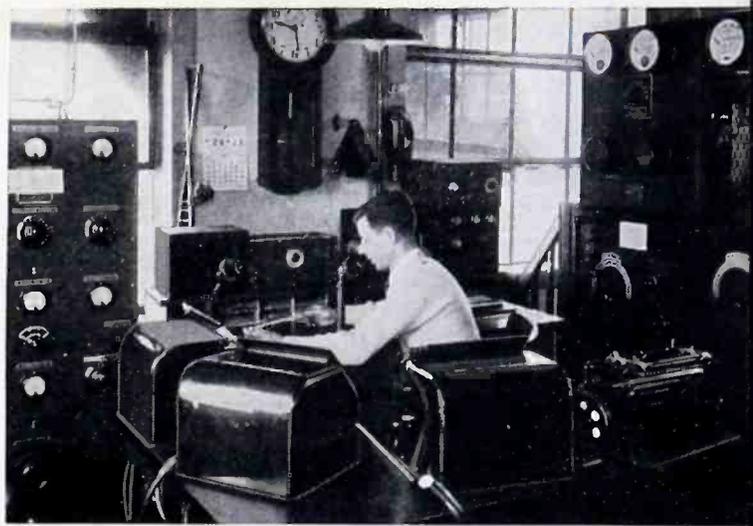
### Thrilling Jobs in the Air and on the Ground

Broadly speaking, Radio jobs in aviation fall into two classes. Those at ground stations and those in the planes. The ground station operators notify planes of weather conditions ahead. It takes one of the big hazards out of flying. Radio's aids to navigation along the various airways divide themselves into two principal classes: The Radio range beacons and the Radio weather communication stations. The beacons send out directional signals along the airways to guide the pilot, while the weather stations send out weather information to aircraft in flight.

Aviation is growing. Millions of miles are flown every year; thousands of passengers and tons of mail are carried with machine-like precision. There are over 700 airports and landing fields in the United States, close to 100 aviation weather broadcasting stations—presenting fascinating opportunities to Radio trained men.

### Opportunities in Police Radio

Police Radio systems are another example of Radio's expanding uses. As I write this, 100 American cities are protected by Police Radio and more than 20 other municipalities have applied for permits. A system of two way communication between headquarters and police cars has



Department of Commerce Radio Station, Hadley Field. The Radio operator is furnished with information on conditions locally and at other points along the Cleveland airways. He sends this information by Radiotelephone to planes in the vicinity.

been developed that promises increased efficiency and usefulness.

The few facts that I am able to give you in this limited space about Aviation and Police Radio represent opportunities to the trained Radio man. These services must go on. Day and night the apparatus must be in working order. Men must be Radio trained to be able to make, install, service, and operate the equipment.

### Do You Want Thrills, Adventure, Good Pay?

Here is your opportunity to get all three in one job. Picture yourself making long flights that may bring fame and fortune, or making hops from city to city in a passenger plane. Or working in an airport, sending out weather information, directing planes. Or, operating police equipment, sending out police calls. N.R.I.'s Advanced Specialized Training in Radio Communications fits men for good jobs in these fields.



### Assistant Store Manager. Serviced Police Radios

"I am now working as Assistant Manager of a local Radio store. We do a lot of service work and also sell a lot of Radio sets. It might interest you to know that I have done service work on the Radio cars of the West Seneca Township Police Department. I feel as if I owe my success in getting my present job to the N.R.I. I want to wish N.R.I. and all its members a lot of success."

JOHN F. TICKNOR,  
111 Edson St., Buffalo, N. Y.



### With Airways Division, Department of Commerce

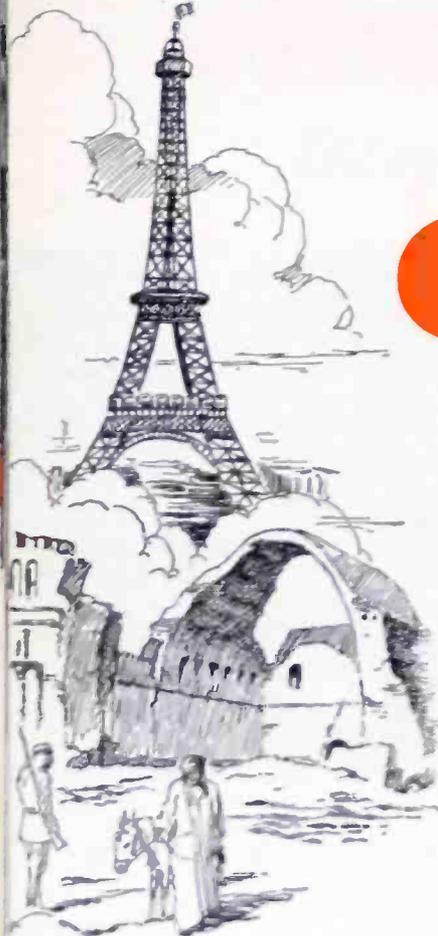
"I am operator with the Airways Division of the Department of Commerce. When I graduated I obtained a position with the Radio Corporation of America as operator on all types of ships, operator at the Cleveland Coast Station, and on repair and construction work for R.C.A. In 1930 I was appointed as Radio Operator, Airways, stationed at Omaha, one of the key stations of the East and West Airways. I am convinced that N.R.I. has the best Course offered today for home training."

CHARLES F. STEINHOFF,  
Municipal Airport, Cleveland, Ohio.

**Travel all over the World  
Enjoy Romance and Adventure as a**

# Radio Operator

**on Board Ship**



**T**HE show places of the earth, rich in scenery, famous in history, are open to you as a Radio operator on board ship. See for yourself Egypt's pyramids, the squalor of China's ancient cities, Buenos Aires, "The Paris of the Americas." Talk from experience of famous old world traditions; of Constantinople and its great Mosques decorated with cloths of gold and millions of dollars worth of gems. Walk through the streets of Athens, Paris, Liverpool, London. See the tomb of Napoleon, the Cathedral of Notre Dame, the Louvre with its world-famous art treasures.

See buildings, famous places, erected hundreds of years before North America was discovered—famous in history, identified with the lives of Kings and Queens long dead.

### Travel—Enjoy Life—Earn Good Pay

To travel is to be liberally educated—to enjoy life. Men and women with money enough to do most anything they choose, spend their play-time visiting places which you, as a Radio operator on board ship, can enjoy without expense. Here is interesting, pleasant, fascinating work that is truly romance—that of operating on board ship.

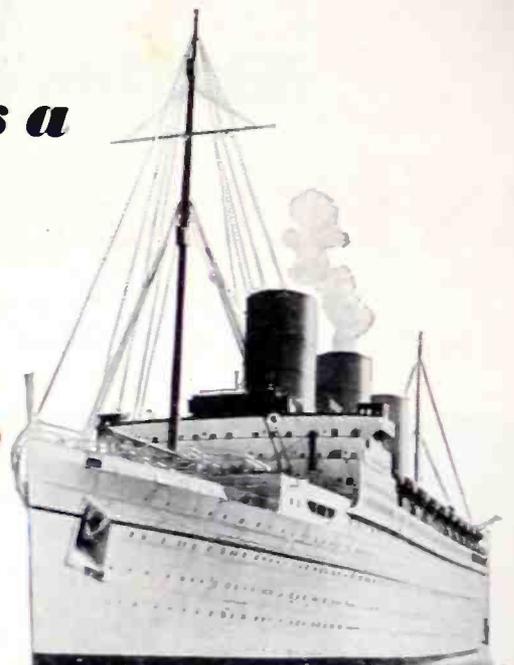
Large passenger ships carry as high as six operators. Passenger ships of smaller size carry from one to three, freight ships from one to two, depending upon the cargo and the amount of traffic to be handled. No matter what type of ship you get on, the best there is, is yours. You get the same considerations, accommodations and general treatment as are furnished to the licensed officers of the ship. You are provided with an officer's stateroom. There is no

room and board to pay, no fare. A Radio operator on board ship finds it easy to save money as practically none of his usual living expenses need be paid from his salary. Radio operators' salaries range up to \$110 a month, and more in special cases. The lowest paid operator can, without stinting himself, save hundreds of dollars a year. See the world, see places that others pay good money to see, send and receive messages for the world's prominent men.

### Many N.R.I. Men Enjoy World Travel

Do you long to see Hawaii, the Philippines, Japan, China, Australia, New Zealand? Over 2,000 American vessels are Radio equipped for sending and receiving messages in code; some for telephoning to and from shore.

The door to the life of a ship operator is open wide to you through N.R.I. Training. Many men and young men have visited all parts of the world as the result of N.R.I. Training. Get your start now. Enjoy life—make more money.



From top to bottom: Floating palaces like the one above provide excellent jobs for Radio operators. More luxuries, pomp, and conveniences are being built into ocean liners than ever before. Fit yourself to see the world without expense. The photograph immediately below the liner shows impressive, attractive surroundings in which ship Radio operators work. Next, a technical operator at a small switchboard, handling the routing of calls to and from the ship in ship-to-shore telephone service. Bottom, a Radio operator enjoying shore leave.

# Why you can have Faith in N. R. I.'s Home Study Training



**Y**OU are taking a tried, time-tested Training. You are tying up with an experienced organization. N.R.I.'s experience, training men and young men for good jobs in Radio, dates back farther than the beginning of broadcasting. We have been at the job for more than twenty years. Hundreds who were at one time

"doubting Thomases" have written me letters of praise because of the success it brought them.

## Read What Graduates Say

Read the letters in this book. There are two on this page—there are almost a hundred in this book. Is there any reason for you to believe that you cannot do as well as these graduates have done? Is there any reason for you to question the practical results N.R.I.'s Training brings when hundreds who have taken it tell you if you do your part, you, too, will be rewarded with larger earnings and fascinating work.

## N.R.I.'s Training is Practical

You want practical Training because you want results in dollars and cents. When you go out on the job, you know that you will be faced with practical problems. Read pages 30, 31, 32 and 33. Read what extensive, practical experience you get right in your own home; fascinating, interesting experience with Radio circuits, vacuum tubes, working with many of the very problems that will confront you when you get a job. We know the value of practical experience, so we have made our Training practical. That we have met the

requirements of concerns which employ trained Radio men, is proved by the many organizations that have employed N.R.I. graduates. See Page 63.

## N.R.I.'s Training is Recognized

Radio employers know what is in our Course; how it is presented. They know that a man who finishes it is steadfast in his purpose to get ahead; they know that he has the determination to tackle a job and finish it—the very qualities they like in an employee.

## It Gives You Your Chance

The better jobs do not open to men without Training. The man working for a small or even a fair salary, who has responsibilities, cannot quickly or conveniently pack his grip and attend a trade school or college. But he can quickly start the N.R.I. Course. He can take it during his spare time. He needn't leave home at all. The Training that has brought hundreds much needed increased earnings is brought right to you.

## There is Danger in Some Friendly Advice

To listen to good advice is a sign of good sense. To be influenced by bad advice, "hearsay," is a sign that a man lacks a mind of his own. Some of your friends may tell you that they know a man who took a home study Course and didn't "make anything out of it." Look back of statements of that kind. Maybe it was the man's fault. I know men who graduated from the best universities, but turned out to be failures. For evidence that you need not doubt for one minute that N.R.I.'s Training can pay you big dividends, I again refer you to the many letters in this book from graduates. Let their experience be your guide.



*Correspondence training is the greatest development of the Twentieth Century. It is doing and will do more to improve and uplift our present day civilization than any other invention or development we have made.*—THEODORE ROOSEVELT.



## "Friends Told Me I Couldn't Make Money"

"I know exactly how many of your prospective students feel about breaking into Radio work. I couldn't see how I was going to make money in Radio, and my friends tried to tell me I couldn't make any. But I had faith in the letters from students and graduates. I made up my mind that I was going to take it, and I have never been sorry. You never miss that little payment each month. Most of us would spend it foolishly anyway. Why not spend it for something no one can take away—knowledge?"

"After I had taken ten or twelve lessons, I

made as much in one week as I had to pay on the Course in a month. I was getting actual experience and making money while studying. I have done all kinds of work in my life, but none that I enjoyed nearly as much as I do my Radio work. As near as I can figure, I have averaged about \$25 a month in my spare time Radio work. One month I cleared \$60 in spare time. I might also add that when I enrolled, I didn't know one thing about Radio; didn't even know which part was the audio stage. You have done everything you promised, and a lot more besides."

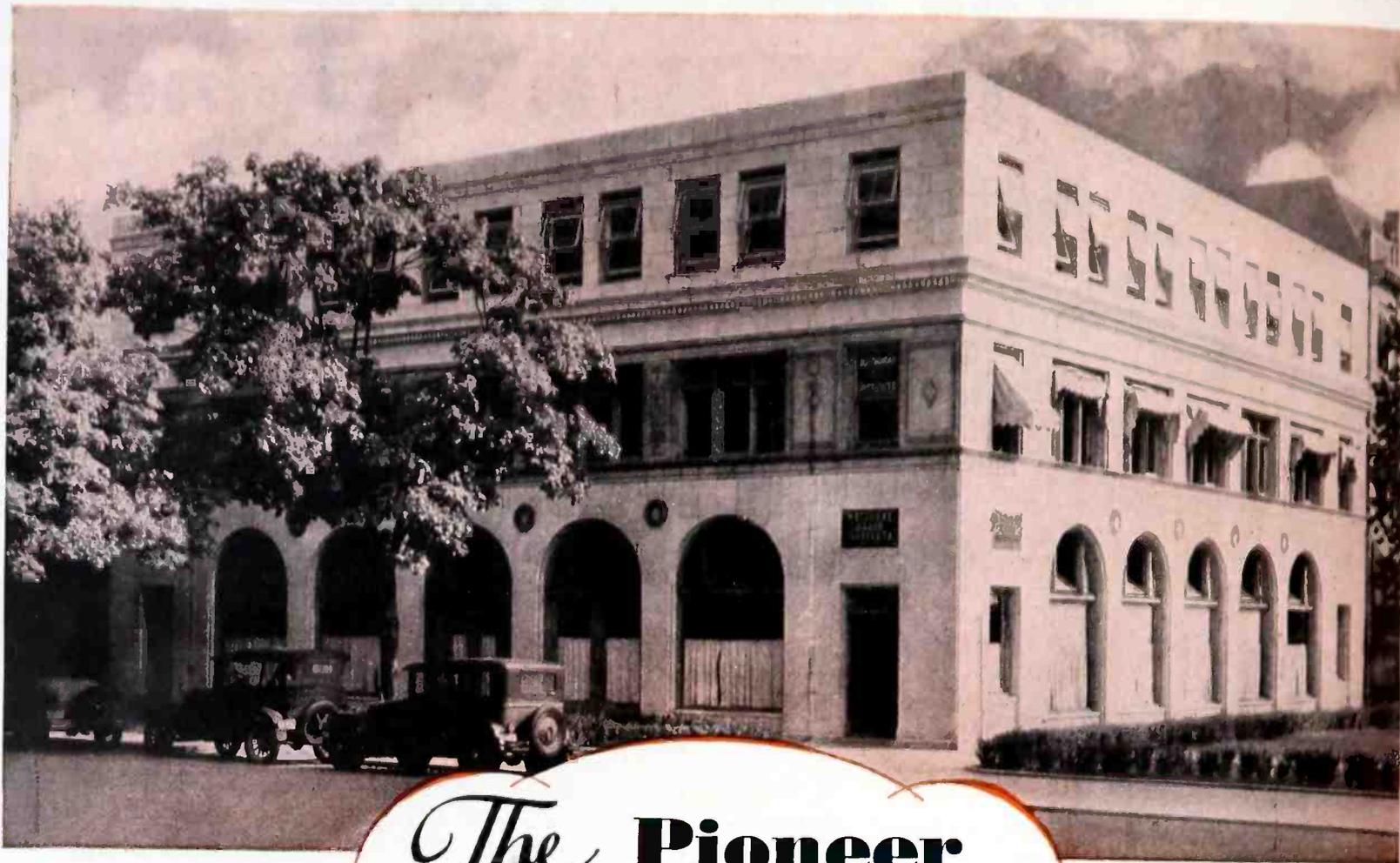
LEONARD E. CLOSE,  
1200 Division St.,  
Burlington, Iowa.



## "Folks Said I Was Doing the Wrong Thing"

"I started out very much in debt. My folks told me I was doing the wrong thing, but I had my mind made up; quite sure I would succeed. I have paid about \$2,500 worth of debts, made a fair living, and have about \$2,000 worth of equipment and stock. For the last eleven weeks I have averaged over \$65 a week net profit. You certainly do all you claim to do. My Diploma hanging over my service bench helps a lot. People wait as if they were sure they would get the job done right."

T. E. JOHNSTON,  
Shamrock Radio Shop, 203 E. 3rd St.,  
Shamrock, Texas.

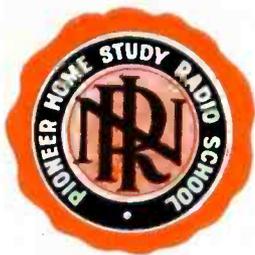


*The* **Pioneer**  
**and World's Largest Institution**  
**Devoted Entirely to Fitting Men for**  
**Good Jobs in Radio**

**T**HIS is our home. It is our own building. We occupy every inch of its 15,000 square feet of floor space. Not a square foot is rented. We do not owe a dollar on it. I tell you this, not to boast, but to show you that N.R.I. is not only successful in training men for successful careers, but that it is successfully managed. It isn't likely that a Course of training can be more sound—first, than the training and experience of the men who make up the organization back of that Course, and second, than the policy, the action, vision, that make up the business management of the organization.

**Established in 1914**

I founded the National Radio Institute in 1914. My first class consisted of exactly four students. It has grown from those four students and from a small rented room to its present imposing home. Our long, specialized experience—experience devoted to perfecting and giving a Course of training for one field—Radio—has taught us how to make that training easy to learn, yet practical and



resultful. We have learned how to eliminate waste of time, waste of material, how to cut operating costs, because we have concentrated—specialized—and the result is a training highly endorsed, an organization highly respected for its ability, hundreds of loyal, satisfied students and graduates, in the United States and Canada—in fact, all over the world.

**Determination and Specialization**  
**Helped N.R.I. Succeed**

Organizations, I believe, are like men. When they concentrate on one proposition, specialize in it, stick to it and strive to improve, especially when they do it for 20 years, they become exceptionally expert. That thought is so fundamentally sound that I have applied it to the National Radio Institute. Since the very beginning, N.R.I. has confined its resources, the energies of its employees, exclusively to training men for the Radio industry. Its continued success, and the success of its graduates, has certainly demonstrated the wisdom of holding steadfastly to this policy.

# My Money Back Agreement • Protects You

**1st  
STAR  
FEATURE**

Read this and every one of the following pages. They cover the Eighteen Star Features of N.R.I. Training; they tell you what you get in Instruction Material, in Instruction Service, and in Special Privileges.



## N.R.I. Sticks to Its Students

"I have been four years since I graduated from N.R.I., and I'm still going strong buying new Radios and second hand ones. Business has been very good; is getting better. I can't praise the N.R.I. training too highly. I still think that the personal service you give a student is well worth the price. The N.R.I. surely sticks to its students and graduates."

J. OTTO HIGGINS,  
333 W. Oak St.,  
Union City, Ind.



## More Than Satisfied. Farmer Does Spare Time Jobs

"I'm operating a hundred and twenty acre farm. It keeps me busy during the day. Three nights a week for two hours each, I teach a class in Radio. The other three nights I usually have service calls to make. Words cannot express my gratitude to and respect for the N.R.I. I am more than satisfied with your training. It prepared me to earn nice sums in spare time instructing and servicing."

HOYT MOORE,  
R. R. No. 3, Box 919, Indianapolis, Ind.

## Every Promise Was Zealously Kept

"I shall never forget the kindness that the N.R.I. has shown me during my period of study, and the urge to continue when it appeared to me that I had reached the breaking-off point. Today I am so much happier; all of which is due solely to the encouragement I received. The N.R.I. has my appreciation, support and respect one hundred per cent. Every promise made me has been zealously kept from beginning to end. While taking the Course I serviced almost every type of receiver."

A. J. MELVILLE PURCELL,  
113 E. 12th St., New York City.



**T**HIS agreement is legal and binding upon the Institute. Its terms are clear and broad. Within a few hours after your enrollment arrives, a Money Back Agreement, identical with the one reproduced here, will be made out in your name and sent to you. You must be satisfied. That is my way of doing business.

With an agreement like this in your hands, you can start your training with absolute confidence that you are going to get your money's worth—or your money back. You alone will be the judge—you alone will decide whether you are satisfied when you graduate, with the lessons and instruction service we gave you. If you are not, you can get back your tuition fee in full.

## References

If you want to know more about our financial responsibility, have your banker look us up in Bradstreet's, or write to the Riggs National Bank, Dupont Branch, or the Hamilton National Bank, Main Branch, both of Washington, D. C. Or, write to the publisher of any large Radio magazine in the United States.

I could not give you this Money Back Agreement if I did not have confidence in my training and in the staff which will help me train you. Keep in mind that the Pioneer and World's Largest Institution devoted entirely to training men for good jobs in the Radio industry—an institution of 20 years' standing and all its resources—stand behind this Money Back Agreement.

# You do not need Radio or Electrical Experience



*I'll give you all you need . . .  
of both to be a Radio Expert*



## Knew Nothing about Radio or Electricity

"As time goes on, I realize more and more what a wonderful school N.R.I. is and what it has done for me. When I enrolled I knew nothing about Radio or electricity. I now do the more complicated service work for retail and wholesale houses. I have made over \$2,500 in spare time work alone."

P. N. KANTEN,  
1133 35th Ave., Seattle, Wash.

## "N.R.I. Training enabled me to earn \$5,000 a year for 5 years."

"I was untrained. It was necessary for me to accept any work that would afford me a living. I decided that the Radio field offered unusual opportunities—that if one were well trained—the opportunities would be enormous. The first day I went in search of work after completing your Course I landed a job with Station WABC. I left to accept a position installing and servicing Western Electric Sound Projection Systems. This type of work afforded travel and further opportunities to the trained man. I am still in the employ of this company, being supervisor of service, visiting some 23 theaters.

"I attribute my success entirely to your training. The chances and opportunities in Radio are so unlimited that anyone trained by your Course and teachings is bound to succeed. Prior to taking your Course my yearly income would not exceed \$2,500. For the past five years I have exceeded \$5,000 a year. How valuable the training has been to me is evident by the fact that I am able to command work and a good salary."

B. J. GRIFFIN,  
453 N. E. 102nd St., Miami, Fla.

**Y**OU may have wondered, as you were reading this book, whether you should have some knowledge of Radio or electricity in order to make the most of my training. I don't expect you to know the first thing about Radio or electricity. I expect to give you all you need of both.

N.R.I. Training starts you at the very beginning. It builds up your knowledge just as carefully and as systematically as you would lay brick after brick in its place when building a wall. You get the knowledge you want

presented in a manner that is easy to learn and use. When we teach you a principle, we show its practical application to make it easy for you to remember and apply the principle.

Actually you will get a lot of personal satisfaction out of studying Radio with N.R.I. There is something thrilling, absorbing, about a Course of training that makes you feel as you go along that you are getting somewhere—that you are learning something every week for which you will have future use. In

## N.R.I. Training Complete in Every Detail

"I am taking this opportunity to thank you for your kind interest in my Radio work and to congratulate you on your excellent Course. I feel justified in saying that the N.R.I. stands apart as the most superior Radio school in America. Every part of your Course, your practical experimental outfits, text books, etc., are complete in every detail. N.R.I. has certainly proven to be a 'depression chaser' if there ever was one. I have doubled my earnings during the past year in

fact, you will have use for much of the information we give you promptly after you learn it. That's why so many N.R.I. students can make good money in their spare time while learning.

## Supply the Ambition— I'll Do the Rest

I do not expect you, as I said before, to supply any knowledge of Radio or electricity, but there's one thing that I do expect of you. I expect you to have a keen desire to succeed—a desire so keen that you yourself will not be satisfied until you do. I am sure N.R.I. will satisfy your want of knowledge of Radio—all I want you to do is to apply yourself to your lessons enthusiastically, with a determination that will brush aside interruptions and distractions.

Many of the graduates whose letters you read in this book did not know a condenser from a rheostat when they enrolled. To them a vacuum tube was a funny little bulb that looked something like an electric light. But they had the desire to get ahead—they had faith in themselves—that faith and that desire, coupled with what I gave them, enabled them to succeed.



comparison with former years. At times I have been so rushed I have had to call in extra help. Knowing the quality of your Course, I will not hesitate to recommend it to those who intend to study Radio."

FRED J. DUBUQUE,  
19 Church St., Oswego, N. Y.

# My training is Clear, Interesting, Easy to Master and Use



***Easy enough so that men who did not go through grade school can master it—Practical enough to fit college graduates for good jobs***



## **N.R.I. Never Too Busy to Help**

"My spare time Radio work is very profitable. In cold cash it has run into several thousand dollars during the past few years, and has meant much in other respects; paying off the mortgage, and making things easier in many ways. There's one thing I'd like to say: N.R.I. sticks by you to the end. They are true friends. They are never too busy to write a friendly letter or help solve some problem."

F. R. HILLS,

2239 Toronto St., Regina, Sask., Can.

**S**OME men feel, because they cannot see the Radio waves that travel through the air and bring us the voices of prominent people, the writings of our music masters, etc., that a man must possess some special gift to be able to understand "how" Radio sending and receiving sets work. Those impressions are far from the real truth. Actually, Radio is rather easy to learn. You know that Radio is interesting and fascinating because so many boys, who have to be coaxed and begged to study their school lessons, will sit up half the night to tinker with their sets; to send messages to some unseen friend in a far off city.

## **It Helps Those Who Need it Most**

When I founded the Institute, the one object I had in my mind was to help the man who needed help the most—the man who for any one of many reasons had not been able to go far in school. That man, who, despite a lack of school training, wanted to make something of himself, deserved

my help. I realized that I must give my training in a manner that would be interesting, easy to understand, yet very practical. My training is easy enough so that hundreds who did not go through grade school have mastered it and have gotten better jobs as a result. It is practical enough so that hundreds of high school and many college graduates have benefited from it in increased earnings.

It took time and a lot of patience to prepare instruction material, keeping in mind always that every fact, every principle had to be written in a style, choosing words, phrases, pictures and diagrams that would make it easy to understand. But it isn't enough for a member of my staff to know Radio. He must be able to present what he knows in a manner that others will understand.

You won't find page after page of dry matter. We've left out useless theories. We give you practical information that you will be able to use and cash in on.



## **One Month's Spare Time Profits \$76.80**

"My business has improved a great deal. Last month was a banner month. I do only spare time service work—no advertising, just recommendations from satisfied customers. I had 35 service call repair jobs from which I cleared \$76.80 after deducting the cost of material, tubes, oil and gas for the car, and the telephone bill. Not bad for a free lance serviceman."

EDWARD J. MEYER,

7121 Michigan Ave., St. Louis, Mo.



### **Radio the Most Interesting Subject**

"I enrolled with the idea of making up what money I had lost through the long siege of depression. I have made about \$2,750. Radio is in its infancy. I would advise everyone to enter it at once. Radio is the most interesting subject of any study I have known. Your school teaches it right; not only the theory, but the practice as well. The attention given students by you and your instructors makes the student grasp the idea very easily. I have worked on every make of set on the market and have been successful through the kindness and courtesy of the N.R.I."

HAROLD OPPENHEIMER,  
104-25 Roosevelt Ave.,  
Corona, L. I., N. Y.

### **"Investment small, profits large from N.R.I.'s easy-to-learn Course"**

"Any person, young or old, who can read and write, and who wants to make good money, should take the N.R.I. Course. The investment is very small, and the profits large. Since entering the Radio field, I have made as high as \$80 a month profit, have built a new house, as well as bought a new car. I owe my entire success to N.R.I.'s easy-to-learn Course, which put me on the road to easy money."

REX B. SMITH,  
311 W. Easterday Ave., W.,  
Sault Ste. Marie, Mich.



### **"Give N.R.I. a trial. I was low myself once."**

"When I enrolled I worked on a farm. I have since moved to town and am now Chief Operator at the Majestic theater here. Here is what I want to say to any fellow who can't get a job, who is down and out and doesn't feel like going on. Give N.R.I. a trial—you will never be sorry that you did. I was 'low' once myself, about five or six years ago, and I took the N.R.I. Course. Now I have my home all paid for and a good, clean, easy job that I have held for the past five years. N.R.I. training is so easy that anyone can learn by it."

W. A. MARTIN,  
Box 601, Artesia, N. Mex.

# Expert Instructors

*give you . . .*

## Close Personal Attention

**4TH  
STAR  
FEATURE**



Scenes like this occur many times every day in the N.R.I. To make sure that your questions are thoroughly and accurately answered, frequent consultations between instructors are not only encouraged but required. This is the kind of service and attention you will get when you are an N.R.I. student.

**T**HE lessons you send in for grading and the letters you may write asking for information will receive the personal attention of one of the members of my staff of instructors. When we take over the job of preparing you for the Radio field, we intend to do the job right. We intend to work with you and for you in a friendly, helpful way.

Every member of my staff of instructors is a Member or an Associate Member of the Institute of Radio Engineers. They have all had extensive experience. I don't believe there is one who has had less than three years' experience as a member of my staff; most of them have had five to ten years or more. You are not working, trying alone, when you are an N.R.I. student. You have experienced, trained men helping you, ready any minute you call on them.

### You Deserve a Real Chance

There is no need for you to go through life feeling that success is for others and not for you. You can get your share, too—simply get the right training; it will bring out your best ability. We are not going to stand by, watch you to see if you will make good. We are going to take a warm, personal, active interest in you, encourage you, inspire you, help you when you need it. I don't want you ever to feel that our relationship is simply that of a teacher and a student. I want you to feel that we are friends—that you have a whole group of friends here at the Institute, ready, anxious, enthusiastic about their partnership with you which has as its object that of fitting you for a better job.



**"N. R. I. gives a fellow cooperation"**

"I certainly recommend your training. The N.R.I. gives a fellow cooperation not only while he studies, but after he finishes as well. I have earned about \$1,000 in spare time in two years. If I had put in full time, I would have earned five times that amount."

CEDRIC W. TEWS,  
825 W. Walker St., Milwaukee, Wis.



**Fine Spirit of Helpfulness**

"I have always appreciated the fine spirit of helpfulness shown by the N.R.I. staff. Anyone who takes the N.R.I. training and properly applies himself, will find that it serves as a stepping stone to better things. I have made around \$900 servicing sets in my spare time since graduating."

W. V. BUCKMASTER,  
324 Oak St., Uhrichsville, Ohio.



**Thanks N. R. I. Staff**

"After finishing my tenth lesson, I started on my first job. After that, the jobs came rolling in and I found myself with a surplus of money with which to continue paying for my Course. My first year's record was exactly 108 Radio repair jobs. I wish to thank the N.R.I. staff for the way they have kept in touch with me."

JOHN HEARL,  
66-53 Jay Ave., Maspeth, L. I., N. Y.

**5TH  
STAR  
FEATURE**



## **N. R. I. is a Member of the National Home Study Council**

**T**HE National Home Study Council is an association of the outstanding correspondence schools of the United States with headquarters at Washington, D. C.

Members are admitted only after rigid examination of the training courses offered, of the faculty teaching these courses and of the standards followed in the advertising, selling and conduct of the training. Thus the students of any Council members are assured of both the character and the educational efficiency of the school in which they are enrolled.

The institutions belonging to the Council are united in the belief that students are entitled to the utmost in efficiency and service, and are constantly striving to increase their ability to help each student achieve the goal sought. The common purpose and aim of these schools constitutes perhaps the greatest single factor in the adult education field and give an assurance to you in your consideration of this institution for your training.

The National Radio Institute is a member of the National Home Study Council.

# Use my Students' Consultation Service

6TH  
STAR  
FEATURE

*You can get our Advice and Help  
as often as you wish*



## Consultation by an Authority

"Today, \$4.67, the amount I used to earn a week working Saturdays and during vacation in a grocery store, is only a part of my daily earnings. For example, my buddy and I recently landed an amplifier job costing about \$800. I am engaged in repairing and servicing all makes of sets, repairing electrical appliances, electrical wiring and building, repairing and installing sound amplifiers. Consultation service has been given to me without question by an authority. I have earned about \$3,500 in Radio."

CLYDE D. KIEBACH,  
1429 Moss St., Reading, Pa.



## Faculty Always Ready, Anxious to Help

"My N.R.I. Course has been worth ten times what it cost me. Not only was the Course easy to learn, but when I wanted any additional data or help, the entire faculty at N.R.I. was always ready and anxious to help me in any possible way, not only while taking the Course, but after graduation."

J. E. SIMS,  
P.O. Box 171, Blackwell, Tex.

**U**SE this Consultation Service often. Any time you want help or advice in connection with your Training, drop us a line, and you will find us quick to give the help you need. You are not limited to a certain number of questions, but may ask for our help and advice as often as you wish while you are a student.

Some of my staff members are experts on set servicing, some on transmitting apparatus, such as broadcasting stations, commercial Radio stations, short wave stations; some on merchandising, some on manufacturing. You will find some one here who can answer your questions, and answer them correctly. We are here to help you, not only in every way we think you should be helped, but in every reasonable way you feel that we should help you. We are here to work with you and for you.

## N.R.I. Training Planned to Get Cash Results

The one purpose of my training is to equip you to make more money. This

purpose is never lost sight of. The whole plan is very complete and thorough. Although it is made up of many individual parts—many Lesson Texts, instruction material to help you make money in spare time; diagrams, Service Manuals, Experimental Outfits, Advance Specialized Training, many privileges and services—every part has its place in the one main purpose. Every part is a step of the stairs that lead to what you want—a better job or a business of your own. I want you to take full advantage of this Consultation Service because I know it can be valuable and helpful to you. Call on us.

## Always Received Immediate Attention

"In all the years I have been connected with Radio as a salesman with Federal Radio Company, as a serviceman for Fada and other companies, as supervisor of inspection of transformers for the Kolster Radio Corporation, as a tester and supervisor of trouble shooting of condenser blocks for the RCA-Victor Company, I can truthfully say that the N.R.I. Course has benefited me immensely. Whenever any problems perplexed me, I had but to call on the N.R.I. for assistance, and always received immediate attention."

GEORGES M. BARRERE,  
410 E. 65th St., New York City.

- Meetings with my staff of instructors and with department heads take place every week. Organization and training problems and problems of students receive careful attention, thorough discussion, and prompt decisions.





# THESE PROMINENT

## Help Keep N. R. I. Training Thorough,



**A. E. THIESSEN**

Graduate, Johns Hopkins, Electrical Engineering. Employed by Bell Telephone Lab., submarine cable division, on high gain amplifiers and high speed submarine cables. With General Radio Co., Eng. Dept., since 1928, designing production-testing equipment and voice circuits, also of broadcast and talking movie units, general communication engineering.



**JESSE MARSTEN**

Graduate, College of the City of New York. Former connections include Radio Engineer with Marconi Wireless Telegraph Company; Radio Engineer for the Radio Corporation of America; Chief Engineer for Freed-Eisemann Corp.; Chief Engineer of Earl Radio Corp.; at present Chief Engineer for International Resistance Co.



**RALPH P. GLOVER**

E.E. degree, Univ. of Cincinnati. Former connections: Engineer, Union Gas & Electric Co., Cincinnati; Croxley Radio Corp.; Silver-Marshall, Inc. Now Electrical Engineer, consultant, special representative and technical publicity counsel for makers of electro-acoustic, audio amplifier, Radio transmitting equipment. Assoc. Member, I.R.E. Writes for Radio journals.



**C. E. BRIGHAM**

Educated in Electrical Engineering, Geo. Washington and Columbia Universities. Formerly with Radio Test Lab., Navy Yard, Washington, D. C., and promoted to Research Engineer. Chief Research Engineer on acoustical development with C. Brandes, Inc.; Assistant to Chief Engineer, Federal-Brandes. Now acting Chief Engineer, Kolster Radio Company.



**HORATIO W. LAMSON**

S.M. in Physics, M.I.T.; A.M. in Physics, Harvard. Engineer, development and research, General Radio Co. Instructor, Massachusetts Institute of Technology, Harvard, Massachusetts Dept. of Education, and S. Curtis Radio School. Fellow, I.R.E. and Acoustical Society of America; Member, American Institute of Electrical Engineers.



### Course Very Complete

"I did part time service work while taking your Course, but after completing it, I gave my full time to Radio servicing. I gained many customers because I had received specialized training in Radio. I now have the position of Service Manager for Montgomery Ward, and believe my success is due to the training I received from you. Your Course is certainly very complete."

**ROBERT W. MYERS,**  
309 So. 7th St., Coshocton, Ohio.



### Sound Training in Theory, Practice and Design

"My summer campaign of tuning up old sets was very successful. I got 46 set servicing customers, sold eight new and thirteen used sets, netting a total profit of \$343.00. The N.R.I. Course is certainly complete. In a comparatively short time it gives a man sound fundamental training in Radio theory, practice and design. This summer I bought my own home, thanks to your training."

**STEPHEN J. DRAPCHATY,**  
200 26th St., Barberton, Ohio.

**T**HE N.R.I. is not a one man school—N.R.I. Training is not a one man Course. Radio is too large a field—your future much too important—to trust the matter of preparing instruction material designed to fit a man for a good job in this field, to one man. My training represents the best work of my own staff, myself, these ten men and many others. I have drawn on men outside of my organization for their experience and knowledge. As I told you earlier in this book, the one purpose of my Course is to fit you to make more money. With that one purpose continually in mind, naturally I want my training to be as practical, as thorough, and as complete as you need to accomplish that purpose.

### Up-To-Date and Kept that Way

Radio is a growing, expanding, changing field. As changes in methods, as new applications of Radio principles are developed, the men outside my organization see to it that they are put into my training. They supply this material. My own staff prepares it in a form that makes it easy and interesting for you to learn and apply when you go out and get a job. Our entire training is revised, gone over thoroughly, one to two times every year. Material

that has become obsolete through new inventions is thrown out, new applications of Radio principles are put in. N.R.I. Training is kept right up-to-date—it is kept new.

Any one of these men could give you several hundred dollars worth of Radio information in a short time, simply by drawing on their own personal experiences. Every one of these men are well known in Radio circles. They have responsible, well paying positions. Read their histories given briefly above.

It is because of this set-up that I told you about—my own staff and men on the outside who contribute to my Course, that I am able to give you much information that you will not find in print elsewhere.

### Thorough from Beginning to End

If you were to attempt to learn through your own efforts all the information in my Course—discover the facts, learn the many applications of the principles I shall teach you, you couldn't do it in a lifetime. N.R.I. Training gives you in practical, usable form the accumulated knowledge of many scientists who have spent a lifetime in scientific

# RADIO ENGINEERS

*Practical and . . . UP-TO-DATE*



**SYLVAN HARRIS**  
E.E. degree Univ. of Penna. Experience: Power Maintenance work 1917; Tech. Editor Lefax 1922-23; Managing Editor Radio News 1923-25; Director Research and Design Stewart-Warner 1926-27; Brandes 1927-29; Fada Radio Corp. 1929-30; 1930 to date, Editor-Manager, Society of Motion Picture Eng. Member I.R.E.; American Physical Soc.; Optical Society of America.



**KEITH HENNEY**  
Graduate, Western Reserve University; Master's degree, Harvard. Amateur Radio operator since 1913; two years' experience as ship operator; one year with Bell Telephone Labs.; five years as Director, Radio Broadcast Labs. Since 1930, Editorial staff, Electronics; Author, "Principles of Radio," "Radio Engineering Handbook," "Electron Tubes in Industry."



**CHARLES FELSTEAD**  
Attended Univ. of So. Calif., majoring in Journalism and Elec. Eng. Experience: Construction, operation, KDBG, KFQI, KZY; Asst. Chief Eng., Gilfillan Radio Corp.; Supervisor, construction, installation, KGHV, KGHW; Sound Eng., Universal Pictures Corp.; Member, Soc. of Motion Picture Eng., and I.R.E.; Assoc. Editor, International Photographer, Consulting Eng., sound picture problems.

**ARDON S. MITCHELL**  
Ed Electrical Engineer- at Calif. Institute of and Univ. of Calif. Employed by Universal Pictures Corp., re-recording films. Now Engineering Director, Academy Motion Picture Arts and Sciences. Contributor on Technical Subjects to Radio and Engineering publications.



**HARRY DIAMOND**  
B.S. degree in E.E., Mass. Institute of Technology; M.S. degree in E.E., Lehigh. Two years research work, General Electric Co. Four years instructor, Lehigh, in Radio, communication, and electrical subjects. Seven years, Bureau of Standards. Formerly in charge, development of Radio aids to aviation. Now Senior Radio Engineer.



research or in jobs requiring expert scientific knowledge.

My Course stands on its own feet. It is practical, it is thorough. When you have completed it, you won't need additional training to make sure that you have all the knowledge necessary to hold a good job. It goes from one end of Radio to the other. It always builds upon its own foundation. You learn quickly because the information you need is presented in a manner that makes it easy and quick to learn.

## It is Practical. You can Use what You Learn

You get practical information because useless theories have been cut out. You get thorough information, because so many men have worked to make it thorough. You get complete information because every Lesson Text passes through many hands to be checked and re-checked to make sure that it is complete. You get up-to-date information because so many men are constantly on the alert—it is their job to be on the alert—for new developments and changes.

You get unbiased information because the N.R.I. is an independent organization. Outside companies have no

financial interest in the National Radio Institute. It is not financially interested in any other company. We have no interest in promoting other products, neither have the promoters of other products an interest in our institution. We are not associated or connected with any Radio organization financially or otherwise. We cultivate friendly relations with all Radio organizations, manufacturers, retailers, broadcasting stations, commercial Radio, aviation companies, etc. But we do not make financial tie-ups.

## Take that First Step Now

The first step is usually the hardest, but without taking it, the easier ones that follow and bring success do not come at all. The reason good jobs pay so well is that few men can handle them. And the reason few men can handle them is that few have adequate knowledge. The reason few men have that adequate knowledge is that so few are sufficiently ambitious, sufficiently forward looking to take the first step toward obtaining the right training. The one sure way to break away from having to compete with a lot of men for jobs, is to know more than most of them. Take that first step—that important step—today. Enroll now.



## None Better Than N.R.I. Many Openings for Trained Men

"As for N.R.I. training, there is none better to my knowledge. I made a complete check of all others, and found N.R.I. by far the best on account of the completeness of its book training and giving actual experience with parts. The Radio field holds many openings for trained men in the future. Due to my training, my yearly earnings run from \$1800 to \$2100. I was recently promoted to foreman of the Central Repair Unit with my company."

STEPHEN J. MILLARD,  
390 S. Dale St., Denver, Colo.



## N.R.I. has No Equal

"I have my own shop and am devoting full time to servicing commercial sets. Success in Radio cannot be obtained without proper technical and practical training, and for this N.R.I. has no equal. The future of Radio is unlimited. How much one will realize on these possibilities will depend on the course of training and effort put forth."

EARL STINER,  
8414 Blackburn St., Houston, Tex.

# Special Home Experimental

## give you . . . Broad Practical



AIRCRAFT, POLICE, SHIP, COMMERCIAL RADIO TO ME ARE ALL ALIKE. THE SAME PRINCIPLES ARE USED IN ALL, WHICH I LEARNED AND WORKED WITH N.R.I.'S EXPERIMENTAL OUTFITS



THIS COMPLICATED FREQUENCY METER DOESN'T TROUBLE ME. I KNOW FROM MY EXPERIMENTS WITH N.R.I.'S OUTFITS THAT IT USES A SIMPLE PRINCIPLE THAT I LEARNED THOROUGHLY



THEY SAY IT'S A NEW TYPE OF MICROPHONE—THE LAST WORD YET FROM N.R.I.'S PRACTICAL TRAINING I KNOW IT'S ONLY AN OLD PRINCIPLE WRAPPED UP IN A NEW DRESS.



NOW I KNOW WHY TURNING A KNOB MAKES THE PICTURE BACKGROUND JUST RIGHT. NOTHING TOO HARD TO UNDERSTAND THE WAY THESE ... EXPERIMENTS PUT IT ACROSS



THIS IS GREAT. JUST WHAT I NEED. I CAN TEST ALMOST ANY SET WITH THE INSTRUMENTS N.R.I. SENT ME. I'VE MADE ENOUGH MONEY ALREADY TO BUY PROFESSIONAL TESTING EQUIPMENT.



**You get Radio Equipment with directions for making tests, conducting experiments, building circuits and set testing instruments to give you valuable experience no matter what branch of Radio you enter. . .**

**T**HIS feature of my Course settles that question, "how will I get practical experience?" Soon after you get your training underway, you will begin to get Special Home Experimental Outfits. With each outfit you will also get very complete and detailed directions for conducting experiments, building circuits and testing equipment. The experiments you conduct, the circuits and testing equipment you build, have been carefully planned to give you exactly the right type of experience.

### Better than Building Sets

We could supply you with some Radio parts and a diagram, tell you to assemble the parts into a Radio set, and call that giving you experience. But you want more than experience—you want a working knowledge of fundamentals—of important principles. You want to work out with your own hands many of the fundamental principles that underlie the operation of important Radio devices—in fact, the very principles that make sending and receiving messages possible.

The directions we supply make it very easy to perform the experiments and build the other devices asked of you. I have reproduced sections of a few on the next page so that you may judge their value for yourself, and also judge how valuable it would be to you to know, from experience, the information in the column on page 31.

### Experience Taught Us What You Need

It took some mighty careful planning, some hard work, and behind it all, extensive, practical Radio experience to know and to be able to design directions that would enable you to work out with your own hands many of the basic principles you need to be successful whether you go into broadcasting, commercial Radio stations, ship operating, television, loud speaker systems, set servicing, aviation, auto or police Radio.

Considerable attention has been given to showing you and giving you an understanding of how different types of sets work, how to locate trouble when they do not work, and how to repair

HOWLS, SQUEAKS, BUZZES MAY MEAN POISON TO SOME EARS. BUT THEY'RE MY MEAT I KNOW WHAT CAUSES THEM, WHAT TROUBLE THEY STAND FOR. THATS WHAT N.R.I.'S PRACTICAL TRAINING DID FOR ME



# Outfits

# Experience

them. You actually work out with your own hands many of the things you read about and are told how to do in your Lesson Texts. You get the "feel" of tools and meters—you develop a technique for taking Radio apparatus apart and putting it together again. We all know that experience of this type is what distinguishes one who has had practical experience from a beginner. It shows up in his pay envelope. It makes learning at home easy, fascinating, practical.

## N.R.I. Pioneered this 50-50 Method of Learning

N.R.I. was the first—the pioneer—to adopt a method of giving its students practical Radio experience while learning by the home study method. N.R.I.'s 50-50 method of training—about half from Lesson Texts and half from practical experiments, with equipment we supply, is now recognized as the only proper way to teach Radio. It teaches you to know the "how" and the "why." You are not a "paper" expert—you are a practically trained expert.

You can actually use some of the set testing equipment which you are told how to build, in your spare time service work for making extra money while learning. Use it right on the job. When you finish the N.R.I. Course you will be trained and experienced. You should not have to take any job simply to get experience. Many N.R.I. graduates, when they first step into the Radio field, take a place alongside men who have been in the field for several years.

BOSS SAYS I'M THE FOURTH SERVICEMAN HERE. MUST BE A TOUGH JOB, BUT I'M NOT WORRYING, THANKS TO N.R.I.'S PRACTICAL TRAINING. I KNOW RADIOS - ALL KINDS AND SIZES.



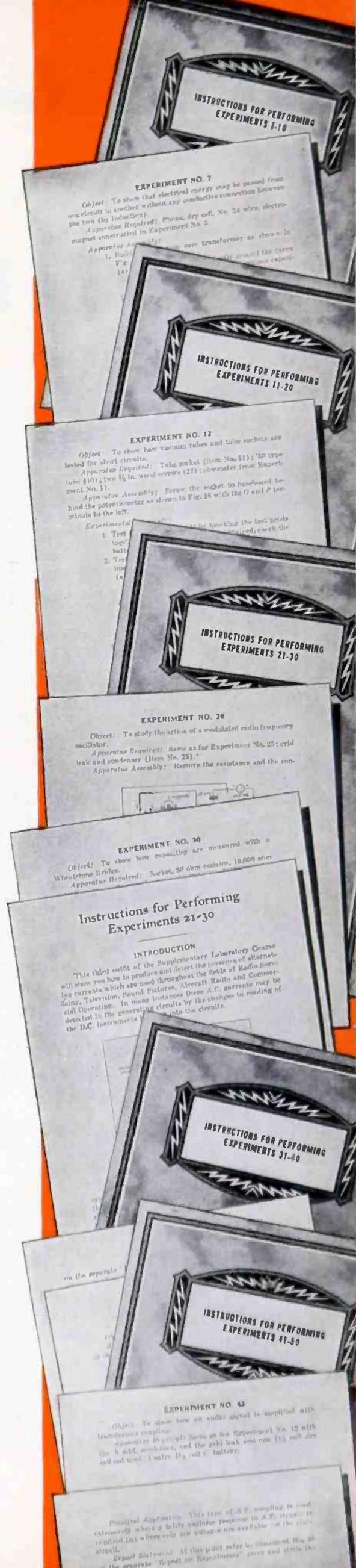
## SOME of the Many Circuits You Build and Experiments You Conduct

- Connect transformers
- Amplifying an audio signal
- Measuring the strength of an audio signal
- How a vacuum tube is made into a sensitive voltmeter
- Testing a resistance coupled audio amplifier for Radio and Television
- Building a simple regenerative receiver
- How to improve receivers by Radio frequency amplification
- Experiments showing by-passing
- How to make a tube act as a detector
- Building different types of detectors
- Changing A.C. to D.C. current with a tube
- Building an ohmmeter for Radio service work
- Generating range of waves by oscillator tuning
- Combining sound and Radio waves
- Building a modulated Radio frequency oscillator
- Effect of coupling on oscillation
- Building a dynatron oscillator
- Building an audio signal generator
- How to measure and show tube behaviors
- Measuring the merit of a tube
- Measuring amplifying ability of a tube
- How tube grid acts as control valve
- Building a device for detecting defective circuits in service work
- Building and testing various audio amplifiers

The experiments illustrate the important principles used in these and other well known receiving sets:

- |                  |                        |
|------------------|------------------------|
| Atwater Kent     | Philco                 |
| Bosch            | Pierce Airo            |
| Colonial         | Pilot                  |
| Crosley          | R.C.A.-Victor          |
| Emerson          | Sentinel               |
| Fairbanks-Morse  | Silver-Marshall        |
| General Electric | Spartan Stewart-Warner |
| Grunow           | Warner                 |
| Gulbransen       | Stromberg-Carlson      |
| Howard           | Carlson                |
| Kadette          | Wells-Gardner          |
| Lyric            | Zenith                 |
| Motorola         |                        |

This feature of my training is a practical Radio education in itself, but you, as an N.R.I. man, will get much more in material and personal service.



# You Get PRACTICAL E

## Building these a

# with the Equipmen

8TH  
STAR  
FEATURE

**H**ERE you see pictures of a few of the many devices you can build with my Home Experimental Outfits. I haven't the space to picture every experiment you conduct, but you can imagine what extensive practical experience you get, as there are over forty. You are interested in knowing that you get a first hand knowledge of sets, that you work with parts, see how they act in relation to one another, that you can build these parts into instruments useful for set servicing. In fact, the testers you build are just the thing for your workbench. They'll help you earn enough money to build up a good spare time servicing business, and later, if you wish, to buy professional looking equipment.

### You Get Fascinating Radio Experience Right in Your Own Home

You don't need a lot of room; a small table or a bench is enough. You don't even need electric current. These experiments are so designed that you obtain all your power from batteries. And you get experience that applies to both battery and "all electric" operated apparatus. Your experience will fit right in with modern practice, as expensive set testing equipment is battery operated and practically all service laboratories, Radio laboratories, and Radio organizations depend upon batteries for their source of supply when testing Radio equipment. Radio sets really operate from D.C. power, the type of power obtained from batteries. The only difference, as you probably know, between an A.C. or electric set and a battery set, is a device which changes alternating current to direct current.

Imagine the thrill of working out with your own hands, and seeing with your own eyes, the result of experiments that illustrate some of the basic principles on which large broadcasting stations, various types of Radio sets, and high powered and high priced Radio equipment operate. Think of the value to you, of gaining two to three years' ordinary workbench experience in one-fourth to one-third of that time. That is exactly what these Home Experimental Outfits are planned to do for you. They cut years off the usual time required to become an expert in the Radio profession. After conducting your experiments, you will handle your first service jobs with the confidence of a veteran. You will have gotten a "feel" and a knowledge of meters, tubes, and Radio parts, that will change ten thumbs to ten deft fingers.

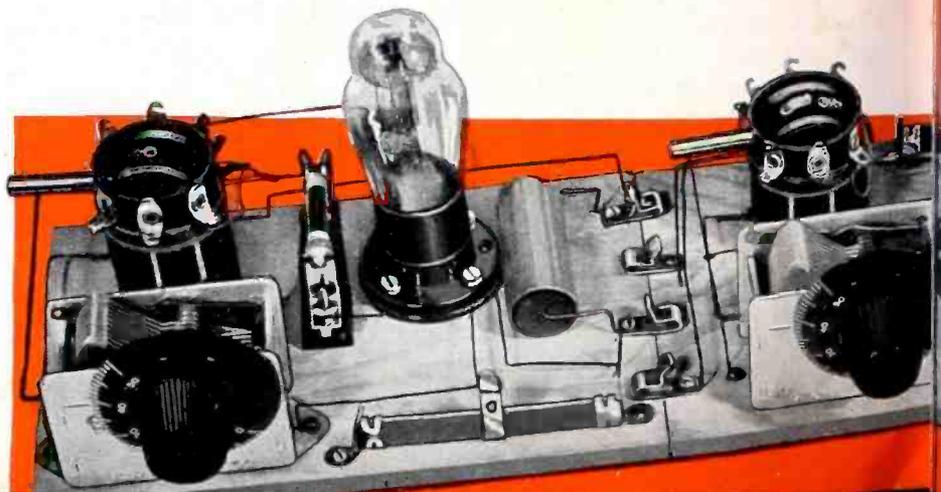
### You Get Valuable Experience with Tubes, etc.

You may not know the first thing about Radio or electricity, and we don't expect you to have had previous experience, but once you start working with these Home Experimental Outfits, you will realize very quickly what an important and definite place they have in rounding out your knowledge of Radio. For example, one experiment deals with electro-magnets, and how permanent magnets are made from them. I am citing this experiment to show you what practical Training you get. Electro-magnets and permanent magnets are used extensively in dynamic speakers, magnetic speakers, and the principles of electro-magnetism are used extensively in the design and construction of set testing instruments. In your experiments you will make a careful study that will clear up the so-called "mysteries" of many types of Radio apparatus.

You will conduct many valuable experiments that teach how vacuum tubes behave. You will learn to understand vacuum tubes when in use as audio and Radio frequency oscillators.

You receive all the equipment you need to conduct the experiments, also all the directions you need, including three vacuum tubes, a milliammeter, a voltmeter, a headphone, grid leak, condensers, and many other items. The only power you need, and which you will be asked to supply, will be batteries. You can pick up batteries most anywhere, or, if you wish, we will gladly arrange for you to buy them by mail at an especially attractive price.

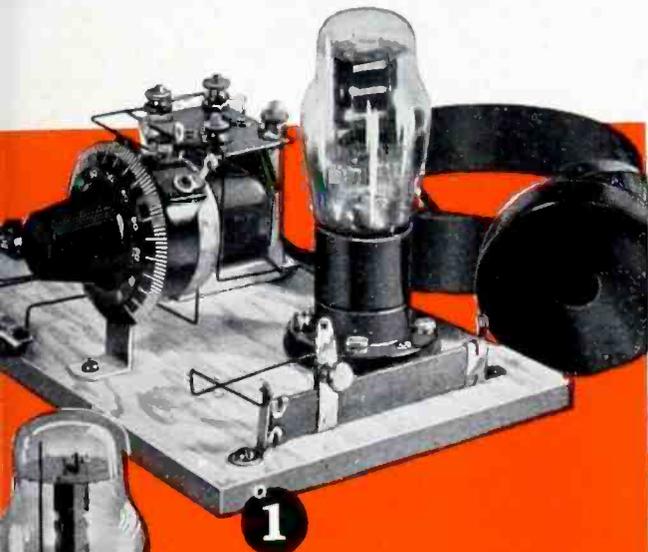
The Home Experimental Outfits, and the directions you get with them, have been carefully chosen with a view to the type of training and experience you need. If new inventions come out, or new developments take place, which make it advisable to make changes in the equipment or the experiments, we will do so in order to keep this feature of our Course up-to-date.



# EXPERIENCE AT HOME

and many more

that I GIVE YOU



1

1. With this set-up you can measure the ohms of a resistor, or the capacity of a condenser. An extremely simple device to connect and use. So practical that you will use it at your work-bench as soon as you start spare time servicing and long after you finish the Course.



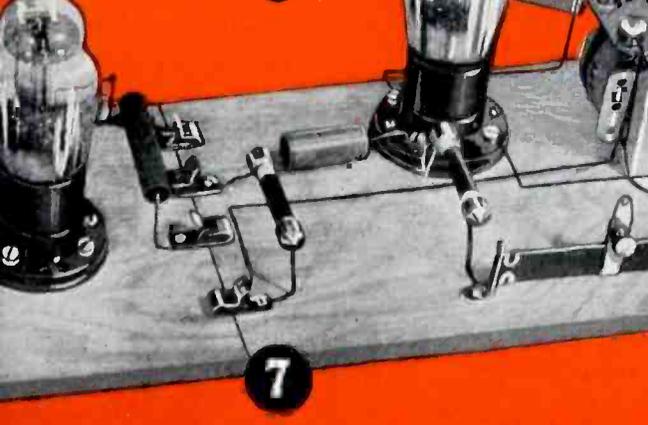
3

2. A simple regenerative receiver that pulls in the stations. You will get a real thrill in building and working it. Experiments with this set-up bring out many fundamental facts.



5

3. A simple broadcast transmitter. You talk into it and hear your voice on your own receiver.



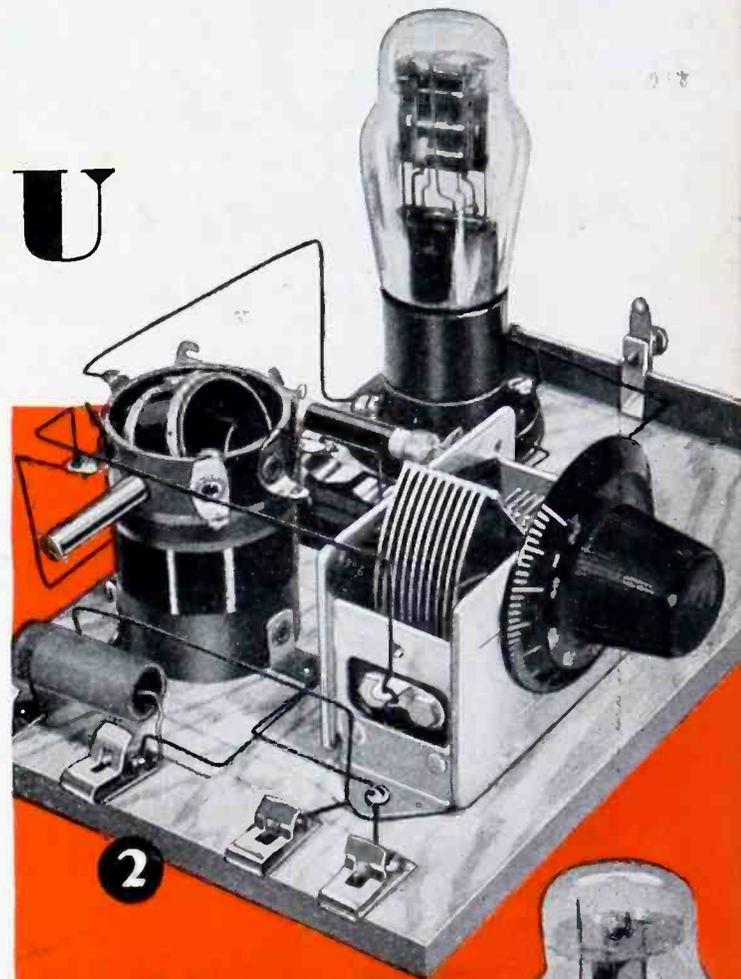
7

4. An example of the many practical testers you can build with these outfits. This I. F. signal generator will help you service modern superheterodyne receivers and make many of the important set adjustments.

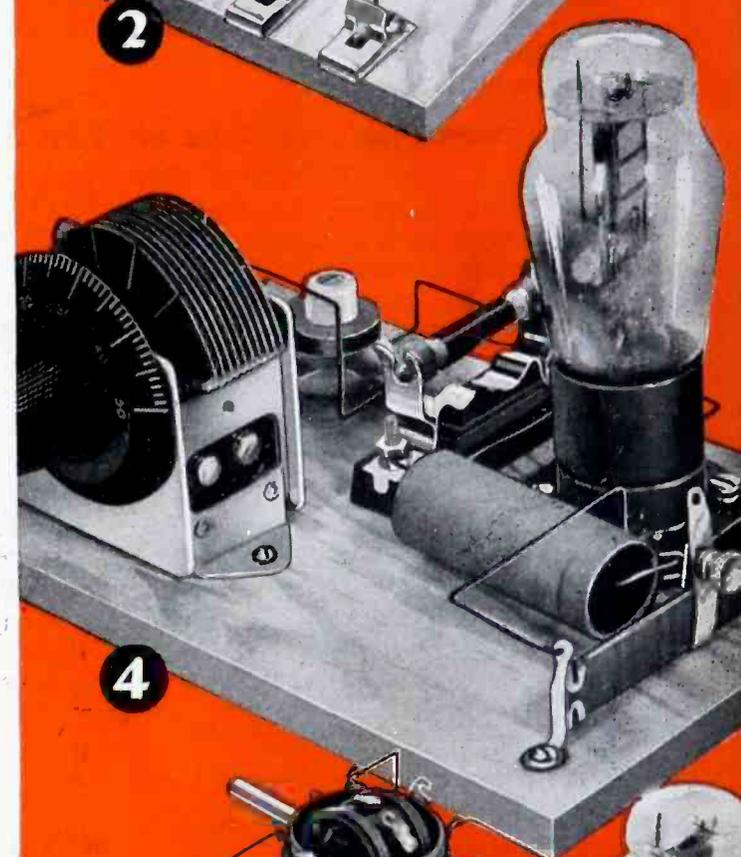
5. A companion instrument to the I. F. signal generator and valuable in service work. It is a vacuum tube output measuring device and is superior to many professional indicators in that it measures as well as indicates receiver power output. You can use it in regular service work.

6. Another signal generator which works in the broadcast range. With this and the output indicator you can test tubes in a very modern way.

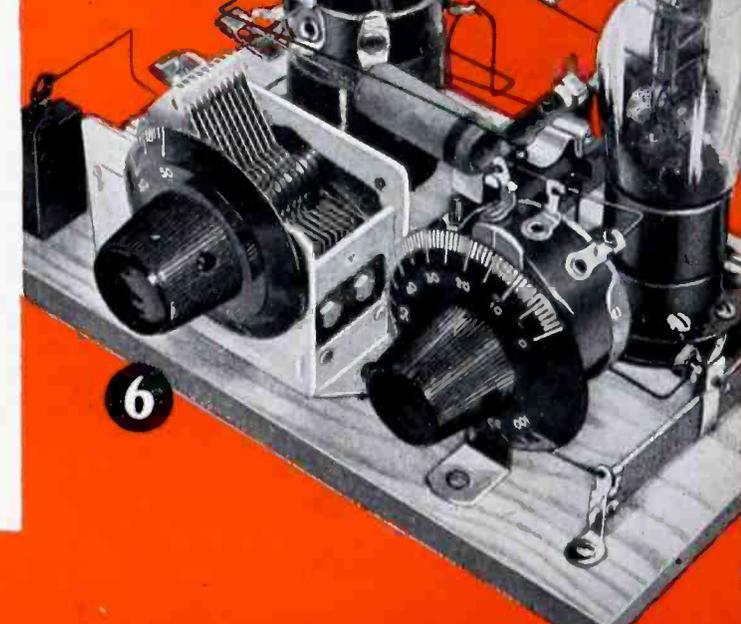
7. A unique experiment showing how a number of Radio stages can be connected together to make a more sensitive receiver. With this set-up you learn the secret of modern receivers.



2



4

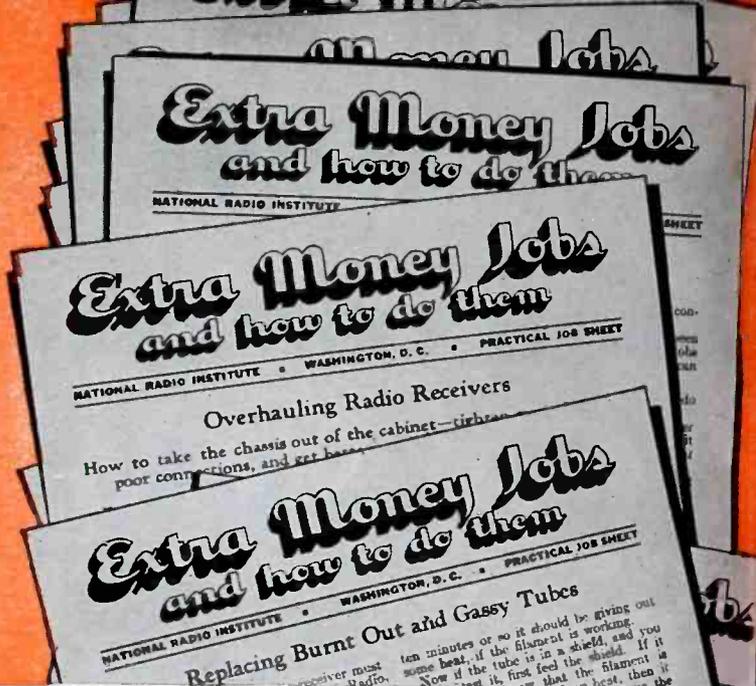


6

# Extra Money Job Sheets for

doing OVER **40** SPARE TIME JOBS

Start coming to you the day you enroll



**Y**OU don't have to wait six months, a year or two, before you are ready to begin "cashing in" when you train through N.R.I. I'm going to show you how to make extra money while you are learning; I'm going to show you how to start doing it soon after you enroll. As a matter of fact, the day you enroll, I'm going to start sending you Practical Job Sheets which show you "Extra Money Jobs" and tell you "How To Do Them." As you proceed with the Course you will get more of these "Extra Money Job Sheets"—you'll be shown how to do more than forty Radio jobs that are common in every neighborhood. And in addition to these Job Sheets, you will get instructions for doing hundreds of other spare time jobs. Some of these are outlined on the next page.

## Many Students Make \$5, \$10, \$15 a Week Extra

Now I want to make it clear that you don't have to engage in spare time work to earn your Diploma. This feature of my Course is intended to help the man who needs and wants

extra money; who will welcome the chance to pick up \$5 and \$10 bills in his spare time, and get good practical experience, too—all while he is getting ready for a good full time job.

## The Opportunities Are Right in Your Neighborhood

You don't have to go far afield to make extra money in Radio. The opportunities are right in your neighborhood. There is hardly a Radio set that does not need some servicing, some new tubes or parts or adjustments, a new aerial, or some other attention once or twice a year. That's where you "cash in." Let your friends and neighbors know that you are studying Radio, and you'll find plenty of jobs coming your way.

## I Also Tell You How to Get the Jobs

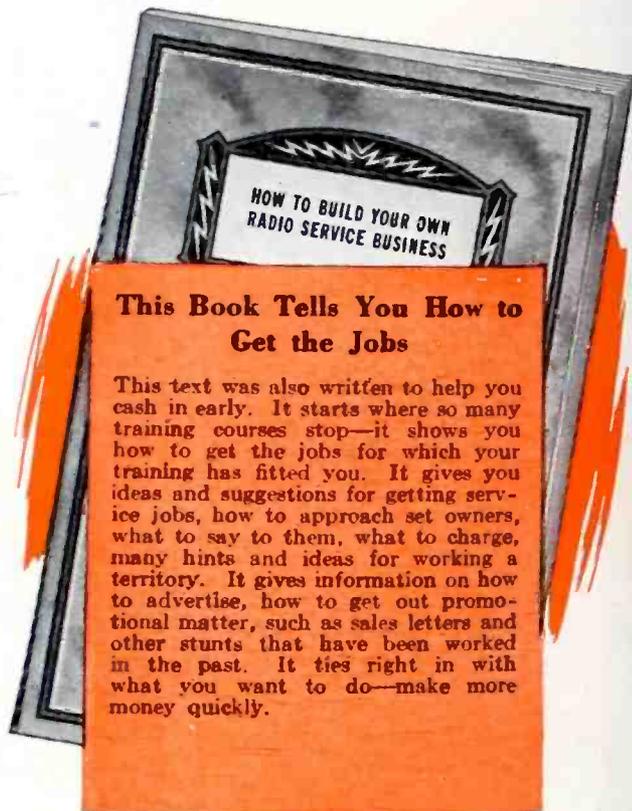
In addition to showing you how to do the jobs, I give you tested ideas and plans for getting them. Without this last feature, a training stops short. I tell you how to break in—how to get started—give you a whole book of valuable suggestions that have made good money for others.

There is no need for you to skimp, to deny yourself many of the things you would like to have but haven't been able to get because you lacked the money. Here's the field, here's the Training, that can add substantial amounts to your income doing jobs that are as fascinating, as interesting as a hobby, yet pay well.

## The EXTRA MONEY JOB SHEETS Show You How to Do These Jobs

- How to Get Started in Radio
- What Simple Tools to Collect
- Learning How to Solder
- Overhauling Radio Receivers
- Replacing Burnt Out and Gassy Tubes
- Replacing Burnt Out Pilot Lamps
- Restoring Marred and Broken Radio Cabinets
- How to Erect a Simple, Complete and Effective Antenna System
- How to Make Reliable Power, Ground and Antenna Lead Extensions
- How to Detect Defects in an Antenna System and Repair Them
- How to Install a Neat Permanent Lead-in
- When and How to Install Indoor Antennas and Aerial Eliminators
- How to String Antennas to Various Types of Supports
- When and How to Build a Good Outdoor Ground
- How to Make and Erect a Tall Antenna Mast
- More on How to Sell Your Services
- What Is the Best Receiver
- How to Eliminate Line Noises with a Filter
- Installing a Noise-Reducing Antenna for Regular Broadcasts
- Where to Place the Receiver in the Home and the Best Antenna to Use
- How to Install a Noise-Reducing Antenna for 1 to 4 Receivers
- How to Erect an All-Wave Noise-Reducing Antenna

- How to Erect an All-Wave Noise-Reducing Antenna in a Limited Space
- Wave Traps—When Needed—How Made and Installed
- How to Make Spare Time Money Cooperating with a Dealer
- How to Select and Use a Tube Tester
- What to Do When Tubes Test O.K. and Set Does Not Play
- How to Test Coils, Condensers and Resistors When in the Chassis
- How to Repair Defective Dials, Controls and Mechanical Parts
- How to Restrung Selector Dial Cables
- When and How to Install an Automatic Line Voltage Regulator
- How to Compensate for Low Line Voltage
- How to Detect and Remedy Vibrating and Microphonic Noises
- When and How to Install a Tone Control Combined with a Power Switch
- How to Install Extension Loud Speakers and Head Phones
- How a Good Speaker Baffle Will Improve Receiver Tone
- How to Build Speakers into the Home
- How to Advertise Your Services
- How to Attach a Phonograph Pick-Up to a Radio
- How to Add an All-Wave Converter Adapter to a Radio
- How to Install a Police Call Adapter
- How to Adapt a Microphone to a Radio Receiver



WORLD FAMOUS AS "THE COURSE THAT PAYS FOR ITSELF"

When You Get Underway

these **8 SERVICE MANUALS**

Step up your spare time earnings

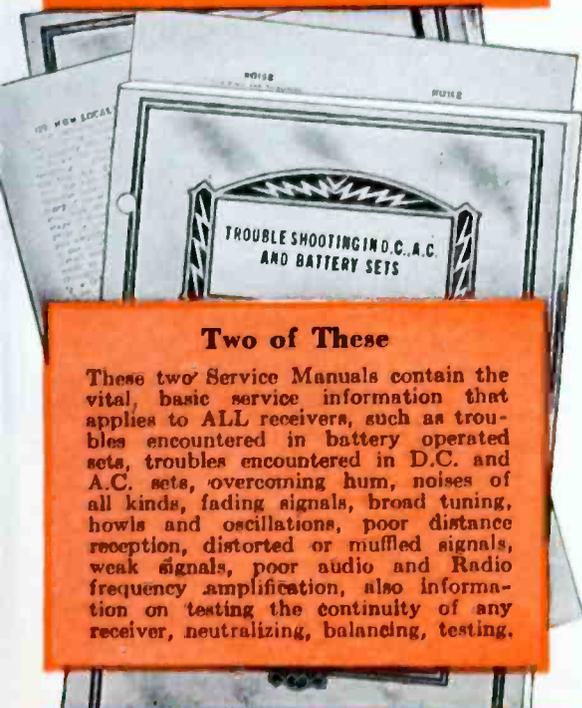


**10th  
STAR  
FEATURE**

**Six of These**

Each Service Manual contains 10 to 14 individual service sheets. Each sheet contains a complete wiring diagram of a modern receiver and also specific service information applying to the individual circuit. These Service Manuals are changed continually as new sets are brought out in order to keep them up-to-date. Below are the names of manufacturers whose sets are included in the Service Manuals at this time.

Apex, Atwater Kent, Bosch, Clarion, Emerson, Crosley, Fada, General Electric, Kolster, Lyric, Majestic, Philco, R. C. A. - Victor, Sparton, Stewart-Warner, Stromberg-Carlson, Zenith.



**Two of These**

These two Service Manuals contain the vital, basic service information that applies to ALL receivers, such as troubles encountered in battery operated sets, troubles encountered in D.C. and A.C. sets, overcoming hum, noises of all kinds, fading signals, broad tuning, howls and oscillations, poor distance reception, distorted or muffled signals, weak signals, poor audio and Radio frequency amplification, also information on testing the continuity of any receiver, neutralizing, balancing, testing.

**A Special Service Manual for Students in Canada**

I have gone to the trouble and expense of preparing a new Service Manual, complete with testing information and wiring diagrams, particularly for you men "across the border." The following makes and models are covered:

Canadian Westinghouse Models 80, 90, 99, and 110, DeForest-Crosley, Type 400-420, 800, 740-762, DeForest-Crosley, Chassis Nos. 603, 605, 766, Rogers Batteryless 520-30-40-50-80 Series 600, and 610-20, 480-90, Marconi Deluxe Console XXII, Marconi Type 20, Marconi Models XV, XVI, XVII, XVIII, Temple Models 10, 20, 30, 8-61, 8-81, 8-91, Mercury 8-G-10.

I AM going to do a thorough job of fitting you to make extra money in your spare time while learning. In addition to Extra Money Practical Job Sheets (p. 34), I am going to give you 8 Service Manuals. Two of these Manuals contain fundamental, vital information necessary for the sort of service problems that you are liable to encounter in any set.

Read the outline on this page. The other six give you wiring diagrams and specific service information on about 70 different types of sets—the type of information every serviceman needs.

**Read How N. R. I. Training Builds Up**

On the previous page I told you about some jobs that would give you an early start making extra money. Now we are getting down to bigger, more complicated jobs that require more information, more knowledge, and pay better. Do not think that the information given in these books is of value only for making spare time money. It is just as valuable on a full time job or in your own business.

Even if you don't need the extra money, I figure the experience will help you, and there are many who do need money; men who would never get the advantage of this Course if I did not show them how to make it pay for itself. Many ambitious men who do not have good jobs can get them once they are

trained. Men with families find the money they make in spare time very helpful in paying grocery bills, doctor bills, and buying little luxuries for their children. Some have even paid off mortgages.

**Decide Now to "Cash In"**

Your spare hours—say from 7 to 11—in the evenings, are the ideal hours to do spare time jobs. Those are the hours of the most broadcasting and the best programs—the hours when most set owners discover that their sets aren't working right.

Do this. Make a list of the things you would like to have in the next year that your present income will not enable you to buy. Get your training underway, now. Apply yourself to the Course and to spare time jobs. You will be surprised what you can accomplish. Who is it that has the respect of his friends and his neighbors—isn't it the hustler—the fellow who has his chin up and his eyes open, always trying to get ahead? Of course it is.

**As Much as \$15 to \$20 a Week Extra**

"I have been working until midnight to keep my service bench from being too full. I work in spare time only, but I am kept busy repairing sets. Some weeks I have made as much as \$15 to \$20 extra for only spare time. When the depression struck and I found myself working only part time on my regular job, I went into servicing and now I have the reputation of being the best Radio man in town. I will always be a booster for N.R.I."



G. BERNARD CROY,  
151 Washington St., Bronson, Mich.

WORLD FAMOUS AS "THE COURSE THAT PAYS FOR ITSELF"

# I give you the key to . . . the Better Jobs **YOU SPECIALIZE**



**Chief Technician, U. S. Air Corps**

"I have been Chief Radio Technician, U. S. Air Corps, for several years. My knowledge of Radio is considered and accepted as the final answer to many problems in engineering and practice among my associates. At this writing I am considering an offer of a position as Communications Advisor for a foreign government; a position carrying a salary around \$6,000 a year. I appreciate your never failing friendship, help and advice. Any young man can do what I have done, but N.R.I. training should be his first step."

**CLAUDE L. ALLDAY,**  
U. S. Air Corps, Brooks Field,  
San Antonio, Tex.



**Faces Future with Confidence**

"It's not the pursuit of the dollar that makes me feel so satisfied, but the relief to be able to go out any time, confident that I can earn money in service work, regardless of existing conditions. I haven't commercialized my Radio activities to any great extent, but the number of sets serviced range close to 500, most of them superheterodyne sets of the latest type."

**L. J. PIHEL,**  
18 Horace St., New Britain, Conn.



*My training is planned to get you a good job in the beginning and put you ahead faster*

**T**HE day is past when the fellow who has a smattering knowledge of Radio and loud speaker systems can expect to go far in Radio. This is a day of specialization. The fellow now in Radio who has allowed himself to be satisfied with just enough knowledge to get by is on his way out. The fellow who is lucky enough to get into Radio without specialized training isn't going to last long. Specialization is the key to the better jobs—to security. I want to see you high up in Radio some day. I am not going to be satisfied simply to give you enough training to get a job—get a foothold. I want to train you thoroughly, equip you so well that you can successfully compete with others in the field, when you have such competition, and actually do a better job because you know more than your competitor.

### **Advantages of Specializing**

The advantage of specialized training is that it enables you to obtain a better job in the beginning and get ahead faster in the end. You have less com-



**Day of Jack-of-All-Trades is Past**

"I have done all kinds of service work. A Radio serviceman must know his Radio. He must have training more than experience. Radio has developed fast. The day when the 'Jack-of-all-trades' could do service work is past. I would have been lost without N.R.I. training. I have talked to a number of men who have taken your Course. They are making good too, and the reason is clear. They know how."

**MELVIN P. HARTZLER,**  
South Mill St., Smithville, Ohio.

petition because you know more. And you earn more because you have less to learn. In short, you are ready for a real job without wasting time.

If you like the type of jobs in broadcasting stations, commercial Radio stations, in airports and airplanes, police Radio stations and on board ship, choose N.R.I.'s Advanced Specialized Training in Radio Communications.

If you want your own service shop or store, or wish to work for a dealer, jobber or factory, choose N.R.I.'s Advanced Specialized Training in Radio Servicing and Merchandising.

### **Other Advantages**

Stop to consider for a moment what specializing like this means in fitting you for many different types of good jobs. When you finish your Advanced Specialized Training in Radio Communications, you are ready for a position in any one of the Radio Communication branches that I have named. If you work in one branch for a while and want to change over, you don't need additional training to do it. If you go out with the intention of getting a job on an airplane or in an airport, and find that you cannot get one immediately, you are just as well qualified for a good job in a broadcasting station or on board ship. You have the same advantages when you specialize in Radio Servicing and Merchandising—you are thoroughly fitted to enter all branches.

This is one more feature of home study Radio training in which N.R.I. is the pioneer. The institution that leads the way is ready to show you the short, sure route to success in Radio.

# You can Finish Quickly or Take as Long as 2½ Years



## "How Can You Do It?"

"I was issued your Diploma certifying that I was capable of servicing all makes of Radios. I want to compliment the N.R.I. for its thoroughness in explaining and teaching the 'dark secrets' of Radio for such a low price. How can you do it, Mr. Smith? I heartily recommend the N.R.I. for showing a person how to train for a clean and profitable profession—a field able to use thousands of thoroughly trained men."

E. L. ROWE,  
3710 S. Gunnison St.,  
Tacoma, Wash.

**Y**OU set your own pace. If you have a lot of time to give to your lessons, or have special aptitude for learning Radio, you can finish quickly. If you work long hours—have only a small amount of time to give to your lessons, you are not left out, because I will give you as long as two and one-half years in which to finish. The average student graduates in one to one and one-half years. Our policy is to encourage you to progress at the rate that suits you best.

## No Waiting—No Rushing

When your enrollment reaches me, I send you enough Lesson Texts and other instruction material so that you can be studying Lesson Texts two and three while your answers to Lesson one are on the way to be graded. When graded answers are returned to you new Lesson Texts are sent to you also. Model answers are enclosed so that you can check yourself; compare your answers with the absolutely correct ones. This method of sending you new Lesson Texts when graded answers are returned to you

keeps plenty of study material on hand at all times, yet it lets you set your own pace.

I start you with Course No. 1—Fundamental Radio Principles. After you get it under way, you start receiving Course No. 2—making experiments, gaining practical experience that I told you about on pages 30, 31, 32, and 33. When you finish Course No. 1, I start you on Course No. 3—the Advanced Specializing Course of your choice—either Radio Servicing and Merchandising or Radio Communications. The three Courses which make up N.R.I.'s Training are explained on page 43.

## A Systematic Method

There is system, there is logic, to this method. You get the groundwork first—then you specialize. Simple, isn't it? Start making headway now. About two minutes of your time filling out the enclosed enrollment blank, a few dollars that you'll never miss, and you're on the road to better things—to a better job—to more money.



## Worked Steadily All Through Depression

"All through the depression I worked steadily as a theatrical engineer. In addition, I have made quite a sum in my spare time repairing and modernizing old sets with the latest types of tubes, etc. The training I received from you put me on the road to success. I have just been appointed manager of a theater by the Board of Directors."

JESSE L. LAUSMAN,  
717 S. Shelby St.,  
Louisville, Ky.

## Averaging \$35 to \$45 a Week

"The firm for which I worked folded up. I felt that if I could make money for someone else, I could do it for myself. So I hung out my sign. I do service work for several dealers, and other jobs that come to my house. At present I am averaging \$35 to \$45 a week. Radio is my dish. There is plenty in it for wide-awake chaps. N.R.I. training has carried me through the depression with flying colors. The interest shown in me has been greatly appreciated."

PAUL W. SEELY,  
7019 Greenwood Ave.,  
Upper Darby, Pa.



## You Benefit from Our Alumni Association



**T**HE students and graduates of the National Radio Institute have formed an unusual Association—the first and only Association of students and graduates of a home study school. It is known as the National Radio Institute Alumni Association. Membership is open only to N.R.I. men.

Let me give you an idea how the spirit of unity and loyalty to one another has grown among our students and graduates. In 1929 there were only 72 members. Today there are 3,500 members. Every state of the United States, every province of Canada, and many foreign countries are represented. In cities where membership justifies it, Local Chapters have been formed which meet once or twice a month

for the purpose of promoting the welfare of the members by interchanging helpful information and ideas, of discussing Radio and business problems, of hearing prominent Radio engineers speak on Radio questions, and of promoting good business ethics and practices in the Radio Servicing industry. Graduates may join Locals as regular members; students as associate members.

All N.R.I. students and graduates have many things in common. For that reason they like to know one another, talk to one another, meet and enjoy one another's society. You will get innumerable benefits as a regular or associate member of this organization. Dues are very low.

# Here's what my . . . Employment Department does for you when you graduate



**W**HEN you complete your N.R.I. Training, you are not "turned loose to paddle your own canoe." That's when my Employment Department steps in to help you get located. We do not charge you extra for any service the Employment Department may render, neither do we charge the person or company that employs you through our efforts.

The splendid records N.R.I. men are making everywhere give you a stand-in with employers. Radio manufacturers, broadcasting stations, jobbers, aviation companies, etc., know that the N.R.I. Diploma stands for thorough training. A large number have copies of our Course in their libraries. They know from first hand examination of our instruction material that N.R.I. lifts from their shoulders the burden of training their own men.

## Meet My Employment Department Manager

Mr. Harold E. Lubber, a college and law school graduate, is in charge of my Employment Department. He has been with the Institute more than five years. He knows what I expect of my Department heads. He has contacted personally or by letter many Radio firms.

The services of my Employment Department are available to you

## My Job is to Find Jobs for Others—Harold E. Lubber

When you graduate, here's what I'll do for you. I will place all the facilities of my Department in operation in your behalf. When Radio employers call on me for trained men, I'll refer them to you, when the jobs are suited to your particular case. If you hear of any good Radio employment leads, I'll write the employer recommending you for the position. I'll help you prepare a special plan to obtain a number of employment leads and help you get interviews with employers. I'll assist you in writing good letters of application. I'll tell you what to do—what not to do—during an interview with a prospective employer. I'll do what I can to help you succeed after you get the job. When you feel that a letter from me to your employer may help you get a promotion, tell me, and I'll write it gladly.

any time after you graduate. You may not want our help immediately after you graduate. You may have a job in mind that you can step into. Or perhaps one will turn up just about the time you are ready to graduate. One year, two years, three years, or even many years after you graduate, whenever you feel that my Employment Department can be of help, call on it.

## Our Record is a Help Too

Here again there is an advantage in getting your training from a long established institution. Our recommendation naturally means much more, after twenty years of training men for success in Radio, than it would if we had been in business only a few years. We don't have to go out and first "sell" the prospective employer that our men are well trained. We don't have to tell them who we are, what we are doing. Our reputation is firmly established.

## Attributes Success to Connection with N.R.I.



"I am at present with the Radio Division (WPDH) of the Richmond Police Department. The advantage a trained man has over the untrained is daily apparent to me. It is too little for me to say that Radio work has repaid me many times the little I invested in your Course. I have always been conscious of the fact that had it not been for my connections with your Institute, I would never have attained the small measure of success in Radio that has been my pleasure."

FRANK E. TIMMONS,  
Station WPDH, Dept. of Police,  
Richmond, Ind.

## Owes Executive Position to N.R.I.



"Your Radio instruction is the most practical I have ever seen for the systematic study of the subject. I owe my success to it. It placed me in a big paying job even before graduating, and has furnished me with steady employment at good pay ever since. At present I have an executive position as Service Manager for the Wilks Distributing Company, distributors of Spartan Radios and Refrigerators for the State of Michigan. The National Radio Institute furnished me the background for my success."

DALE HOAG,  
1040 E. Genesee Ave.,  
Saginaw, Mich.



Graduates drop in to visit Mr. Lubber, to discuss the type of jobs they aspire to hold. Students, graduates, and prospective students are always welcome.

# N.R.I.'s Inspiring Magazine

# NATIONAL RADIO NEWS



*Comes to you Regularly*

**T**HE day your enrollment reaches me, I shall put your name on my list to receive National Radio News. You will get a copy of every issue, postage prepaid, as long as you are my student. While most articles for the News are written by our own experts right here at N.R.I., such prominent Radio engineers as A. H. Grebe, A. Atwater Kent, E. W. Gager, C. M. Jansky, Jr., and many others have contributed in the past.

You can see at once how valuable the News will be to you when you realize that it gives you the latest news on the growth and expansion of Radio, information on new types of tubes that appear rather regularly, changes that are made in the design of broadcasting stations, servicing information on new sets, remodeling information on old sets, installation and servicing information on loud speaker systems, automobile Radio sets, television developments, new applications for electronic devices, etc., and in addition to news and current technical information, it gives ideas for getting spare time and full time jobs. Vocational articles give tested plans for getting ahead where you are or for getting another job.

For the men interested in making Radio their life work, many find it contains as much information of value to them as some Radio magazines that sell for \$2 to \$3.50 a year. National Radio News has the advantage of being edited especially for you. It is well printed, carefully edited, attractive in design and make-up.



### News Is Fine Magazine

"I want to thank you and all of your staff for the service and cooperation given me. I have been in business almost two years. I have a very modern shop and am doing a nice business. Your Course has increased my income from \$90 to \$150 a month. Sometime ago I talked Walter Brown of Knoxville, Iowa, into taking your Course, and today he came in to see me to thank me for selling him on the N.R.I. The National Radio News is a fine magazine. I would hate to be without it."

ROBERT M. HALL,  
Attica, Iowa.

### Harvest in Store for Trained Man

"Regarding repair work, there never was a busier time. Many people have been compelled to purchase cheaper Radio sets during the last year or two through lack of funds. Those sets are now beginning to arrive at the work bench for treatment. There is a harvest in store for the trained Radio man. The farther I proceed with Radio, the more thankful I am to be an N.R.I. graduate."

HERBERT H. ROGERS,  
2749 LaSalle Ave.,  
Niagara Falls, N. Y.



Table 1—Tube Socket Data  
Power Line Voltage 115 Volts

Pin	1	2	3	4	5	6	7	8	9	10
Pin	1	2	3	4	5	6	7	8	9	10
Pin	1	2	3	4	5	6	7	8	9	10

Table 2—Power Transformer Data

Primary	Secondary	Rating
115	250-0-250	100
115	125-0-125	50
115	62.5-0-62.5	25



# Your Title..

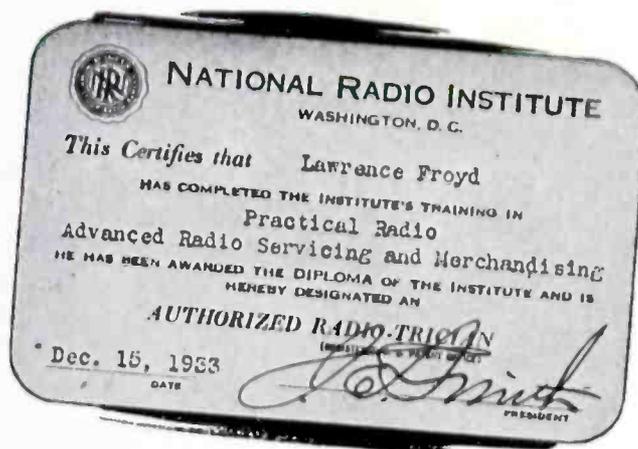
## "AUTHORIZED RADIO-TRICIAN"

**Wins Quick Acceptance of Your Superior Training and Ability**

**R**EALIZE what it means to you to have the right to use this title "Authorized Radio-Trician" on your letterheads, billheads, envelopes, business cards, in your advertisements—any promotional efforts you undertake.

We have spent twenty years of hard work and thousands upon thousands of dollars building an organization and a Course of training. It is only natural that we should want to grant graduates a title that distinguishes them from any other men in the Radio field. We want them to benefit from the recognition accorded the high quality of our training. No one else except an N.R.I. graduate has a legal or moral right to call himself a "Radio-Trician." The word has been registered by us in the United States, Canada, and England.

Recognition as the leader in any field cannot be acquired overnight. It cannot be done in a few years. It has to be earned by steadfastly main-



*This card, convenient for carrying with you, is sent to you when you graduate.*

taining a quality of training over many years to win the lasting respect of men high up in Radio—men who are able to accurately judge the completeness, the thoroughness of a Course of training, the fairness of training methods, and the ability of graduates to satisfy employers.

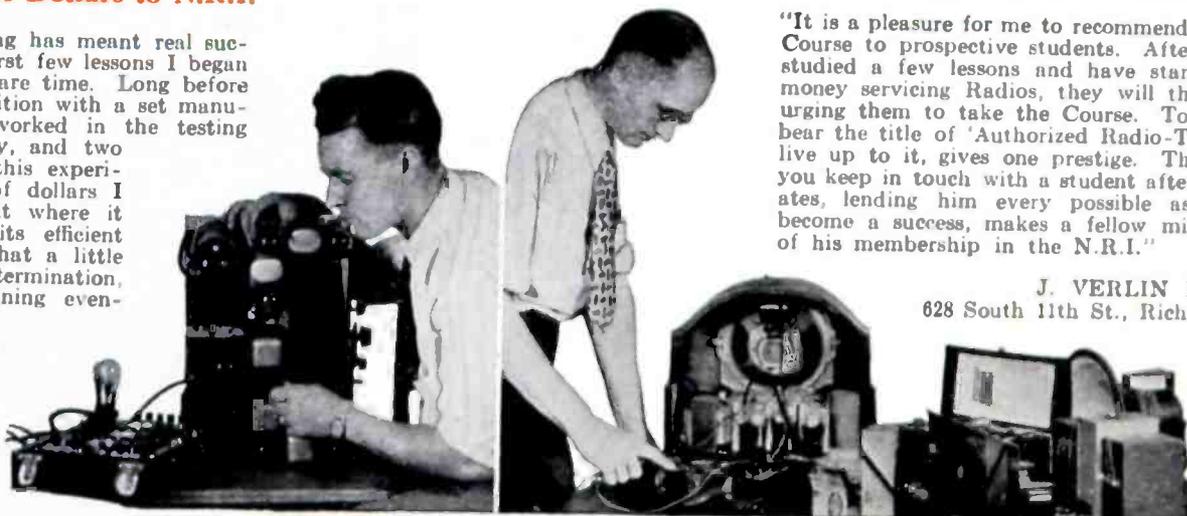
Thousands of dollars have been spent for the purpose of acquainting the public and employers, too, with the contents of our training, the ability of our graduates to hold responsible jobs, and our ability to supply the Radio industry with what it is constantly needing—trained man power. Many letters have been received expressing surprise at the great wealth of practical information our training includes.

When you graduate from N.R.I. you are a recognized Radio expert, because you have had to meet a high standard of performance in order to win your title—"Authorized Radio-Trician."

### Credits Thousands of Dollars to N.R.I.

"Enrolling for your training has meant real success for me. After the first few lessons I began to pick up jobs in my spare time. Long before finishing I accepted a position with a set manufacturer. I have since worked in the testing department and laboratory, and two other factories. For all this experience and the thousands of dollars I have earned, I give credit where it belongs—to N.R.I. and its efficient training. I have found that a little ambition, plus a little determination, together with N.R.I. training eventually spelled Success. I have found that there are 'Rich Rewards in Radio'."

KENNETH E. WHITE,  
Box 112,  
Shiloh, Ohio.



### Title Gives Prestige

"It is a pleasure for me to recommend the N.R.I. Course to prospective students. After they have studied a few lessons and have started making money servicing Radios, they will thank me for urging them to take the Course. To be able to bear the title of 'Authorized Radio-Trician,' and live up to it, gives one prestige. The fact that you keep in touch with a student after he graduates, lending him every possible assistance to become a success, makes a fellow mighty proud of his membership in the N.R.I."

J. VERLIN HUNT,  
628 South 11th St., Richmond, Ind.



**You Get This**

**Diploma upon graduation**

***It has opened the door to new  
and better jobs for hundreds of men***

**H**ERE is the Diploma that so many men frame and hang in their service shops, in their own stores, in the operating rooms of broadcasting stations and aviation stations, on board ship, in commercial Radio stations—in fact, wherever you find trained Radio men.

There is a reason why it is displayed so proudly. It stands for accomplishment. It brings recognition. It cannot be bought, but must be earned. It is proof of ability. It has given a new feeling of independence; it has wiped out all fears of unemployment, low pay, dependent old age for hundreds of fellows. It has opened the door to new jobs, more interesting, more fascinating jobs—and better paying jobs—for hundreds.

When you graduate from N.R.I. you will receive this Diploma. It will be sent promptly, postage prepaid. If you choose my Advanced Specialized Training in Radio Servicing and Merchandising,

your diploma will designate you as an "Authorized Radio-Trician," specializing in Advanced Radio Servicing and Merchandising. If you choose my Advanced Specialized Training in Radio Communications, your Diploma will designate you as an "Authorized Radio-Trician," specializing in Radio Communications.

There is no need for you to be "on the outside," envying the man who has a good Radio job. Start today to train for one yourself. Set \$40, \$60, \$75 a week as your goal. Aim much higher if you want to, because the salaries in Radio go higher than that. Once you get your training underway, each new day will find you with new confidence in yourself and in the future. You will look forward to the years ahead, confident that the things you want—a better job—better pay—are each day coming nearer your reach and accomplishment. Let us form our partnership now—this very day—and have as our goal a good Radio job for you.

# My Advisory Board

*You profit by the knowledge  
and long experience of these famous men*



**T**HE members of my Advisory Board are so well known, because of the work they are now doing and have done in the past, that I feel they need no special introduction to you. Dr. DeForest's name is immediately associated with the vacuum tube. Inventing that tube has justly earned him the title "The Father of Radio," because it made modern Radio possible. Dr. Alfred W. Goldsmith's name, with Radio and sound engineering. Paul A. Green's name, with broadcasting, because of the prominent part he played in installing stations of the Columbia Broadcasting System. George Lewis, with Radio manufacturing, particularly Arcturus tubes. C. M. Jansky, Jr., with the engineering profession as a former University Professor and now as a consultant. Edgar H. Felix, with Radio and Television publicity and research activities.

These prominent engineers have no selfish interest in serving on my Board. They receive no pay. They are interested only in properly equipping men who wish to enter Radio. I am grateful to them for having consented to serve. Naturally, men of high standing and ability are careful of the connections they make. I feel complimented because they serve the Institute so faithfully, give of their time generously by permitting me to consult with them frequently regarding developments which my Course should cover to keep it thorough and up-to-date.

#### DR. LEE DeFOREST

Graduate of Yale; perfected the Electrolytic detector in 1902. Pioneer in development of Radio telegraphy in America. Awarded Gold Medal at the St. Louis Exposition in 1904 for work in Radio telegraph and by San Francisco Exposition in 1915 for Radiotelephone. Most important contribution to art is the "Audion"—detector, oscillator and amplifier—which made possible the transcontinental telephone service, both by wire and Radio; also inventor of the Photofilm system of talking movies. He has received many honorary college degrees. Past President, I.R.E.; Director and Research Engineer for American Television Laboratories, Ltd.

#### C. M. JANSKY, JR.

From 1920 to July 1929 had charge of instruction in Radio Engineering at University of Minnesota, also of the University's broadcasting and experimental station. Now practicing Consulting Radio Engineer. A member of the Board of Directors, American Radio Relay League, President of the Institute of Radio Engineers.

#### PAUL A. GREEN

A pioneer in Radiophone aircraft installations; also inspector of Radio apparatus for war planes sent to France. After the war, he went with Western Electric Company; installed 11 of the most powerful broadcasting stations in U. S. Installed and managed WSAI. Served as Chief Engineer of the Columbia Broadcasting System. Now Consulting Engineer.

#### DR. ALFRED N. GOLDSMITH

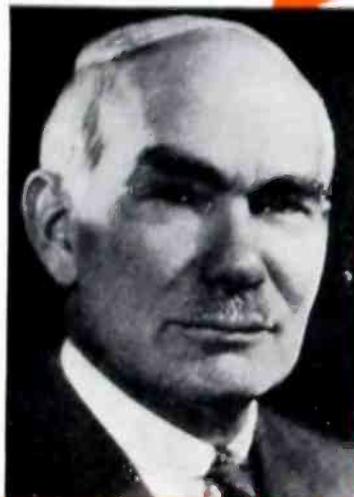
Graduate, Columbia University. Electrical Engineer, specializing in Radio and sound motion picture engineering. Experience: Consulting Engineer of General Electric Company; Vice-President and General Engineer of Radio Corporation of America. Now Consulting Engineer. Fellow, Acoustical Society of America; American Physical Society; American Association for the Advancement of Science. Past President and Fellow, Institute of Radio Engineers. President and Fellow of Society of Motion Picture Eng.

#### EDGAR H. FELIX

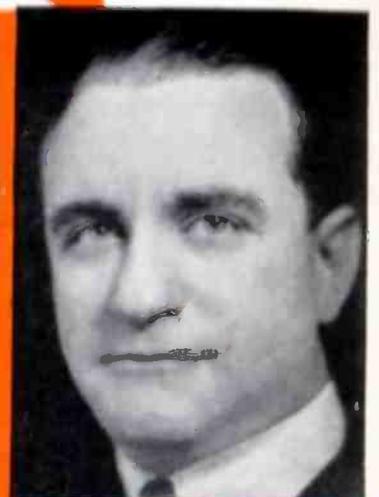
Broadcasting consultant and authority on Radio allocation. Served as Radio Engineer in the Signal Corps. Formerly Radio Consultant to the National Electrical Mfrs. Association; writes for Radio Retailing and Advertising and Selling. Author of "Using Radio in Sales Promotion." Well known author of books including "Television—Its Methods and Uses" and magazine articles. He has also written Lesson Texts for N.R.I.

#### GEORGE O. LEWIS

In charge of Radio design, Navy, at the Bureau of Engineering, for many years. Has served as assistant to the President, Crosley Radio Corp. He has at various times been a manager of the Institute of Radio Engineers; Past Chairman, Vacuum Tube Committee, Radio Manufacturers Association. Now Vice-President, Arcturus Radio Tube Company.



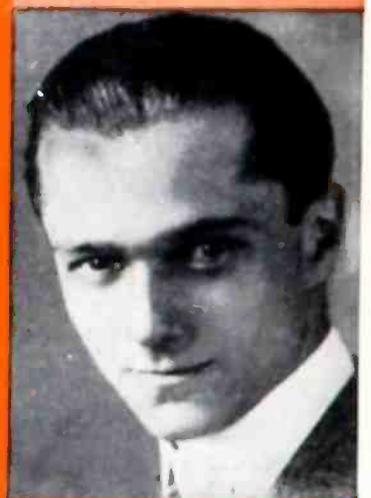
DR. LEE DeFOREST



DR. ALFRED N. GOLDSMITH



C. M. JANSKY, JR.



EDGAR H. FELIX



PAUL A. GREEN



GEORGE O. LEWIS

# N. R. I. Training Gives You

## these **3** Essential Courses for One Price

1

It is important that you know the "reason" back of every design for Radio apparatus, whether it be a receiving set, broadcasting station, a television set, loud speaker system, an aircraft Radio set, a short wave sending or receiving set, or other instruments or parts of an instrument. Course No. 1 covers **FUNDAMENTAL RADIO PRINCIPLES**—it teaches you to know the "why" of Radio.

To be able to design, build, install or service a receiving set, a broadcasting station, a loud speaker system, or other units of Radio apparatus, you must know the "why" of each part in the complete unit—what it does, why it does it, what it is capable of doing. This Course in Fundamental Radio Principles is what the foundation is to a house. It is important that you get this foundation right. You want it strong enough to hold you in responsible jobs, thorough enough to give you a working knowledge of all types of present Radio apparatus and also enable you to understand, use and service tubes, parts, and apparatus invented in the future.

An outline of N.R.I.'s thorough Course in Fundamental Radio Principles is given on pages 48, 49, 50, 51.

2

The second step that follows naturally is that of applying the principles you learn. This second essential Course enables you to do that quickly, easily, and in a very fascinating manner, right in your own home. Pages 30, 31, 32, and 33 describe this **PRACTICAL COURSE IN APPLIED RADIO**.

Many of the very basic principles that make Radio possible are taught to you. Right in your own study room, you work them out, you apply them, you learn to understand them. It isn't the kind of Course that tells you to put a certain Radio part in a certain place and the Radio set will work. It is the type of Course that shows you why you are putting the part there, what happens in a Radio circuit when everything is in place, and when one or two things are out of place or out of order—in other words, it gives you *practical experience*.

N.R.I. is not experimenting to determine whether this Course or Course No. 1 are a necessary part of your training. Prominent engineers, my Advisory Board, my entire staff, have told me so. Hundreds of students and graduates have praised them.

3

This is an age of specialization. Everywhere, in all trades and professions, you see that the most successful and highest paid men are specialists. Radio has followed the general trend of other businesses. The "tinkerer," the "Jack-of-all-trades," who jumped in some years ago, is being left behind, while the trained specialist is forging ahead. Half trained, "blueprint" experts—their days are numbered. The third Course you get is **ADVANCED SPECIALIZED TRAINING**.

Act now, grab the chance you have to better yourself by this change in the trend of Radio, and what this trend is doing to make opportunities for you.

N.R.I. trains you to specialize in either one of the two big branches of Radio—servicing or communications. The Advanced Specialized Course in Radio Servicing and Merchandising is outlined briefly on pages 53, 54, and 55. The outline of the Advanced Specialized Course in Radio Communications is on pages 56, 57, and 58. You have your choice of either one of these specializing Courses without extra charge.



### "Thorough fundamental knowledge necessary"

"Radio is becoming a more thrilling adventure every day. I never cease to be thankful for the splendid foundation for

my Radio career received through N.R.I. I do not see how anyone can get the most out of Radio or put his best into it, unless he is equipped with a thorough fundamental knowledge of the subject. I am still with the Meyer Music House; have just rounded out six years as Service Manager. My work has been steady; the pay is what I often hear spoken of as indicating that I am a 'pretty lucky fellow.' We built a home in 1930, right after the market collapsed, that completely furnished cost nearly \$10,000. We certainly appreciate the part that N.R.I. has played in our success."

HENRY TYSSE,  
162 E. 24th St., Holland, Mich.



### His Training Wiped Out Competition

"I was convalescing from the flu, jobs were hard to get, and there were lots of men who wanted them, when the reorganization of our local Montgomery Ward store took place, but I stepped into the Radio sales and service of all electrical appliances in a department of my own. Thanks to you and your staff, particularly your wonderful training, I had no competition.

The confidence one receives from offering what people want and pay for with a 'thank you,' is a great pleasure to me. The satisfaction of making someone happy seems to me to be the greatest happiness in life. This can be accomplished only by being honest with your fellow man and giving him what he pays for. Know Radio; have a fair price; show that you are doing something worthwhile."

WILLIAM H. ELLIOTT,  
R.F.D. Box 608, Richmond, Calif.



### Yesterday's Training— Today's Meal Ticket

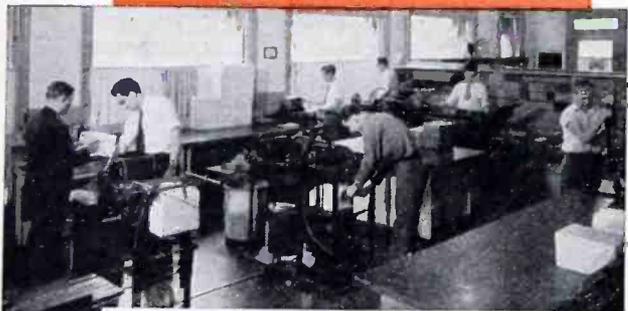
"I have cashed in on my training with plenty of money—doing Radio work. I have been very busy, making a very happy salary, while all around me there were good workmen, mechanics, electricians, etc., out of work. I give N.R.I. full credit for my success. Yesterday's training is today's meal ticket."

EDGAR VAN GILDER,  
Box 84, Highland Sta.,  
Denver, Colo.

Right: a group photograph of the men in my organization. Below: my Addressograph Department. Modern equipment and an efficient staff assure prompt mailing of graded answers, National Radio News and study material.



Circular photograph: Student Service Department. Immediately above: Stenographic Department. Large, well equipped offices, carefully trained employees, assure accuracy, promptness.



# This Highly Trained Organization

*and twenty years' experience are back of N. R. I. Training*

**Y**OU naturally want to know the real facts about the organization behind the Course of training in which you trust your future success. You cannot afford to gamble on the training when your entire future may depend on that training. You know it is not likely that any training is more thorough, better planned, than the organization giving it. That's why I show you a few photographs of my organization in action, as well as a group photograph of the men in my organization on this page. I am proud to be able to say that some of my key men have been with me as long as ten to fifteen years. The valuable experience which they have gained with me over this long period of service

has been drawn on heavily in preparing N.R.I. Training, and is thrown behind you when you are an N.R.I. student.

## The Leader Since 1914

Back in 1914, when the National Radio Institute was organized, it became the leader in giving Radio training. The fact that it has kept that leadership ever since, the fact that it has trained more men for careers in Radio than any other organization, speaks for its progressiveness, the fairness of its methods and the thoroughness of its training.

## Interesting Facts About N.R.I.

A staff of over 70 people; over 15,000 letters from students and graduates requesting technical information are answered a year; over 150,000 lessons are graded a year; 80 per cent of all letters are answered and all lessons are graded within 48 hours after being received. N.R.I. graduates are to be found high up in the Government service and in the employ of almost every large Radio concern in the United States and in many foreign countries. All our resources, all our time, the full time of our employees, is devoted to training men and young men for the Radio industry.

To the left: a view of my Instruction Department. Here lessons are graded, encouragement letters and answers to technical questions are written. Above it: a view of our Printing Department, where model answers to lessons and other instruction materials are printed.

# Our Location in Washington, D. C.

*... is a real advantage to you*

**W**ASHINGTON, D. C., the Nation's Capital, is the very heart of Radio. And the National Radio Institute is in the very heart of Washington, D. C.

The laws governing broadcasting and commercial Radio communication are made in Washington. The requirements for a Commercial License are decided upon here. A great wealth of information gathered by Government Experimental Stations, the Bureau of Standards, and other Government departments, as well as many private Radio companies and experimental laboratories, are within our easy reach. N.R.I. is in the very center of Radio activities. Right at our door are many great sources of new information—sources that help to keep N.R.I. Training up-to-date with the newest practical Radio developments.

## Come to See Us When in Washington

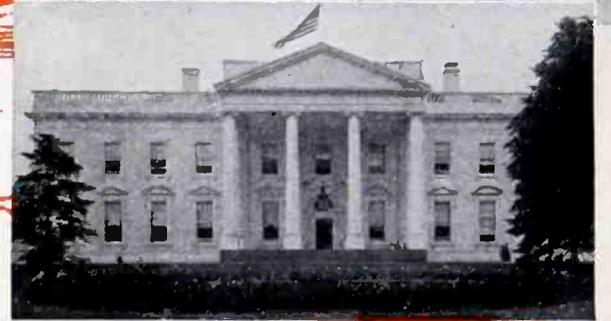
You are welcome. Come in and look around. The door to my private office is always open. Any or all of my department heads will be glad to see you; tell you what they are doing, what they are prepared to do for you. Judge for yourself the efficiency of my organization. Members of the Radio Commission, Congressmen, high Government officials, have visited our Institute. Its history and its record are unique, as you know from information given earlier in this book. Its work is noble in purpose—that of fitting men for better jobs—jobs that mean better pay.

## Now is the Time to Train for a Better Job

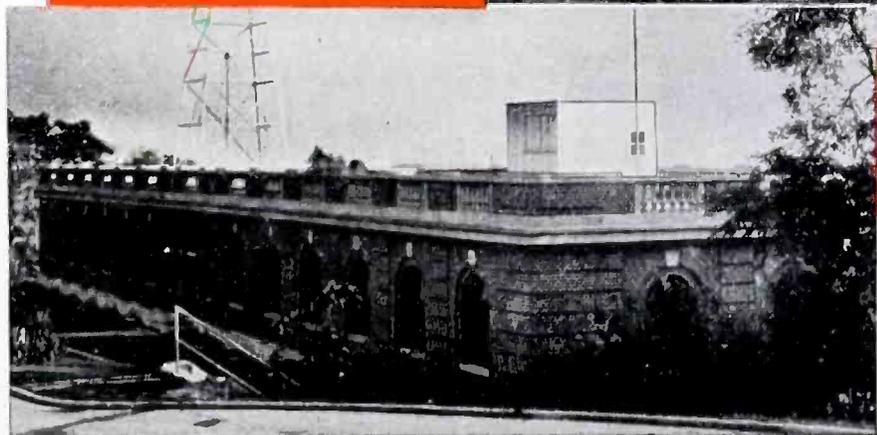
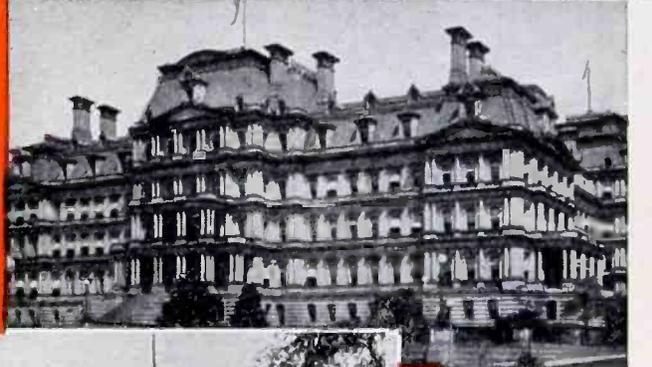
You may think that tomorrow will be a better time to start, or that next week or next month will be more suitable. Tomorrow never

comes. The tomorrow you wanted yesterday is today. Act now!

The way to get a good job in Radio is to equip yourself with the right information. Equip yourself for a good job. N.R.I. Training has enabled so many to get good spare time and full time jobs that I have no hesitancy in saying that it can do wonders for you. Do your part. Get started now. That simple little act of filling out and mailing the enrollment blank today is better evidence that you are out to win success than all the promises you make yourself or your family to do something about your future tomorrow, next week or next month. Do it now.



*I am sure you recognize the U. S. Capitol and the White House above. The Capitol is the scene of many debates on Radio legislation. Immediately above: the new Department of Commerce Building. In the background: historic Washington Monument. To the right: the State, War and Navy Building. The Army and Navy use Radio extensively. Below: a view of the Radio Laboratory of the Bureau of Standards.*



# EVERY MEMBER

*will work to help YOU*



**J. A. DOWIE, CHIEF INSTRUCTOR**

## J. A. Dowie

An old timer in Radio, Mr. Dowie has been with the Institute over 16 years. Educated at Polytechnic Institute, London, Eng.; Chicago Electrical School; Marconi School of N. Y.; Penn State College, Engineering Division, and his long experience serving hundreds of students and graduates, makes him an ideal man for his position as Chief Instructor. Member of I.R.E. and Radio Club of America. Contributor to Radio magazines and newspapers. You will enjoy knowing and working with him.

## Joseph Kaufman

Supervisor of Education. Supervises writing new instruction material; writes many Lesson Texts himself and supervises Consultation Service. Graduate M.I.T., S.B. and S.M. degrees in E.E. and Physics. In Radio manufacturing business 7 years. Instructor, Electrical Engineering and Physics at M.I.T. Member, I.R.E. With me 4 years; a Radio experimenter since 1910; contributor to Radio publications.

## George J. Rohrich

A member of my first class in Radio in 1914. Former ship operator and Radio instructor, Army Signal Corps. Studied Electrical Engineering at George Washington Univ. With the Institute 11 years. Prepared Home Experimental training; Consultant on Sound Pictures and Loud Speaker Systems.

## Paul H. Thomsen

Communications Consultant. Formerly associated with C. Francis Jenkins as Chief Operator of both sight and sound experimental stations W3XK and W3XJ. He has also been associated with the Radio Research Co., working on contracts requiring special design of receiving and transmitting equipment; and with the Amalgamated Broadcasting Co., Washington Branch, as engineer in charge of Long Lines Department. He is an amateur operator of long standing. Mr. Thomsen's television and broadcasting experience fits him well for his position.

## J. B. Straughn

Educated at Randolph-Macon. Experienced in set servicing, he is well equipped to be in charge of Consultation on Radio Servicing and Merchandising problems.

## S. M. Armstrong

Director of Student Service. Educated at the Universities of Kansas and New Mexico, and later at George Washington University. He has had 7 years' experience with me. Mr. Armstrong is well equipped to serve "my boys."

## Don B. Looney

Collects and prepares up-to-date service information on different makes and models of sets. Specialist in technical and business problems of the Radio serviceman. With N.R.I. 11 years.

## David H. Smith

A former Radio operator in the Navy, he grades answers to lessons and helps answer students' and graduates' letters. My brother David has been with me 7 years.

## Theodore Rose

Member, Student Service Department for more than 3 years. University educated, with extensive business experience, he is a valuable member of my staff in rendering prompt and efficient service to students.

## Profit From the 20 Years It Took to Build This Organization

Back of N.R.I. methods and N.R.I. Training stands this unequalled experience in training men and young men for good Radio jobs. N.R.I. Training has been constantly improved, revised, and kept up-to-date by an alert group of aggressive men. It is only natural, therefore, that we should be able to offer you much.



**JOSEPH KAUFMAN**



**S. M. ARMSTRONG**



**GEORGE J. ROHRICH**



**DON B. LOONEY**



**PAUL H. THOMSEN**



**DAVID H. SMITH**



**J. B. STRAUGHN**



**THEODORE ROSE**

# OF MY STAFF

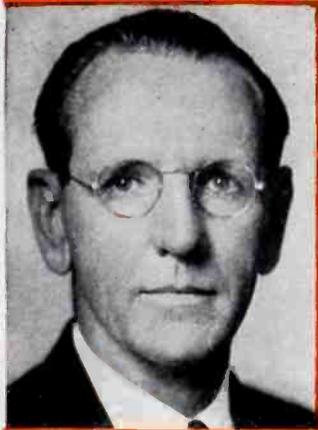
## ... win SUCCESS



GORDON BIRREL



E. L. DEGENER



B. S. LAVINS



P. J. MURRAY



J. G. HOLLINGSWORTH



WM. T. McKENNA



C. F. WEBER



ALBERT F. DOIG

### E. R. Haas

Mr. Haas assumes the executive and business responsibilities which arise in conducting the Institute, leaving me practically free to give my time and effort to students, graduates and to the Course. He is particularly well qualified by his extensive knowledge of organization methods to administer the business affairs of the Institute. Keen, versatile, experienced, gifted in business matters and administration, his work in keeping down costs is largely responsible for my being able to give my training for its present low price.



E. R. HAAS, VICE-PRESIDENT

### Gordon Birrel

Office Manager in charge of personnel and coordinating the work of our different departments, assuring students and graduates prompt and efficient service. University graduate, and, having been with the Institute for 8 years, he is well equipped with experience and knowledge for his responsible job.

### E. L. Degener

Director of Publicity. Educated at George Washington and Southeastern Universities. Under his supervision many students and graduates get favorable write-ups in their local newspapers upon graduation. He has been with the Institute 15 years.

### P. J. Murray

Managing Editor of *National Radio News* and Executive Secretary of the N.R.I. Alumni Association. Aggressive, talented, widely experienced (6 years with N.R.I.) in business matters, he serves students and graduates.

### B. S. Lavins

Comptroller. Holder of coveted M.C.S. degree. His extensive and varied accounting experience with lumber mills, wholesale houses, manufacturers, U. S. Government, and 10 years with N.R.I. fit him ideally for the responsible duty of keeping accurate records of students and graduates.

### Wm. T. McKenna

Member, Student Service Department, Educated in parochial and public schools and college. Holds LL.B. degree. With N.R.I. 4 years.

### Albert F. Doig

Manager, Mailing Department. He sees to it that your graded answers to lessons, new lessons and experimental outfits are sent out promptly. There is no lost motion with Doig on the job. He has been with me 12 years.

### J. G. Hollingsworth

His extensive business experience and 5 years' association with the Institute equip him ideally for his job of helping prospective students select the branch of Radio in which to specialize that suits them best.

### Over 50 People Help Them Serve You

The men on these pages are my Department Heads and some of their assistants. I haven't space to show you all members of my organization. I believe I have a unique, in fact, a remarkable organization. I never saw a group of men and women so imbued with the spirit of loyalty and personal service. Remember, they are not working for me—they are working with me. We all work for you.

### Carl F. Weber

In charge of student supplies. It is his duty to see that we have sufficient quantities of study material on hand at all times to make prompt shipments to students. Mr. Weber is a graduate of N.R.I. He has been with the Institute for over 7 years.

# A Brief Outline of N.R.I. Training in Fundamental Radio Principles

*It lays the foundation for a  
Successful Career in Radio*

**T**HE Course starts off with a bird's-eye view of Radio. Certain basic facts govern all Radio, whether it is building or repairing a receiver or a transmitter, installing a sound amplifying system, experimenting with Television, operating aircraft equipment, Radio beacons, ship or police Radio apparatus, or developing electronic devices.

## Course Planned to Insure Progress

The National Radio Institute method stresses fundamentals for the practical Radio man as well as for the beginner. Rapid progress and thorough mastery of advanced subjects taken up later in the Course are assured by the unusual completeness and thoroughness of all the early lessons.

The natural way of tackling a new subject is to want to start in the middle. Self taught or poorly taught Radio men rarely have a complete grip on all the fundamentals of Radio science. These fundamentals, as presented by the National Radio Institute method, are amazingly interesting. Scores of examples drawn from practice, and a live, readable style transform dry-as-dust facts into vital discoveries you learn, remember, and know how to use.

## Gets Quickly Down to Business

A clear understanding of electricity and the electron theory is first obtained. Magnets, electromagnets, how they behave in Radio circuits, the relation between current and magnetism, and the all-important Ohm's law are fully explained with typical, practical examples.

The nature of waves, particularly Radio waves, how they are sent, how received, and the relations between velocity, frequency and wavelength are all taken up. The essential features of the Radio receiver are described, and the arrangement and the importance of the parts shown.

The expert Radio man frequently uses a sign language to save time and insure accuracy. This language consists of photographs, sketches, symbols, diagrams, tables of facts, and the conversion factors, graphs, curves and how they are drawn and used. Equations and formulas are useful tools in Radio. The National Radio Institute Course makes their use simple. A comprehensive table of Radio abbreviations and symbols is included for reference use.

## Complex Subjects Are Made Simple

The kinds of current met with in Radio are now taken up, also the reactions of electrical charges, relation of electrical and magnetic effects and the different methods of producing current. Arrangement of both primary and secondary type batteries in series, parallel, or in combination for special load conditions, also proper care for long and useful service, are included.

Radio circuits may easily bewilder practicing servicemen, as well as beginners. Proper knowledge of fundamentals prevents this. The Course reduces complicated circuits, or networks, to separate simple circuits. A complete Radio receiver circuit is analyzed for its essentials.

As soon as a real understanding of Radio circuits and the production and flow of current in the circuits, have been obtained, the parts which make a practical circuit are taken up, studied in turn, and their functions, design, construction, and use are mastered. These essential parts are resistors, coils, condensers, vacuum tubes, and transformers.

## Receiver Parts Studied in Order

Resistors are taken up first and studied thoroughly. The effect of a resistor on current, as expressed by Ohm's law, is here made simple. Every resistor actually has conductance, the ability to allow current to flow, and we master this concept. In a network, Ohm's law is supplemented with Kirchoff's two laws of electrical circuits, which are simply and practically illustrated. Various types of resistance devices and resistance measuring methods are explained clearly and thoroughly.

The developing Radio-Trician now turns to the subject of coils. A coil ceases to be merely a number of turns of wire on some kind of a core or center and becomes a marvelous instrument to influence the magnitude and phase of current. Each of the different kinds of coils is taken up—insulated core, iron core, plug-in coils for short waves, broadcast, and standard types.

## Operation of All Parts Explained

Inductance and reactance—the influence of the coil on the current, also the measuring and control of this influence—are explained. The actual use of coils in a typical receiver is explained thoroughly.

Radio devices employ many condensers. These are used in many ways. The N.R.I. trained Radio-Trician learns how much alike all condensers behave, regardless of construction or design. The simplest forms of fixed and variable type condensers are first mastered. The operation of a condenser in direct and alternating current circuits, and its ability to store up electricity are studied. Further behavior and phase relations, also capacitive reactance concepts, are mastered. The use of coils with condensers is now considered. Thus the various kinds of knowledge already obtained begin to supplement each other and build up a very wide and practical grasp of receiver operation.

## The "Magic Bottles" of Radio

Vacuum tubes next have all unnecessary mysteries stripped from them. You understand the vacuum tube as a fundamental circuit device. You learn what the tube's parts are and why the all-important vacuum is necessary. A detailed analysis of tube operation is included. Clear pictures of the diode, triode, tetrode, and pentode tubes are given, and you learn how and why modern tube makers build more than one tube in one glass container, yet how essentially simple it all is.

After having mastered the other circuit components, transformers are studied, including their purpose, design, and operation. Practical transformers are analyzed and a clear insight obtained of the inductive effect—the mutual induction between the coils of which the transformer is composed. Variable inductance is explained and we learn how to measure mutual induction.

(Continued on next page)

HOW TO SELECT A  
GOOD RADIO RECEIVER

THE VACUUM TUBE AS A  
GENERATOR IN



## "Does N.R.I. Training Pay Dividends?"

"Let those who doubt listen. I lost my job a year ago and went into the Radio service business, received plenty of work from the start, moved twice to larger quarters and advertised my business. As a result I have new work coming in every day. I am buying a home, own two cars, and have time left to go fishing occasionally. A thorough understanding of Radio fundamentals has instilled in me the confidence to push ahead."

R. L. HOLMES,  
28 S. Front St., Wilmington, N.C.

A MODERN TRANSMITTING  
INSTALLATION

HOW A THREE ELEMENT  
TUBE AMPLIFIES

# Practical Money - Making Information

*Easy to learn . . .  
Easy to put into use*

(Continued from previous page)

## Special Study of Transformers

The use of coils and transformers using magnetic cores in low frequency audio and A.C. Radio supply systems is explained. Ohm's and Kirchoff's laws apply to magnetic circuits, the meaning of magnetomotive force, ampere turns, reluctance, permeability, lines of force, and flux density are brought out clearly. Special behaviors of different types of transformers with D.C. as well as A.C. current are described.

Now that a thorough grasp has been obtained of the devices which make up Radio circuits, we study the way these parts work together. We learn how coils, condensers, and resistors are used together in A.C. circuits, the differences in behavior between series and parallel hook-ups, and the astonishing effect of impedance on circuit voltage and currents. Resonance and a typical resonant circuit in Radio receivers are studied.

## Different Jobs Radio Tubes Do

Radio tubes—the heart of a receiver—are now taken up from the standpoint of their operation in the circuit, beginning with the triode or three-element tube as a basic one. You will learn about the control the grid charge has on the plate current, about grid C bias, and how to express the performance of a triode. You learn about amplification factors, plate resistance and impedance, mutual conductance or trans-conductance. You learn about tubes as voltage, power, and cascade amplifiers and how to determine in advance the operation of amplifiers. A long list of triodes in common use is given.

Almost as important as the triode is the diode (electron emitter and plate) tube with which we obtain from the A.C. power lines all the necessary high direct current voltages to operate the vacuum tubes of a Radio. We consider typical rectifier tubes and learn what supply voltages are necessary.

## More About Power Supply

Since not all power supplies use simple vacuum tube rectifiers, we study in detail the storage battery, dry cell, and so-called "air cell" method of heating the electron emitter of battery tubes. The nature, connection and care of B and C battery supply systems are necessarily included. The 110 volt D.C. power operated receiver, special power supply systems, also motor-generator, rotary, and frequency converter power sources are all taken up. The cold diode, gaseous, mercury arc, dry electrolytic, chemical and mechanical rectifiers, and their special applications in Radio are dealt with.

Sound is so important a part of Radio that ample space is devoted to it. The nature of sound, its action as a wave, its speed, sound reflection, and sound absorption are explained.

## Sound—Changing It—Distortion

You learn how sounds are made up of fundamental frequencies, harmonics, and overtones; how simple and complex sounds are graphically represented; how they are photographed; and the effect of sound interference. You learn how to convert sound into an electrical equivalent which you can handle like any A.C. current. Sound to electricity conversion devices—single and double button microphones, and simple condenser microphones—and electricity to sound con-

version devices, including the phone and loud-speaker, are taken up in turn in detail. Modulation is explained.

Based on the understanding, by this time very thorough, of electrical and sound waves, we take up the study of the receiver from the standpoint of signal amplification. The Radio, the detector, and the audio systems are treated thoroughly, beginning with the audio or A.F. system, which, in addition to its place in every Radio receiver, is used in electrical reproducers, recorders, public address systems, transmitters, talking pictures, and in many low frequency industrial installations.

## Signal Amplification Stages

The various vacuum tube stages, together with resistance, impedance, transformer and combination coupling devices are studied. The special uses for special arrangements and advantages of the different basic systems are shown and described in helpful detail, both from the circuit and the design point of view, so that repairs, remodeling, or design of A.F. systems can be handled readily and profitably.

The Radio frequency stage of the Radio receiver is most vital and gets extremely thorough treatment in the Course. At the very heart of a modern receiver, it strengthens the weak signal and excludes the undesirable signal. You learn the effect of the R.F. system on sensitivity, selectivity, and of the fidelity of the desired signal. Side bands are explained. We study the use of triodes, tetrodes, and pentodes in the various R.F. stages, and the proper coupling of R.F. tubes used in cascade.

## Building Up Signal Strength

The limitations of R.F. tubes and expedients for increasing the R.F. output, most important subjects, are interestingly presented.

Between the audio frequency and Radio frequency systems of a receiver, already mastered, come the detectors. The modulated signal has been raised to a suitable level. The detectors separate the sound, code, or Television signals from the Radio frequency carrier current—already studied. Now the reverse process of demodulation is made clear.

The practical diode, triode, and tetrode detectors are studied, and their special features carefully considered. How to determine the efficiency of a detector is shown. The automatic or self-bias which is generally used in practice is dealt with at length. The C bias, linear, and power, the grid leak condenser, weak signal and power detectors are examined. The oscillating or autodyne detector, important particularly in code and short wave reception, is fully treated.

## Modern Vacuum Tubes Explained

Now a more thorough understanding of modern vacuum tubes becomes necessary. The modern screen grid, variable mu, and pentode tubes, their characteristics, and uses, are explained in detail. You learn how a screen grid added to a triode prevents plate to grid feed back, and how this increases desirable R.F. amplification; why a screen grid tube has a large amplification factor; limitations of tetrode tubes and how circuits are designed to make the most of them; how the screen grid tube acts and how to increase the

(Continued on next page)

# Hundreds of Pictures and Diagrams are used to make

## Learning Easy, Interesting, Fascinating

(Continued from previous page)

usefulness of a screen grid tube by special construction. We learn the importance of the variable mu tube in modern automatic volume controlled sets, and how the screen grid and variable mu tubes are increased in efficiency by employing a third grid, the cathode grid, which makes the tube a pentode. All of this and other subjects, such as the Loftin-White direct coupled amplifier, are discussed and explained.

### Using Our Facts—Circuit Operation

All of the material included in the Course has practical importance. About this point in the Course, however, much of the material becomes more obviously practical. New facts learned fit in with many facts met with earlier. The operation of different kinds of circuits is taken up. We learn how the receiver is correctly connected, how regeneration adds R.F. amplification, how oscillation allows us to receive C.W. waves, how fixed R.F. amplifiers can give good gain, and why special tuned filters must be used to keep out unwanted signals. A simple tuned R.F. receiver with a detector and audio amplifier is studied connected as a battery, then as an A.C., and finally as a D.C. power operated instrument. The similarities and the differences are clearly brought out, all this being essential information in servicing, re-wiring, and designing practical receivers.

### Money-Making Hints on Old Sets

Not all receivers requiring repairs are of modern design. Both to be able to handle all such service problems, and for the sake of better understanding of modern receivers, the design and common troubles in older type receivers are included. Methods of feedback neutralization, like the grid suppressor, Rice, Hazeltine, out of phase, R.F.L., and lossier methods, and the shielding of R.F. coils, tubes, and condensers, subjects it would be easy to neglect, are still important and are taken up in practical detail. You learn how to increase the efficiency of these receivers. You learn also how manual volume control systems are placed in various circuits.

Tube generators, formerly important in transmitters and service signal generators, are today a part of the modern superheterodyne receiver. This subject gets particularly thorough treatment, starting with simple condenser-coil oscillatory circuits. Buzzer and tuning fork drivers and the plate and grid feed-back self-excited generator are examined in detail.

### Practical Service Oscillators

Factors affecting the strength and stability of oscillation are taken up. You learn how harmonics are generated and how suppressed. Typical Hartley, Colpitts, tuned-plate-tuned-grid, Meissner oscillators are examined. Methods of applying a load and of modulation are treated. Practical service oscillators are described and their operation discussed. The dynatron oscillator, modulated and unmodulated, and many other angles of the subject of oscillation are considered.

Now we turn to tuners and wave filters, another major division of our study. These are employed in the special resonant system used in receivers, power packs, and audio systems to get selective and peak actions. The subject is treated in detail, not only from the theoretical standpoint, but actual couplers which you can construct are described. Band pass circuits and side band suppression are discussed from both theoretical and practical standpoints. All types of wave filters are examined.

### Understanding the Superheterodyne

By this time the conscientious student is ready to undertake the study of the superheterodyne receiver and can obtain a more thorough and more practical understanding of this type of receiver than men with ten years' experience in Radio, but lacking this information, can possibly have. You learn how the superheterodyne operates through a special R.F. system which lowers the incoming carrier in frequency so that it may be efficiently handled.

You learn the essential parts of a superheterodyne—the pre-selector, the oscillator, the mixer-detector, and the I.F. amplifier, also exactly how each part works, and where to look for trouble. Image interference, image ratio, repeat points, and parasitic interference are clearly explained. Typical design and operation of various sections are discussed and a thoroughly rounded out knowledge of the entire subject is assured. The super-regenerative receiver is included.

### The True Value of Diagrams

You have already become somewhat familiar with circuit diagrams from the viewpoint that they represent certain kinds of devices. Now you learn the true value of diagrams for the practical serviceman called upon to service, install, and repair any and every kind of instrument. Ample consideration is devoted to reading circuit diagrams from the performance or result standpoint. You learn what results to expect from each device in a given stage of the receiver, and when that result is not obtained, or a different result is obtained, what the probable difficulty is. Typical receiver performance curves are analyzed.

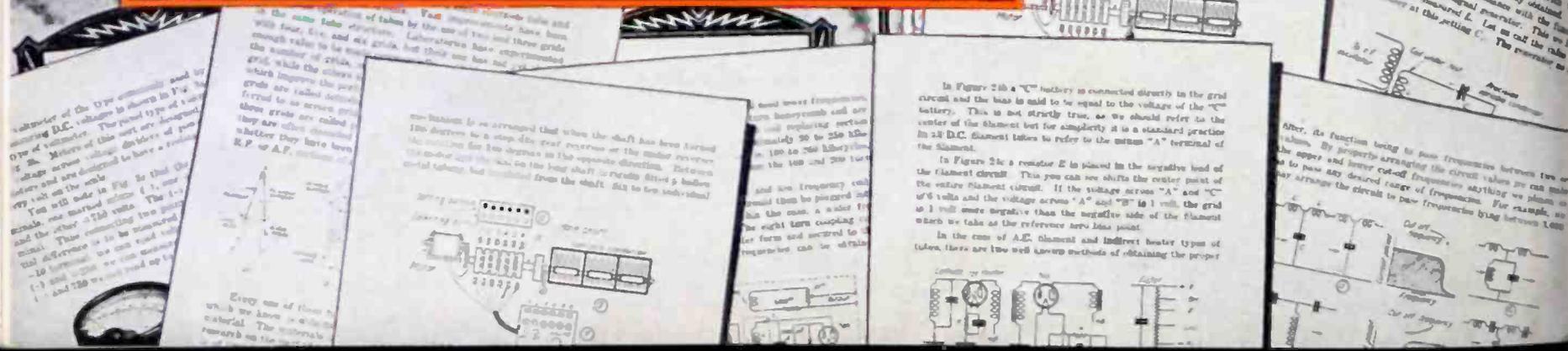
A thorough study of loudspeakers comes next. Various types including the phone, balanced magnetic, moving diaphragm, and moving coil systems are carefully analyzed and described.

### Loudspeaker Devices

Horns, cones, and baffles get proper consideration. Detailed instruction is included on self and power pack excited dynamic speakers, the inductor dynamic, permanent magnet dynamic, airplane cloth, and condenser speakers, also dual speakers, how they are phased, and tone controls. You learn how speaker and receiver characteristics are combined to give an overall good response.

Radio measurements are the key to all design, assembly, construction, service, and repair work. The subject is of dominating importance and receives the most simple possible treatment in a group of lessons devoted

(Continued on next page)



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entirely to the subject. The reasons for measurements and the units of measurement, amperes, volts, watts, cycles, ohms, farads, and henries, are explained. We begin with basic devices like the tangent galvanometer and moving coil mirror type galvanometer.

### Radio Measurements—Photocells

The basic D'Arsonval, hot wire, thermocouple, copper oxide rectifier, moving solenoid, moving vane, electro-dynamometer, and current oscillograph meters, are taken up in turn. You learn how to extend their current range with shunts. Various kinds of voltmeters, including their construction and use are included. Device after device is explained. The regular resonant method of measuring R.F. resistance, inductance, and capacity, including distributed coil capacity, is simply presented. This group of lessons gives the ambitious student a mastery of the operation and control of all Radio devices.

Our training now includes a study of the photo-cell, often called the electrical eye. An offspring of Radio, it is rapidly increasing in use in industry, as well as in talking pictures and Television. We learn how light rays govern the electron flow, how photocells control relays, and how amplifiers aid this control.

### Photocells—Modern Set Devices

The selenium cell and its limitations are described, and compared with gas filled and vacuum photocells with their fields of uses. The practical meaning of the color spectrum of photocells is taken up, also the electrical characteristics of all types of cells. Glow lamps, including the flat plate and crater lamps and their use in sound recording and Television projection are made clear. Several commercial photocell circuits are investigated.

Mechanical and convenience refinements of the modern receiver require special treatment. You learn the difficulties that may arise because of single dial receiver manipulation, how to allow for them, and how to correct them. Various electrical and mechanical methods of remote control are discussed. You get a real insight into automatic volume controls and visual tuning. Different types of phonograph pick-ups are studied, their methods of operation, how they are attached, and how the common scratching sound is removed.

### Short Waves—Power Amplifiers

The increasing significance of short wave transmission and reception require attention at this point. The peculiarities of short waves and therefore of short wave receivers are studied, also regenerative circuits as used in short wave receivers. A detailed discussion of short wave coils, also of short wave receiver design and construction, is included. Shielding of short wave receivers, the short wave super, typical experimental and practical short wave receivers, are described for construction.

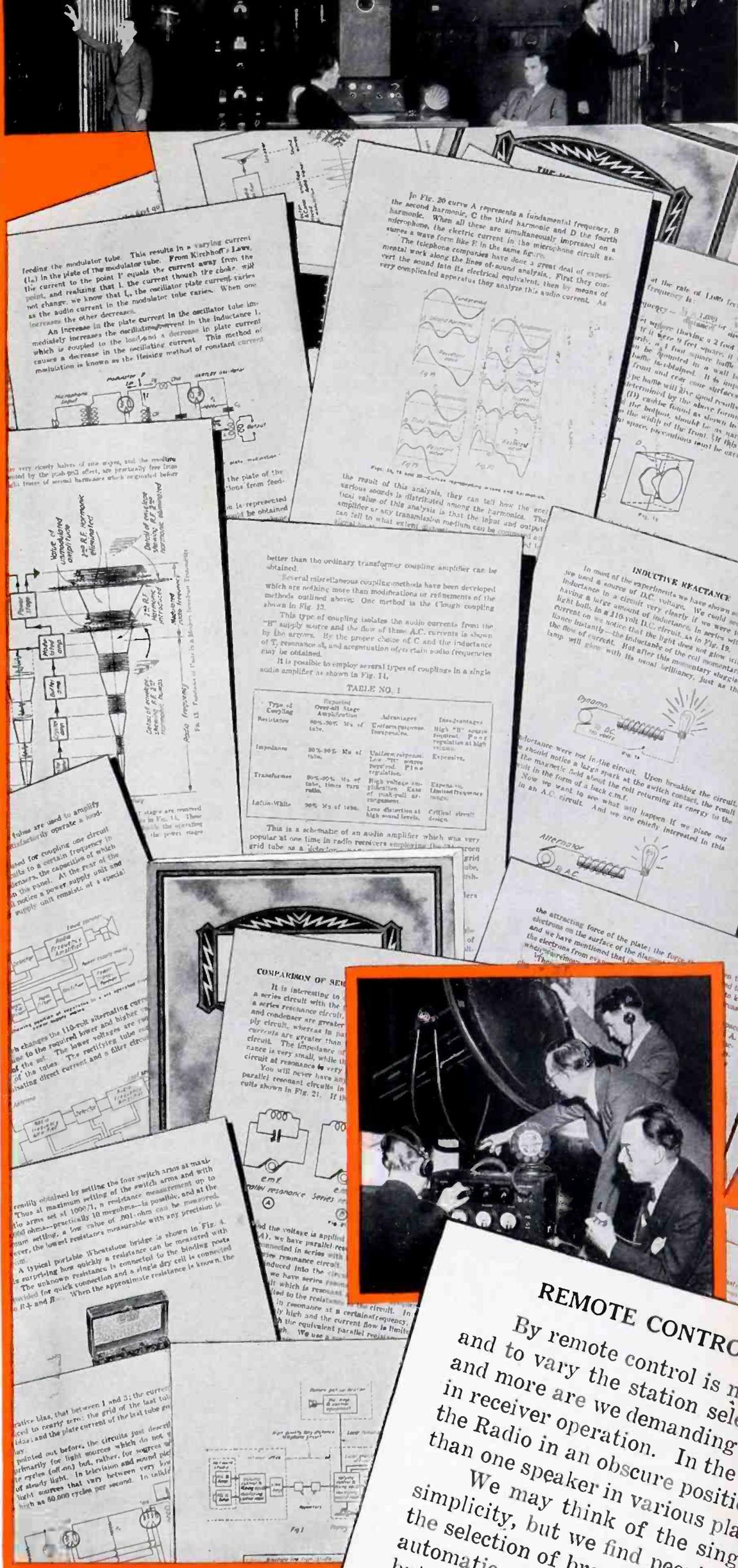
Power audio amplifiers, of vast importance in public address, talking movies, in broadcast transmitting systems, and in modern receivers as the power output has been raised, now receive adequate handling. Thorough training is given in the design and construction of power audio amplifiers.

### Broadcast Transmission Included

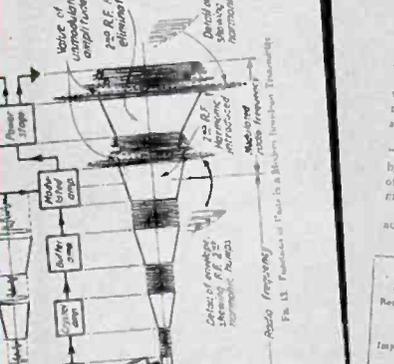
The extent to which the transmitter may be depended upon from the fidelity standpoint is important. The basic concepts of radiation must also be clearly understood. Both subjects are included at this point. Beginning with the microphone at a remote pickup, the circuit is traced through the telephone lines into the control room, where the local studio with its pick-ups, controls, and amplifiers takes charge. You learn how chain broadcasts are received and electrical transcriptions introduced, how announcers break into broadcasts, how the programs shift, and how the impulses are fed into the telephone line to the transmitter. You learn how the sound signal is amplified and modulated on the R.F. system, which is, in turn, carefully explained. All essential parts are described clearly and in detail.

### Antennas and Antenna Systems

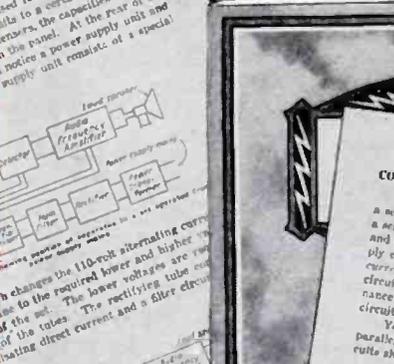
The various types of antennas, including the vertical, L, T, umbrella, doublet, land and submarine loop antennas, and the current and voltage relations in the important radiation systems, each comes up in turn for examination. Field patterns are studied and the important constants of an antenna (radiation resistance especially), coupling methods, transmission lines for remote antennas, wave and beam antennas and field patterns, and many other subjects are included.



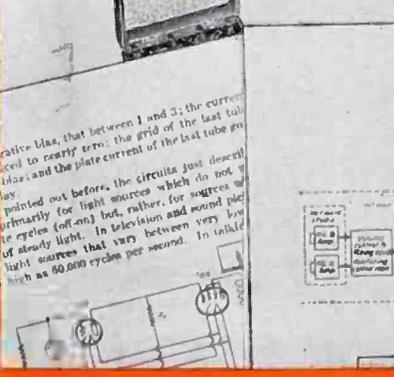
feeding the modulator tube. This results in a varying current (1a) in the plate of the modulator tube. From Kirchhoff's Law, the current to the point P equals the current away from the point, and realizing that I, the current through the choke will not change, we know that I, the oscillator plate current varies as the audio current in the modulator tube varies. When one increases the plate current in the oscillator tube immediately increases the oscillation current in the inductance L, which is coupled to the load and a decrease in plate current causes a decrease in the oscillating current. This method of modulation is known as the Heising method of constant current modulation.



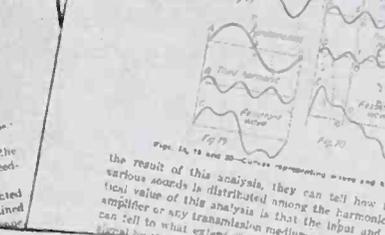
Various methods are used to amplify and to couple one circuit to another. The most common method is the transformer coupling method. The transformer is used to couple one circuit to another. The transformer is used to couple one circuit to another. The transformer is used to couple one circuit to another.



It is interesting to note that a series resonance circuit with a series resonance circuit, and a condenser are greater than in a parallel resonance circuit. The impedance of a series resonance circuit is very small, while the impedance of a parallel resonance circuit is very large. You will never have any trouble with a series resonance circuit shown in Fig. 21. If the voltage is applied to a series resonance circuit, we have a parallel resonance circuit in series with a series resonance circuit. The induced current in the circuit which has series resonance is very large. The induced current in the circuit which has parallel resonance is very small. We use a series resonance circuit in a certain frequency, and the equivalent parallel resistance is very small. We use a series resonance circuit.



In Fig. 20 curve A represents a fundamental frequency, B the second harmonic, C the third harmonic and D the fourth harmonic. When all these are simultaneously impressed on a microphone, the electric current in the microphone circuit assumes a wave form like E in the same figure. The telephone companies have done a great deal of experimental work along the lines of sound analysis. First they convert the sound into its electrical equivalent, then by means of very complicated apparatus they analyze this audio current. As the result of this analysis, they can tell how the electrical value of the sound is distributed among the harmonics. An amplifier or any transmission medium can be compared and called to what extent it distorts the sound.



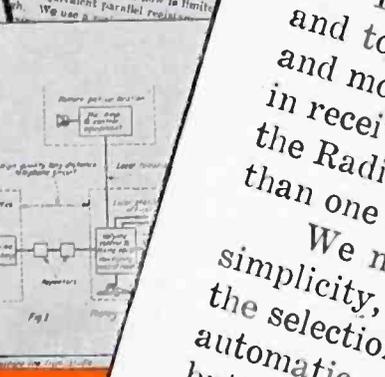
Several miscellaneous coupling methods have been developed which are nothing more than modifications or refinements of the methods outlined above. One method is the 'tough coupling' shown in Fig. 12. This type of coupling isolates the audio currents from the 'B' supply source and the flow of these A.C. currents is shown by the arrows. By the proper choice of C and the inductance of T, resonance at, and accentuation of, certain audio frequencies may be obtained. It is possible to employ several types of couplings in a single audio amplifier as shown in Fig. 14.

TABLE NO. 1

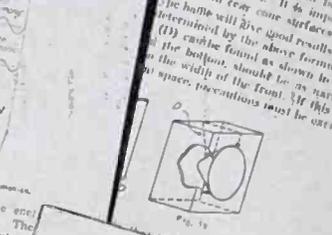
Type of Coupling	Frequency Range	Advantages	Disadvantages
Resistor	200-2000 Mc of 1000	Uniform response throughout.	High "B" source required. Poor regulation at high voltages.
Impedance	200-2000 Mc of 1000	Uniform response throughout. Fine regulation.	Expensive. Limited frequency range.
Transformer	200-2000 Mc of 1000	High voltage isolation. Ease of multi-pull arrangement.	Low distortion at high sound levels.
Inductor	200-2000 Mc of 1000	Low distortion at high sound levels.	Critical circuit design.

This is a schematic of an audio amplifier which was very popular at one time in radio receivers employing the vacuum grid tube as a detector. It is a schematic of an audio amplifier which was very popular at one time in radio receivers employing the vacuum grid tube as a detector.

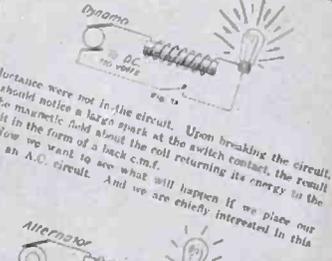
COMPARISON OF SERIES AND PARALLEL RESONANCE CIRCUITS. It is interesting to note that a series resonance circuit with a series resonance circuit, and a condenser are greater than in a parallel resonance circuit. The impedance of a series resonance circuit is very small, while the impedance of a parallel resonance circuit is very large. You will never have any trouble with a series resonance circuit shown in Fig. 21. If the voltage is applied to a series resonance circuit, we have a parallel resonance circuit in series with a series resonance circuit. The induced current in the circuit which has series resonance is very large. The induced current in the circuit which has parallel resonance is very small. We use a series resonance circuit in a certain frequency, and the equivalent parallel resistance is very small. We use a series resonance circuit.



At the rate of 1,000 cycles per second, the frequency is 1,000 cycles per second. At the rate of 1,000 cycles per second, the frequency is 1,000 cycles per second.



INDUCTIVE REACTANCE. In most of the experiments we have shown so far, we have used a source of D.C. voltage. We could not have used a source of A.C. voltage. We could not have used a source of A.C. voltage. We could not have used a source of A.C. voltage.



the attracting force of the plate, the force of the magnetic field about the coil returning its energy to the electrons from the surface of the filament. We have mentioned that the force of the magnetic field about the coil returning its energy to the electrons from the surface of the filament. We have mentioned that the force of the magnetic field about the coil returning its energy to the electrons from the surface of the filament.



REMOTE CONTROL. By remote control is meant and to vary the station selected and more are we demanding in receiver operation. In the the Radio in an obscure position than one speaker in various positions. We may think of the simplicity, but we find people who the selection of broadcasting station automatic station selector was in button, or pushing down a lever without fuss or added adjustment. The modern automatic station selector is a very simple device. It is a very simple device. It is a very simple device.

Lesson texts are printed in large type, easy to read under natural or artificial light. This reproduction of a section of a page is actual size. Lesson texts contain 30 to 32 pages each.

# *You get these Study and Reference Texts with your Course in Fundamental Radio Principles*

**T**AKE a few minutes to read through this list of study and Reference Texts. Notice the wide range of valuable subjects they cover. For an outline of subjects in these texts, read pages 48, 49, 50, and 51. Since Radio is a changing, growing industry, we reserve the right to change the titles and contents of texts to keep up-to-date. Such changes may increase the number of texts now in this Course.

A Bird's-Eye View of Radio  
 The Language of Radio-Tricians  
 How the Radio Receiver is Supplied with Power  
 Practical Radio Circuits  
 How Resistors Are Used in Radio to Control Current Flow  
 Radio Coils—Why and How They Work  
 Radio Condensers, Their Function and Operation  
 How a Vacuum Tube Works—Types of Tubes in Use  
 Radio Transformers and the Principles of Tuning  
 How a Three Element Tube Amplifies  
 Iron Core A.F. and Power Transformers

How a Two-Element Tube Rectifies A.C. in Power Pack Operation  
 Various Voltage Supply Methods for Radio Equipment  
 Changing Sound into Electricity and Electricity into Sound  
 The Vacuum Tube in Audio Frequency Stages  
 The Vacuum Tube in Radio Frequency Stages  
 How a Vacuum Tube Acts as a Detector  
 Screen Grid, Variable Mu and Pentode Tubes  
 Practical R.F. Circuits and Methods of Controlling Volume  
 The Radio Frequency Amplifier and How It Works  
 The Vacuum Tube as a Generator in Radio Circuits

Tuners and Wave Filters  
 The Modern Superheterodyne Receiver  
 How to Select a Good Radio Receiver  
 Electronic Devices—Photocells and Glow Lamps  
 Loudspeakers and How They Operate  
 Recent Developments in Loudspeakers and Tone Controls  
 Current Measuring Devices and Their Uses  
 Voltage Measuring Devices and Their Uses  
 Resistance, Capacity, Inductance and Frequency Measurements  
 Receiver Refinements  
 Short Wave Receivers and Transmitters  
 Transmitting Antennas and Their Radiation Characteristics  
 Power Audio Amplifiers  
 A Modern Transmitting Installation

## Reference Texts

Definitions of Radio Terms and Symbols  
 Commercial Radio Condensers  
 Modern Automatic Volume Controls—Operation and Repair  
 Power Audio Amplifiers—Power Level

## With Your Advanced Specializing Course . . .

**In Radio Servicing and Merchandising**  
**You Get These**

**T**HESE are the study and Reference Texts in our Advanced Specializing Course in Radio Servicing and Merchandising. For a brief outline of the subjects they cover, read pages 53, 54 and 55. On these, too, we reserve the right to change titles and contents of texts.

The Correct Professional Attitude—Installing and Servicing Radios  
 Adopting a Service Technique—Set Analyzer Method  
 How to Trouble Shoot by the Point to Point Voltage and Resistance Methods  
 Direct Stage by Stage Elimination Method of Trouble Shooting—Revitalizing Receivers  
 Acoustics in the Home—Superheterodyne Troubles and Remedies  
 Special Radio Installations  
 Service, Bench and Laboratory Testing of Vacuum Tubes  
 Servicing Sound Reproducers and Pickups  
 How to Recognize, Locate and Remedy Internal Receiver Noise and Intermittent Reception  
 Receiver Hum  
 External Receiver Noise—Origin and How to Eliminate It  
 Testing Receiver Parts  
 Service, Bench and Laboratory Testing of Audio Amplifiers  
 Bench and Laboratory Servicing of R. F. Equipment

Impedance Matching Networks, Pads and Volume Controls  
 Transmission Lines; Volume Indicators; Monitors  
 Acoustics of Buildings  
 Outdoor Public Address Systems  
 Indoor Public Address Systems  
 Essentials of Television  
 The Theory of Light  
 Geometric Optics  
 Applied Optics  
 Television Quality Requirements  
 Synchronization and Framing  
 Mechanical Television Systems—Sweep Circuits  
 Electronic Scanners and Radiovisors  
 How to Build Radiovisors  
 How to Build Television Receivers—Part 1  
 How to Build Television Receivers—Part 2

## Reference Texts

The Use of Arithmetic in Radio  
 Radio Formulas and How to Use Them  
 Radio Salesmanship  
 Radio Merchandising  
 Radio Accounting and Records

**If You Choose Radio Communications**  
**You Get These**

**S**HOULD you choose to train for the jobs in the Radio Communications field, you'll get these texts and Reference Books. For a brief outline of the contents of these books, read pages 56, 57, and 58. We also reserve the right to change the contents and titles of these books.

A.C. and D.C. Generators  
 A.C. and D.C. Generators and Motors  
 Alternators and A.C. Motors  
 Motor-Generators, A.C. and D.C. Starters, Dynamo Troubles  
 Storage Batteries  
 The Arc Transmitter  
 Impedance Matching Networks, Pads and Volume Controls  
 Transmission Lines; Volume Indicators; Monitors  
 The Tube Transmitter  
 Modulation in Tube Transmitters  
 Typical Tube Transmitters, Transmitting Antennas  
 Radio Measurements in Transmitters  
 The Radiocompass  
 Commercial Receivers  
 Learning the Code  
 Airplane Radio Equipment  
 Aircraft Radio Power Supplies  
 Aircraft Radiotelephone Transmitters  
 Fundamental Aircraft Receiver Circuits

Radio Aids to Air Navigation  
 Aural Radio Range-Beacon  
 Visual Radio Range-Beacon  
 Aircraft Radio Communication Systems  
 Weather and Weather Dissemination  
 Maintenance and Repairs  
 Radio Laws and Regulations  
 Traffic Handling  
 Essentials of Television  
 Television Quality Requirements  
 Synchronization and Framing  
 Mechanical Television Systems—Sweep Circuits  
 Television Studios and Transmitters

## Reference Texts

The Use of Arithmetic in Radio  
 Radio Formulas and How to Use Them  
 Typical Broadcast and Telegraph Transmitters  
 Aircraft Radio Receivers—Police Radio  
 Radio Aids to Blind Flying  
 Electronic Scanners and Radiovisors

# These subjects and many more are covered by my

## Advanced Specialized Training in Radio Servicing and Merchandising

**T**HE National Radio Institute's new advanced and specializing Course in servicing is different from anything ever offered before our introduction of this training. A serviceman must be more than a "set fixer" to get to the top of the ladder. A National Radio Institute Authorized Radio-Trician must know how to diagnose, repair, and improve any receiver. He must have—and in this Course he gets—a variety and wealth of useful information which equips him for the entire service field.

### Thorough Training for Success

This Course covers all phases of servicing, field, bench, and laboratory practices and problems. Servicing and testing technique are explained thoroughly. The art of trouble shooting gets special treatment. Special groups of texts are devoted to public address systems and to television. The purpose is to train you completely, as well as thoroughly, in every angle of the servicing game.

As you read this outline, you may even want to start your training here rather than with the Fundamental Course. This is not possible. Bear in mind that this training is based on the fundamental training and is an extension of it. Both are equally necessary.

### Practical Service Business Slant

The Course begins with fundamental service business considerations of importance to every serviceman, service business owner, and service engineer. A serviceman's code of fair dealing, dependability, and courtesy is outlined.

Beginning with the delivery of the receiver from the manufacturer, or jobber, the unpacking, inspection and testing are taken up in turn. The N.R.I. trained Radio-Trician learns how to make a scientific installation in which the receiver will deliver its utmost in good performance, and if the machine is on demonstration, how to conduct it so that a sale will result.

### Profitable Service Calls

depend upon proper handling. The Course shows you how to receive and prepare for such calls in a business-like manner, what records, tools, supplies, and circuit diagrams are needed, and what to do both in the shop and in the homes to complete a satisfactory job.

Trouble shooting, the art of restoring reception to its original quality in improperly operating or dead receivers, is treated thoroughly. You learn first what the various troubles may be, and the symptoms, exactly as a doctor learns medical symptoms. You learn in what order to check, and which of the four main trouble shooting procedures you will use.

These are: 1. The set analyzer method. 2. The point to point voltage method. 3. The point to point resistance method. 4. The famous N.R.I. direct stage by stage elimination method.

### All Methods Explained in Detail

In the set analyzer method you learn how the modern selective analyzer permits you to read voltages and currents, and how to interpret the readings, also how to trace defects even when the set does not play.

The point to point voltage trouble shooting method is still a great favorite for bench jobs. You learn from actual examples how direct, quick, and simple it is when you can work with the open chassis on your bench.

The point to point resistance method—how it is applied to the chassis in the cabinet, or on the work bench—is fully covered. Complete sample diagnosis using the point to point resistance technique is given.

### N.R.I. Perfected Method Included

The direct stage by stage elimination method is gradually winning the approval of experienced Radio technicians. Here at N.R.I. under the originator of this method, you learn it correctly. With this method you learn how to locate the defective stage and quickly isolate the defective joint or part. You learn further how the equipment used with this technique can be used to test tubes in the receiver, and how to conduct a long list of checks and tests. Furthermore, the Course helps you to develop your own personal technique for greater efficiency.

### Supers, Special Receivers, Tubes

Information on how room surroundings, output sound level, location of the receiver and other room conditions affect the quality of reception, is included.

Special treatment of the troubles peculiar to superheterodyne receivers is included to simplify trouble shooting. You will find special attention devoted to modern portable receivers, midgets, universal, and automobile receivers—including their design, peculiarities, and installation problems.

The testing of vacuum tubes is covered from the field, the bench, and the laboratory viewpoint. The kinds of tests and testers are explained thoroughly.

### Servicing Receiver Sound Devices

The servicing of all kinds of sound reproduction devices and pickups is a subject covered with great practical detail. The useful tests on phone, balanced armature, moving diaphragm, and inductor magnetic units are given, together with methods of improving and correction. Repairs of horns and cones, dynamic or moving coil units, also use and construction of baffles, and tests on condenser speakers are fully covered. Magnetic phonograph pickup, and carbon and condenser microphone troubles are explained and correction procedures given. Noisy receivers are a great source of profit to the better than average Radio-Trician. You learn . . .

### ... How to Take Out Noise and Hum,

how to distinguish internal from external noises, the causes of and corrections for noises peculiar to resistors, defective insulation, partial shorts, regeneration noise, motorboating, mechanical resonance, microphonic, and loudspeaker noises. A stage by stage and inter-stage method of locating hum origin is given. The various causes and methods of correction are all explained. Ways and means of reducing static interference is a source of profit. Man-made static may be eliminated at the source or by effective shielding and filtering. Both methods are explained. A typical interference locating device and method of use are explained.

(Continued on next page)



### Business has Grown by Leaps

"Our concern has grown by leaps and bounds. There appears to be no limit to the possibilities open to wide-awake servicemen. We are now supplying the needs of Radio dealers, servicemen and amateurs of four states. While our general offices, salesroom and service laboratory are located here, we have established a well stocked branch at Barre, Vt. From personal experience and observation, the N.R.I. Radio-Trician is the man who travels the highway of profits and integrity in Radio."

REYNOLDS W. SMITH,  
1008 Elm St., Manchester, N. H.



# Every Branch of . . .

## Radio Servicing and Merchandising

### is Covered Thoroughly



Testing and experimenting with long wave and short wave receiving sets is one of the many good jobs in Radio factories.

(Continued from previous page)

#### Bench and Laboratory Testing

We next take up professional bench and laboratory testing. Special testing of parts such as ganged variable condensers, air and iron core coils, wire, metal and carbon resistors, bypass and filter condensers, and transformers, down to such parts as volume and tone controls, are covered thoroughly. The audio amplifier and the power pack, also the Radio frequency systems and

receiver operation, often require special bench and laboratory tests. Detailed explanations covering methods and equipment are included.

#### Public Address for Extra Profits

Many servicemen have to pass up public address and loud speaker system jobs because of lack of knowledge. The National Radio Institute trained man learns how to handle installation and maintenance service in this profitable branch of Radio. A special group of texts is entirely devoted to public address system design, construction, and servicing problems.

Special fundamental subjects such as impedance matching networks, pads, volume controls and indicators, transmission lines, monitors, faders, and acoustics of buildings are first mastered. Then the assembly of sound amplifying, controlling, and projection devices into working systems is taken up.

#### Assembly, Operation and Control

You learn how to obtain maximum transfer of power and how to match parts and control transmission lines to avoid distortion or loss of power.

You learn next how sound effects may be spoiled by incorrect sound projection, or by an unsuitable auditorium. You are given ample information to overcome difficulties. A typical case is presented. The design, the installation, and maintenance of both.

#### Outdoor and Indoor P. A. Systems

are covered from every practical angle. The essential parts of typical systems are considered especially in the order in which they are connected. Microphone and projector placements for the best acoustic effects, mixer arrangements, amplifiers and controls, essential power supply, monitors and protective devices are fully discussed. Typical P. A. systems are designed to show you how to handle similar installations.

Typical indoor systems for halls, churches, hotels, and schools are given special attention. The design and installation of portable systems are presented. Practical examples to enable you to handle any type of installation are included.

#### Television—the Coming Opportunity

It is only a question of time until a practical knowledge of Television will be a rich source of profit to the properly trained Radio man. Very thorough treatment of Television developments up to the present is given, so that you will be equipped to reap the harvest when Television becomes a commercial reality.

Your study of Television is based on many subjects already covered in your Course. Visual broadcasting is first compared with sound broadcasting. You learn the six basic steps: Scanning the object; conversion of light impulses into electrical equivalents; amplification, modulation and radiation; reception including R.F. amplification, demodulation, and picture signal amplification; converting picture signal to light; and the reconstruction and synchronization of the image. These principles are traced through a typical mechanical and electronic system.

#### Special Television Subjects Given

The science of optics, which deals with vision, naturally plays an important part in Television. Among the subjects studied are light, light waves, light projections, shadows, reflection, refraction, velocity, wavelength of light, and the behavior of the eye. Geometric optics is included as it relates to Television.

The magnifying glass and the telephoto lens, both important to Television, are covered. Because sound films are to be used in Television transmitters, the motion picture projector, sound film recording, and sound optical systems are included. Many specialized and important related subjects are included. Mechanical and automatic synchronization methods are discussed. Various synchronization and frequency problems are investigated and illustrated from practical and interesting viewpoints.

#### All Important Systems Taken Up

Typical American, British, and German mechanical Television systems are examined. The cathode ray tube and its operating features are taken up. Various circuits are considered. Farnsworth, Von Ardenne and the Zworykin electronic pickup and reconstruction systems are analyzed, and from them you gain a definite idea of the probable types of Television equipment you will eventually service.

As Television is still in the experimental state, graduates of this Course will be eligible to do experimental and research work in this field. As in the past, the amateur is destined to help perfect the commercial product. To help you do this, the Course includes material on how to build typical Radiovisors.

#### Practical Building Data Included

Construction of a simple manual synchronizing system, of phonic wheels, and the necessary line frequency signal amplifier is given. More advanced information on how to build lenses, scanners, Weiller wheels, Kerr cells, and an amateur Television camera is also included.

Television receivers have important differences from sound broadcast receivers. These differences are carefully analyzed and explained. The design characteristics of the glow lamp are discussed.

A complete Television receiver is analyzed, best assembly suggested, and recommended as a guide for your future needs. Several typical commercial Television receivers presenting interesting design and practical problems are included.



RECEIVER HUM

INTERNAL RECEIVER NOISES

INDOOR PUBLIC ADDRESS SYSTEMS

ACOUSTICS OF BUILDINGS

IMPEDANCE MATCHING NETWORKS, PADS AND VOLUME CONTROLS

EXTERNAL RECEIVER NOISE

BENCH SERVICING OF R. F. EQUIPMENT

SPECIAL RADIO INSTALLATIONS

# Extra . . . Reference Texts show the way to Extra Profits in Radio Servicing and Merchandising

**R**EFERENCE texts are a feature of the Advanced Specializing Courses. The special Course in Servicing and Merchandising includes some particularly valuable and instructive reference books.

The main study Courses purposely include as little mathematics as possible. Some students prefer purely practical training. Many are interested in Radio from the mathematical and scientific viewpoint, but prefer to put off this study until they have the wide, practical, working knowledge of Radio they are above all anxious to acquire. An interesting reference text on the applications of arithmetic to Radio meets these requirements. Beginning with simple addition and subtraction, you discover and learn how to apply the

## Radio Engineer's Simplified Way

of multiplying and dividing. The use of logarithms to save work and to simplify tedious arithmetic is shown clearly. You learn how to find squares and square roots, cubes and the cube roots, powers and roots, with the least possible amount of work. This reference text also shows how you can make computations quickly and easily with a slide rule.

Sooner or later most ambitious students decide to gain a working knowledge of formulas. An interesting and practical reference text on formulas and their uses is included. You learn what a formula means to you, how to rearrange formulas and how to work with them. Many useful Radio and electrical formulas are given, and the more important ones are illustrated with actual examples to make them perfectly clear.

These texts are not compulsory training. They are an extra advantage and privilege for every student who wishes to benefit from them. The beginner will find the material so presented that previous training is not essential. For the trained man these texts offer a sound review, and a rich mine of time saving methods.



### Salary Ranged from \$30 to \$70 a Week

"I am with R. C. A.-Victor. My first position obtained in 1928 was as inspector. From there I was promoted in the Test Maintenance Dept.; given charge of all testing equipment on audio amplifiers and power packs. In 1929 I was taken into the Engineering Dept.; given charge of calibrating all test equipment in the plant. In 1930 I was made process man on assembly of special equipment—Navy and Army airplane receivers and transmitters, signal generators, etc. In 1931 I was made foreman of the assembly and wiring of the equipment named above. As I progressed with R. C. A.-Victor, my salary ranged from \$30 to \$70 a week. I am still with them, working steadily with lots of overtime. I have charge of test equipment in the R.F. Channels cage."

LOUIS F. LYET,  
17th & Tloga Sts., Kenderton Apts.,  
Philadelphia, Pa.

## Radio Salesmanship and Merchandising

A special group of reference texts is devoted to the problems and methods involved in building up a profitable, independent Radio business. Radio offers an ideal opportunity to the man who wants to do this for himself. The experience of hundreds of graduates of the Institute, and our own knowledge and experience over many years, assure you a rich mine of practical help.

The question of the kind of business, whether service and repairs, receiver and accessory sales, or some combination of these, is discussed. Qualifications and requirements for beginning a sound business are outlined.

## An Open Door to Making Money

The knack of getting people to do business with you can increase immeasurably the amount of profit you can derive from this training. It is vital to you to learn how people can be persuaded to do business with you. Your customers are going to call you on the phone, come to your shop, even write you, asking for your services, buying receivers and other merchandise. Dozens of ways to get them to do this are revealed in these special reference texts.

Radio service merchandising and Radio receiver merchandising are analyzed. Fundamentals are stated and successful practices outlined. The art of buying, pricing, displaying, and selling merchandise is treated plainly and helpfully. Result-producing, money-saving suggestions for advertising are included.

## Store Methods and Policies

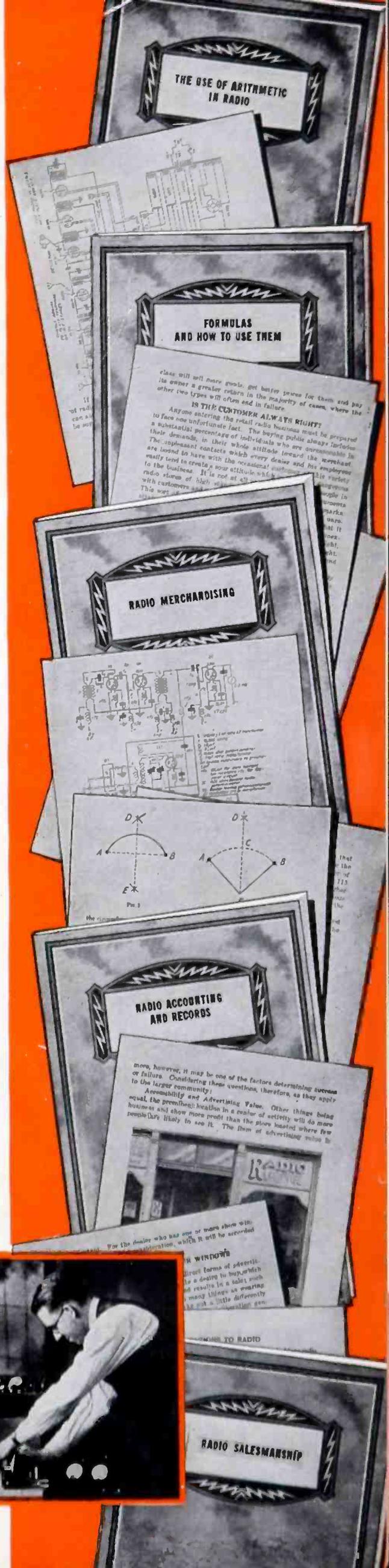
Selling methods and selling policies, credit policies and collection methods are included. The selection and training of service and store personnel are treated briefly.

Business forms and records are taken up in detail. The importance of keeping the right kind of records is stressed as an aid to profits—but keeping of useless records is properly discouraged. Many other common errors and pitfalls of inexperienced merchants are pointed out so that the young and growing business will escape setbacks, progress rapidly, and yield constantly increasing profits to the proprietor.

## \$45 a Week as Head Serviceman

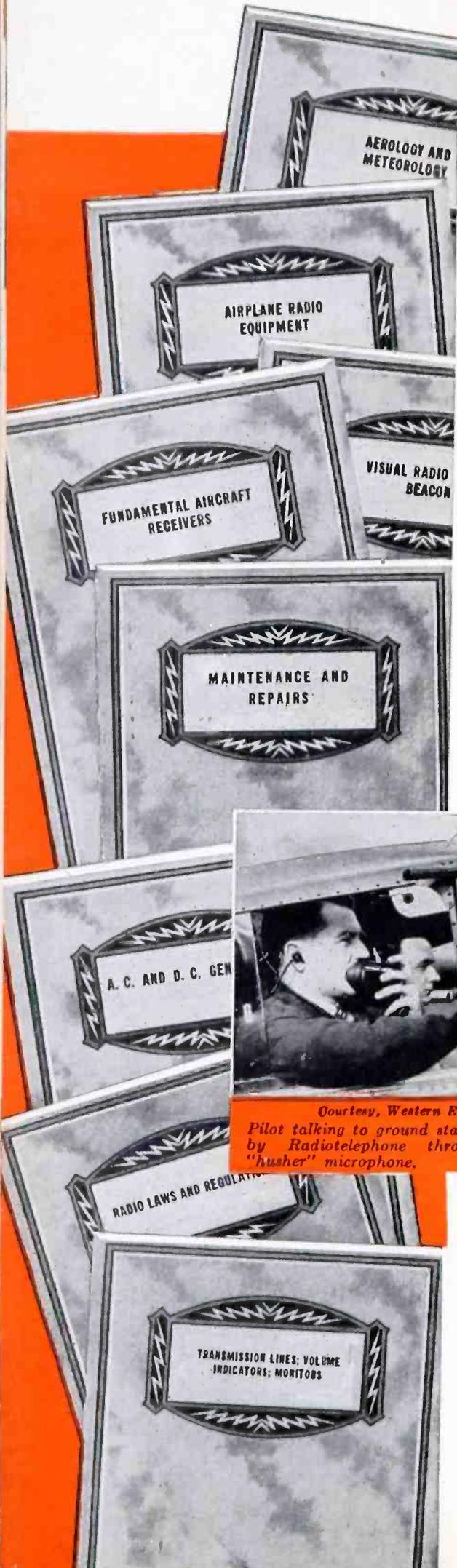
"I was working in a garage—a dirty job with low wages. One day I built a one tube set. I wanted to know why it worked. I decided to enroll with you. In a few months I made enough money to pay for the Course three or four times. I got a job as serviceman at one of the leading Radio stores in town at a salary of \$35 a week. I am a graduate now, and head serviceman, making \$45 a week, and not afraid to tackle any job that comes along. I have made over \$10,000 in Radio. Enrolling with you has given me a good job and made me independent."

JAMES E. RYAN,  
1535 Slade St., Fall River, Mass.



# This Advanced . . . Specialized Training opens the Great Radio Communications

## Field to you



Courtesy, Western Electric  
Pilot talking to ground station  
by Radiotelephone through  
"husher" microphone.

**T**HE National Radio Institute's Advanced Specializing Course in Radio Communications gives you, first, thorough preparation for the various Government license examinations. Second, it includes new, unusual training to equip you to do exceptional things in the communications field. When you complete this Course you are trained not merely to "hold a job" but to hold a wide variety of jobs, win advancement, and be a leader in the Radio communications world.

### All Branches Completely Covered

The Course in Communications covers all the equipment used in ship-to-shore communications, point-to-point telegraphy, broadcasting, telephone and telegraph aircraft Radio, and visual transmission (Television). Much of the information essential for one kind of job is useful in other kinds, and mastery of the field means that you can step from one good job to a better job, and as Television or other new fields open up, get in on the ground floor.

All forms of Radio communications (except some experimental work) are Government controlled. Every man in direct control of radiating equipment must be Government licensed. If your ambition is ship, shore, or air station operation, you will require a Government operating license.

### License Requirements Provided For

Licenses are for either Radiotelephone or Radiotelegraph, several in each division. Those planning to take a Radiotelegraph examination will be expected to read and send Code. Special Code training is available to those who will require it at moderate additional cost. The National Radio Institute is familiar with the requirements in every type of examination, watches changes in these requirements, and includes in your Course all necessary information.

The Course begins with special training in dynamo electric machinery and power supplies for transmitters. Generators are studied thoroughly from all design, construction, and maintenance angles. Such apparatus as fuses, relays, circuit breakers, and protection devices used with motor generator systems are also included.

### Generators—Arc and Spark Transmitters

The control and operation of motor generator systems get special attention. Methods of trouble shooting and apparatus used are described in detail.

Storage batteries play an important part in present-day Radio communications. Their study is essential. The Course makes their construction, operation, and upkeep interesting. From battery service station problems to ocean liner requirements, the treatment is complete and thorough.

Arc and spark transmitters are still used in a few mobile marine installations, as well as ground stations. The subject is included in several Government examinations. All necessary design and operating information is included in this Course.

### Line Transmission—Monitoring

Equipment such as transformers, equalizers, pads, attenuators, and mixers are commonly used to compensate for transmission network effects on the audio signal which is fed into a modern transmitter. This signal must also be greatly amplified. The nature and use of all such devices are brought out clearly.

Knowledge of the condition of the signal at various points is very essential. Volume indicators and monitoring apparatus used to determine and control the signal are discussed thoroughly. Proper characteristics of transmission lines and methods for improvement are included. How filters are made, wired, and how they operate to cut off bands of specific, undesirable frequencies are described.

### Transmitters Are Studied Thoroughly

For the R.F. portion of a transmitter, a stable crystal controlled oscillator with temperature control is needed, followed by a group of R.F. amplifier and modulated amplifier tubes. The Course shows how such oscillators work, what is necessary for oscillation, how quartz crystals are cut and used, and how the crystal temperature is kept constant. Types of amplifiers, neutralization, large tank circuits, and their adjustment, how stages are coupled, and the characteristics of all important transmitting tubes, including rectifiers, are included in generous, helpful detail. The process of modulation or superimposing the voice wave on the carrier is an important study and is thoroughly handled in the Course.

### Transmitter Systems and Antennas

Many complete transmitter systems for Radiotelephone work are shown and described, also auxiliary apparatus for bypassing, neutralizing, tuning, and otherwise adjusting the circuit. Marine Radiotelegraph transmitters with telephone attachment are described and circuits given. The Marconi antenna, the beam antenna, the Hertzian antenna and others are included. An antenna for transmission is completely designed. Radio frequency transmission lines are extensively used and thoroughly covered.

Radio measurements applied to transmitting equipment include determination of power output, modulation percentage, condition of resonance, completeness of neutralization, stability of frequency, actual frequency, harmonic radiation, and field strength. Kinds of equipment and use are treated thoroughly.

### The Radio Compass

as used in ship and aircraft navigation, gets proper consideration. The properties of loop and vertical antennas are analyzed. The taking of bearings and the establishing of the positions of ships are gone into thoroughly, including allowance for distortion of readings due to metal in the ship and proximity to the shore line.

Various commercial receivers, particularly the regenerative receiver adjustable to a large band of frequencies and most suitable for general commercial communications, are treated. Their careful mechanical tuning apparatus, their changeover apparatus for various types of signals, their loading apparatus for wave band coverage, and additional audio amplifiers, are included. Commercial forms of the superheterodyne receiver and commercial short wave receivers are also taken up. The Marconi auto alarm is fully described.

### Aircraft Communications Requirements

include specialized types of arrangements of equipment. Different kinds of antennas, reels, ignition noise suppression systems, arrangement of equipment, and installation problems are gone into. Aircraft Radio apparatus power supply demands light weight, dependability and efficiency. These problems are thoroughly treated. Radiophone transmitters for use as ground station equipment and as aircraft equipment get

# Master these Subjects *and you* *are ready for a Good Job...*

## IN BROADCASTING—COMMERCIAL—SHIP—AVIATION POLICE AND TELEVISION STATIONS

(Continued from previous page)

thorough consideration. Different circuits, including diagrams, are treated, and a large, complete transmitter is studied. A complete aircraft installation is outlined. Suitable aircraft receivers are discussed with reference to the special aircraft requirements. A selected circuit is shown in detail. Automatic volume control as used in aircraft beacon work is taken up, together with filters for simultaneous voice and beacon reception.

### Radio Beacons—Aural and Visual

The operation of directional Radio aural and visual range beacons gets ample attention. The directional properties of a transmitting loop antenna and the simultaneous operation of a loop and vertical antenna are treated in detail. Ground direction finders, foreign direction aids, and course indicators are thoroughly described.

Operation of both the aural Radio range beacon and the visual Radio range beacon in aircraft navigation get special emphasis. The Course explains the signals used, the special methods used in transmitting them, how they are received, and how they are interpreted. All mechanism and equipment used is carefully described.

The practical operation of aircraft Radio communication systems between different airports, and between airports and aircraft, involves problems and practices with which the student should become thoroughly familiar and which are included in the Course for this purpose. Location of planes, contact with them, weather conditions, and destination arrival time, are important considerations. The more elaborate systems require teletype machinery, communicating telephone lines, and a well trained personnel to keep the dispatching reports up-to-the-minute. Allotment of frequencies in an orderly manner is important. Typical lists of frequencies and their use are included.

### Meteorology—Aircraft Service Problems

Meteorology—knowledge of weather conditions—as used in aircraft work will appeal to every ambitious student of this Course.

Different types of cloud formations, storm indications, wind currents, wind velocity, temperature, humidity, electrical and storm conditions are studied from the standpoint of promoting safe flying, and all necessary information on these subjects is included.

The servicing and maintenance of aircraft equipment is of unusual importance because the shock, vibration, temperature, and moisture effects to which such equipment is exposed, cause frequent breakdowns. The testing of both transmitting and receiving equipment for aircraft is somewhat different from ordinary testing and these differences are clearly brought out. Practical servicing data is included.

### Radio Laws and Regulations

governing the use of the air are given. Technical requirements of various transmitter and receiver systems to conform with the law, legal requirements of measurements, censorship, licensing, and other phases are included for your guidance, protection, and use. Laws governing frequency stability under different conditions, and those controlling police Radio, experimental Radio procedure, commercial long, short, and intermediate wavelength communications, both mobile and fixed, police, fire and forest reserve equipment, geophysical equipment, Television and picture transmission, are given. Procedures governing distress calls, urgent messages, and other classes of messages are given. Many calls and signals are given, and you get full information on handling regular messages and traffic.

### Get Ready for Television

Television transmission or broadcasting constitutes a major division of the Course. While Television is still experimental; nevertheless there are actual Television transmitters in operation already, and future possibilities are unlimited. The communications expert must be prepared to take advantage of developments in Television.

Visual or Television broadcasting is first compared with sound broadcasting. The

six basic steps in creating visual transmission are analyzed. These are: Scanning the object; conversion of light impulses into electrical equivalents; amplification, modulation and radiation; reception, including R.F. amplification, demodulation, and picture signal amplification; converting picture signals to light; and the reconstruction and synchronization of the final image.

### Typical Television Systems

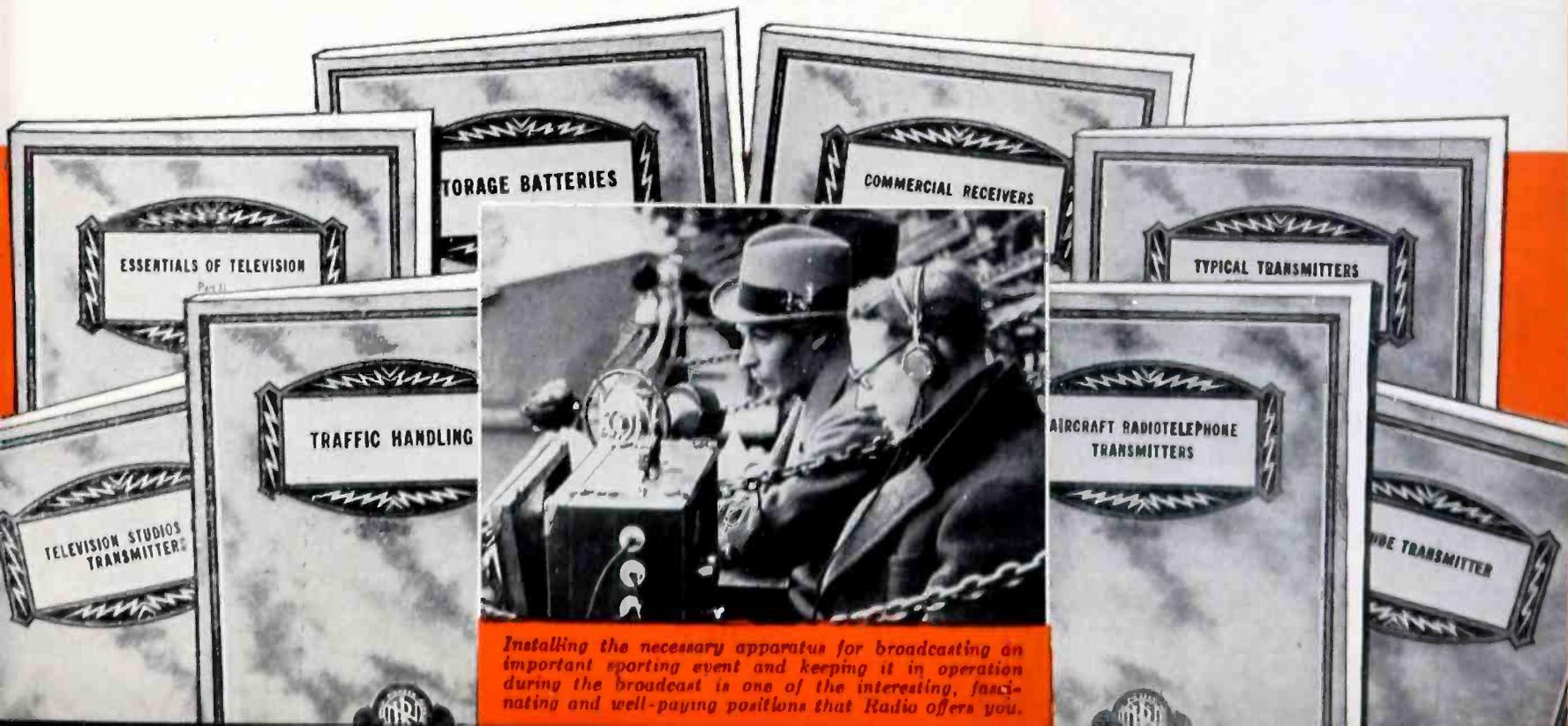
are examined. You learn the significance of picture elements and their relation to frequency; the persistence of vision; relation of detail to frequency, limitations of the present system; and various problems which come up together with the methods of eliminating them.

The transmitting operator is vitally concerned with the quality of transmission. The production of quality Television and quality standards are emphasized, how fidelity tests are made, frequency distortion corrected, and how aperture distortion is reduced to a minimum. The picture being transmitted must be kept "in step" or synchronized with the picture being received. Typical synchronizing and frequency problems are investigated, illustrated, and corrections given.

### Present and Future Trend Factors

Typical American, British and German mechanical and electronic systems are examined. Pinhole and lens scanners, Weiller wheels, drum scanners, Television cameras, Kerr cell systems, and cathode ray tubes used according to the Farnsworth, Ardennen and the Zworykin electronic pickups and reconstruction methods are given.

Studio requirements are given definitely in detail. These include the type of photocell to use, type of background, and lighting. Portable and studio types of Radio cameras for Television pickup are illustrated. Many subjects not described here are included to round out your grasp of Television and other transmitting practices.



Installing the necessary apparatus for broadcasting an important sporting event and keeping it in operation during the broadcast is one of the interesting, fascinating and well-paying positions that Radio offers you.

# These Reference Texts on Communication Subjects

... are included

**J**UST as is the case with the other Courses, certain subjects of special interest are included in reference texts to suit the convenience or requirements of special groups of students. Two such subjects included in this group of material are arithmetic and useful formulas as applied to Radio Communications.

### Useful Shortcuts Made Quick, Simple

This work will not interfere with your progress in any way if you are not interested. On the other hand, you can review or learn, as the case may be, addition, subtraction, multiplication, and division, both in the ordinary way and as done by the engineer using logarithms or the slide rule. Particularly in raising numbers to their powers or in extracting square roots, cube roots, etc., is a knowledge of logarithms a time saver and a great advantage to you. Should you ever become interested in work involving computations, the

### Practical, Working Knowledge

of formulas contained in these books will be invaluable to you. A long list of useful formulas for reference is included.

Code training is not compulsory as part of the Communications Course. Knowledge of Code is not necessary in Radiotelephony, yet it must be learned by those interested in Radiotelegraphy. A special reference text on learning the Code is given as part of the Course. Code training instruments may be obtained from the Institute at moderate additional cost as mentioned elsewhere.

### Code Training Simplified

The National Radio Institute has specialized in Code training since its founding in 1914 and our method embodies our entire experience.

You learn to read the Code by learning the sound of letters and not by memorizing the dot and dash arrangement. Several lessons in sending, graduated to develop your ability, are given. Hints in sending and receiving are a feature and assistance is given in developing a professional "fist." In case you do not have the use of a transmitting machine or the cooperation of another operator, you receive information on how to build a receiver which will receive slow, commercial transmission for practice purposes.

### Typical Aircraft Receivers

are taken up in another reference text, the subject of aircraft receivers having already been considered from a general standpoint in the body of the Course. This rounds out the entire presentation of the subject and in addition includes police Radio, so closely allied from the standpoint of equipment, and a field of real significance.

### Radio Aids to Blind Flying

and in particular to blind landing, are of growing importance. Experts prophesy a future in this branch of Radio science. The requirements of blind flying and coordinated instrument panels are set forth. Such systems as the leader cable, absolute altimeters (sonic, capacity), and Radio beams are presented. Special attention is given to the Radio landing beam as developed by the Bureau of Standards.

Again, as in all the other Courses and groups of reference texts, much valuable material not outlined in detail is included. Often a single sentence or paragraph in this outline refers to an entire lesson on some practical, useful phase of Radio, the full value of which you will never realize until you are a graduate using this knowledge in your chosen profession.

### In Charge of Airways Radio Station

"N.R.I. will always hold a warm spot in my heart, because it started me on the right path to success. My career has been rather varied. It includes Radio operating in the Navy, for commercial steamship lines and at the R. C. A. Chicago Coastal Station. At present I am operator in charge of the Airways Station at Bellefonte, Pa., and have four men under me. My salary is over \$2,000 a year.

"Our duties consist mainly of keeping the mail pilots advised of weather conditions along the route by means of scheduled weather collections and broadcasting of same, keeping the Radio range transmitters, both visual and aural, operating. The operating personnel must consist of thoroughly trained Radio experts."

L. T. NEWELL,

Airways Radio Station, Dept. of Commerce,  
Bellefonte, Pa.



# A Special Course in Code for those who want a Government Operator's License

## Pay Good in All Branches

"I have worked in all branches of the Radio field, broadcasting, receiving, etc. The pay was always good, and still is. I am in business for myself now. As for the financial returns, they are what you make them in Radio. That is where the N.R.I. comes in—it teaches you to learn quickly and do your work well. Mr. Smith, you have always kept your word with me. I would say that anyone thinking of starting in Radio can depend on anything you tell him."



RAYMOND L. McLAUGHLIN,  
574-A Congress St., Portland, Me.

## Holds Radiotelegraph Second Class License with Radiotele- phone First Class Endorsement



"I thought you would be interested in knowing what I have accomplished in Radio. I have done service work on all makes of battery and A.C. operated sets, also some set building and experimental work with broadcast and short wave receivers and transmitters. Radio work enabled me to pay expenses through my senior year of high school while finishing as valedictorian. I am now Assistant Engineer and Chief Operator at WNRA, Muscle Shoals. I hold a Radiotelegraph second class license, with Radiotelephone first class endorsement, also amateur, Class A, W4ADI."

OTIS L. WRIGHT,  
Station WNRA, Sheffield, Ala.

## Chief Operator of WMPC

"When I had completed the first twenty lessons, I had obtained my license as Radio broadcast operator and immediately joined the staff of WMPC, where I am now chief operator. I have had steady employment and a good salary during this time of depression, when so many have been without work and without a means of livelihood. I appreciate the personal interest the N.R.I. staff of instructors gave me. I do not hesitate to recommend your Institute to anyone who wishes to take up Radio as their life's work."

HOLLIS F. HAYES,  
85 Madison St., Lapeer, Mich.



**T**HIS special Course was designed to train you to send and receive messages in the dot and dash alphabet of the Radio code. It should be taken by you if you are interested in obtaining a position that requires a Government license. Only the first four classes of licenses listed below require proficiency in sending and receiving code.

Commercial Extra First-Class; Radiotelegraph Operator First-Class; Radiotelegraph Operator Second-Class; Radiotelegraph Operator Third-Class; Radiotelephone Operator First-Class; Radiotelephone Operator Second-Class; Radiotelephone Operator Third-Class.

These licenses are issued by the Department of Commerce through the Radio supervisors in charge of the different districts into which the United States is divided for this Government function. When you are ready to take your examination, I shall be glad to give you the name and address of your nearest supervisor.

This Code Course is not a part of my regular training. There is a small extra charge for it, as explained on the enclosed enrollment blank. This charge covers the instruments described on this page. If you are not sure now whether you want a position requiring a Government license, do not check to include this Course when you enroll. You can decide later about taking this Code Course. You can enroll for it any time before you graduate, and we will start it before you complete your Advanced Specializing Course.

## The Ideal Code Teacher

The Nacometer and the Audio Oscillator suit your needs whether you are a beginner or have some speed, but need more to get a Government license. The Nacometer can be regulated to send at a rate of 3 to 4 words up to 40 words a minute. It has many patented features that make it the ideal machine for learning to receive and send. The tape has two rows of perforated messages. When one side has been used, the opposite side can be used without rewinding.

Each tape contains approximately four hundred letters or characters and will last indefinitely with ordinary care. They are very strong. Three



rolls of tape are given with every Nacometer. The whole instrument is enclosed in a handsome cabinet with handle attached for convenience in carrying. The crank is removable. It is as simple to operate as a phonograph. Equipped with a silent motor, there is no noise to bother you, no clicking or choppiness.

The Audio Oscillator has many advantages over the ordinary key and buzzer. The tone is constant. It does not need constant adjusting. The signals are clear, pure, exactly like those of a Commercial Code Station, and their pitch may be varied. It is adaptable to high speed sending. We recommend that you operate it with a type 30 or 31 tube. It is compact, portable.

The Nacometer is sent by express collect. You build the Audio Oscillator, using parts supplied with the Home Experimental Outfits (pages 30, 31, 32, 33) and extra parts which we supply especially for this instrument. The Nacometer is ready to use after hooking up the necessary batteries. This method of learning to send and receive at home has received considerable praise.

# To Men Already in Radio

## Why you can profit from N.R.I. Training

It gives you a practical working knowledge of Radio fundamentals

It fits amateurs to "cash in" on valuable experience

It brings your knowledge of Radio up-to-date with the times

It teaches servicing short cuts

It fits servicemen to beat competition

It helps win quick recognition of ability

It gives a working knowledge of fundamentals so necessary to understand the operation and servicing of new devices constantly being marketed

It gives you the benefit of valuable Consultation Service and other privileges open to N.R.I. men

N.R.I. Diploma gives you prestige

**M**ANY men who entered Radio without the benefit of N.R.I. Training find the art changing so fast that the amount of basic knowledge of fundamentals they have is not enough to enable them to keep abreast of new developments. New tubes, new circuits, new applications of principles are exposing the weaknesses of their knowledge. Men who have worked up from the ranks, or are still in the ranks, who depended entirely upon experience to teach them what they needed, are in danger of being replaced by others who come equipped with a thorough working knowledge of Radio fundamentals and understand modern operating and servicing technique.

### N.R.I. Training is Specific

In spite of its simplicity, many experienced Radio men and even college trained engineers have found this training gives them an insight into Radio that no amount of experience or book study could give them. N.R.I. Training is not dry or abstract, but specific. Practical problems, circuits and apparatus are given to illustrate fundamental theory.

You are taught how to coordinate the required parts for any form of Radio apparatus to produce specific results. You learn how to improve on the different designs, how to operate any Radio device at its greatest efficiency. Many operators in the Army, Navy

and civilian service have found that knowing "how" and "why" the apparatus they maintain performs has enabled them to get the greatest efficiency and most reliable performance out of it.

Many servicemen who learned to service Radios in a blind and guess manner have found that a sound knowledge of modern Radio sets, circuits, and particularly basic fundamentals has helped them to service more intelligently, more quickly, thereby increasing their earning power without working longer hours. Often the men in Radio know a great deal of the "how" but not enough of the "why."

### Benefit from Other Men's Experiences

Act now to bring your knowledge up to date. Act now—get a thorough working knowledge of Radio fundamentals, so the day will not come again when your knowledge will be out of date; when you again need fear being replaced by men who have had the foresight to train thoroughly. The man who attempts to learn everything he needs to know from his own personal experience is failing to benefit from the experience of other men. This experience is set down in our training in a correlated manner, easily mastered, easily used; much of it is not in print elsewhere.



**Radioman 2nd Class, U. S. Navy, when He Enrolled**

"I was a Radioman 2nd class, U. S. Navy, when I took your Course. Shortly after completing I was promoted to Radioman 1st class. When I was discharged from the Navy, I took a position as 2nd operator at Commercial Coast Station WPR, at Ensenada, Porto Rico, engaged in mobile and point to point traffic. I left to take a position as Airport Radio Operator with the Pan-American Airways, Inc., at their Isle Grande Airport in San Juan, P. R., which position I now hold. My salary is greater, and the hours much shorter. My salary has increased from \$1100 to \$2000 a year, not taking into account the income from service work in my off hours."

EVERETT W. MAYER,  
2 Lindberg St., Santurce, Porto Rico.

**Seven Years' Experience. Saw Need for N.R.I. Training**

"I did not start as a beginner. Radio was my hobby from 1911 until 1920. After seven years as a commercial Radio operator, I saw the need more than ever for specialized training. It has now been over five years since I graduated from your Course, and as the years pass by, the thoroughness of your training becomes more evident. Since graduating I have operated various types of Radio installations, including the design and construction of broadcast stations, short wave telegraph stations from 19,000 to 7,000 kcs. in commercial work, engaged in Police Radio work, and am now with Firestone Tire and Rubber Co., Engineering Laboratory. In these various types of work your training has been of inestimable value to me."



NORMAN R. HOOD,  
1193 Burkhardt Ave., Akron, Ohio.

# MORE PROOF

**That Men Who Want to Make More Money  
Can Rely on N. R. I. Training**



## Successful Radio Business

4134 Juniata St.,  
St. Louis, Mo.

DEAR MR. SMITH:

It is certainly great sport to be in the Radio game, and a profitable game it is, too. I am now operating a very successful Radio service and sales business for myself—have one of the most up-to-date laboratories and service departments in the city. I am in a position to do any kind of work pertaining to Radio, and Radio work is the most fascinating I have ever done in my life.

I owe the greater part of all this to the National Radio Institute for the proper training it gave me. Without this training I could never have been successful in Radio. You started me off right by giving me everything a Radio man should have to become successful. I am proud of my diploma, because I know what it means to have one.

Yours very truly,

J. A. VAUGHN.

## Service Cannot be Duplicated

2390 Front Street,  
Cuyahoga Falls, Ohio.

DEAR MR. SMITH:

A few words of appreciation for your most excellent Radio training. After inspecting several well known courses and graduating from a residence course, I still attribute my Radio knowledge and Government license to N.R.I. The Institute undoubtedly has the finest, most modern and comprehensive training ever published. Your Consultation and Student Service cannot be duplicated. I know. It is five years since I graduated from N.R.I., but your very efficient staff of instructors keeps me informed on all the latest developments. I shall certainly be pleased to recommend you.

Sincerely,

WILLIAM A. KELLY.



## Profit \$300 a Month

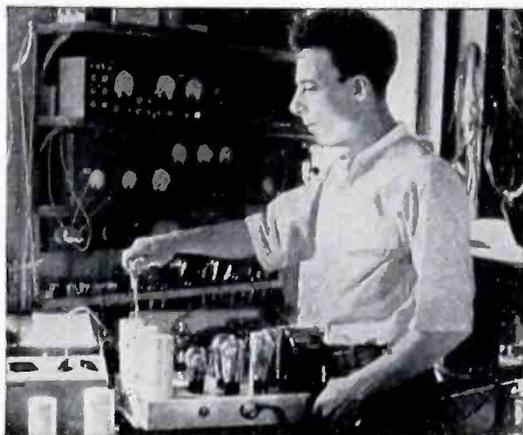
222 South 60th St.,  
Philadelphia, Pa.

DEAR MR. SMITH:

Your Course is one investment that has paid weekly dividends to me for over eight years; not small ones either. Your cooperation with the students, and your highly trained staff of instructors, plus your Course, can't help but produce a Radio-Trician who can handle any problem which he may encounter. I now have my own Radio business which shows a \$300 a month profit, thanks again to N.R.I.

Cordially,

FRANK REESE.



## Business Doubled

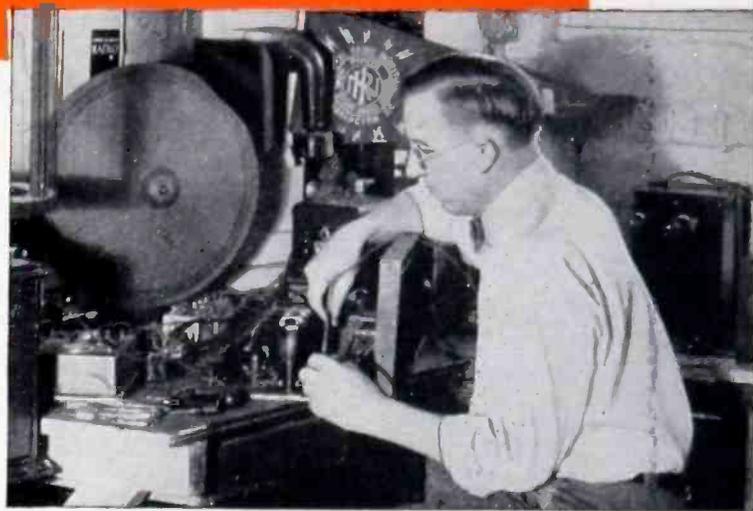
93 Broadway,  
Newark, N. J.

DEAR MR. SMITH:

I was working as a cabinet maker. One lucky day I read about your Institute in a magazine. I didn't hesitate a minute. I enrolled. To my surprise, after a few lessons, I learned the principles of Radio and started at once to do repair work. In a short time I made enough to cover the cost of the entire Course. Now I have my own repair shop. In the past year my business has more than doubled. I have also built up a profitable business in public address and sound truck work. Without the N.R.I. Course, I would still be punching my time card at the factory.

Yours very truly,

WILLIAM SPARTIVENT.



## Doesn't Fear Future. Increased His Income Every Year

3127 West 112th St.  
Cleveland, Ohio.

DEAR MR. SMITH:

My fourth year in the Radio field finds me with all my original customers still doing business with me, and all their friends have been added to my trade. This means that the service N.R.I. training taught me to render, leaves me nothing to fear about the future. Your training has enabled me to increase my income every year. It has changed my idea about interesting work and good pay. My greatest thrill comes from being able to repair sets for servicemen with inferior training.

Cordially,

CHARLES R. JESSE.

## "This week my business netted \$75"

MODERN RADIO SERVICE

Pittsfield, Ill.

DEAR MR. SMITH:

If you had not insisted that I take your Course, I would be digging ditches or perhaps be among the ranks of the unemployed this very day. This week my business netted \$75 on repairing alone, and there are sales to be added. All of which makes a right nice income. I have only you to thank for it. If a fellow wants to get into Radio, the National Radio Institute is the starting point. In my estimation, N.R.I. is the best home study school in the whole United States. If anyone wants to write to me about your Course, I shall be glad to take the time to answer.

Cordially,

R. S. LEWIS.





# Many of the future

## \$5,000 to \$10,000 a Year Men

### will be Picked from those who

#### What I Predict for Radio

The Radio industry will continue to grow for years to come. It will employ many times the present number of employees.

Radio principles will find many new commercial uses. Hundreds of fine jobs will be made by this growth.

Radio's use for commercial communication will become almost as common as the telegraph today. Can you realize what this will mean in number of jobs, in opportunities?

The advent of television will open so many jobs that there will be a wild scramble by companies in the television business to grab the best men of the few who will be available. Have the foresight to train now—to be one of those few.

We will soon be able to see our party while carrying on a telephone conversation.

The aggressive, ambitious, resourceful man or young man who gets into Radio now will have many more opportunities for advancement and promotion than most of his friends will have who associate themselves with older industries.

I predict that you will thank me some day if you take my advice to get into Radio now—that you will want to "kick" yourself some day if you pass up this advice.

## ..get into Radio Now!

**I** DON'T know what you aspire to be or to earn. Perhaps you will be satisfied with \$40, \$60, or \$75 a week. Whether you are satisfied with that type of job, or whether you want to get in a field where you have an excellent chance to make considerably more, Radio is the field for you.

Let's look back a few years—it will help us to see what is ahead for you in Radio. Who are the \$5,000, \$10,000 and higher paid men in the automobile industry, the motion picture industry, the electrical industry? Aren't they the men who got into those fields early—the men who were in line early when opportunities for promotions came? Of course they are. But the opportunities which your father and grandfather had in those businesses are gone—others have taken them. But similar opportunities are being duplicated right now in Radio.

When the first high-wheeled, two-cylinder automobile made its appearance, most people thought that men with such an idea were "cracked." A few men with vision saw in this contraption a faster, more comfortable means of transportation, saw in it a big business in the making. They jumped in.

When the first crude outfit of coils and crystal made its appearance, it was generally thought to be a plaything for boys. A few thought of it as a beginning of a new means of communication. Those who turned their backs had forgotten history.

#### You'll Kick Yourself Some Day if You Pass Up This Opportunity

You've heard your neighbors, perhaps your father or uncle, say: "If I had only gotten into this or that business some years ago, I would be rich now." Isn't that what you are going to be saying a few years from now if you pass up the opportunities in Radio? I am sure it will be. Some of the good jobs in Radio have been taken. But—many more good jobs are in the making. The men who get into Radio now—who build upon the firm foundation of thorough training—are sure to have many opportunities to get just the type of jobs that made some rich and thousands of others independent in other industries.

Have the vision to realize this. Have the ambition to try to get one of these places. Have the courage to act now.



#### Radio's Possibilities Unlimited

"I believe the advent of Radio has opened up new fields of improvement in many lines of industry, science, medicine and sound. Its possibilities along these lines are unlimited. It has speeded up time, has brought high class entertainment, national events, direct to the mass of people. This field has branched into numberless fields. A knowledge of Radio is a wonderful wage-earning tool."

JOHN L. AMBROZICH,  
211 W. Locust St., Chisholm, Minn.



#### \$150 to \$200 a Month from Radio and Battery Business

"I am in the Radio and battery business and make from \$150 to \$200 a month. I am located on the edge of town and have all the work I can do. In the early part of 1930 I was down and out, working here and there and worrying how I was going to eat and pay my bills. Now I am my own boss and do as I please. I gained all I have through N.R.I., and can't begin to thank you."

GERALD W. CURTIS,  
1204½ W. Washington St., Centerville, Iowa.

# What the Radio Industry . . . thinks of N.R.I. Trained Men

**D**ID you ever hear the president, the manager, or some other official of a large concern speak rather nicely of some fellow's training, ability, honesty, etc., but when it came time to hire a man, choose someone else? I am sure you have.

This page gives you a partial list of well known concerns that have employed N.R.I. trained men. I cannot possibly show you a complete list because N.R.I. trained men are to be found in practically every Radio organization of importance in the United States, Canada and many foreign countries. I want to show you that these companies thought enough of N.R.I. trained men to give them what you want when you graduate—a job. To my way of looking at it, that's the final test of what the Radio industry thinks of N.R.I. Training. Our training must be right to fit men for responsible jobs.

Manufacturers, dealers, broadcasting stations, aviation companies, police departments, the U. S. Government, every branch of Radio has hired N.R.I. trained men. Hundreds of N.R.I. men have established their own businesses—service shops and stores.



## In Charge, Montgomery Ward Radio Department

"I have been transferred by Montgomery Ward & Co. to Manhattan, Kans., and placed in full charge of the Radio Department of this store. An increase in salary and a better position are rare occurrences these days. I cannot speak too highly of the practical training given by the N.R.I. I had all the part time work I could handle while studying and now I have a steady, full time, pleasant job."

H. A. LOGSDON,  
625 Bluemont St.,  
Manhattan, Kans.



## A few of the many employers of Radio trained men that have given jobs to N.R.I. graduates

PHILCO RADIO & TELEVISION CORPORATION . . .  
ZENITH RADIO CORPORATION . . . STANDARD OIL  
COMPANY . . . MONTGOMERY WARD & COMPANY  
. . . UNITED AMERICAN BOSCH . . . AMERICAN TEL-  
EPHONE & TELEGRAPH COMPANY . . . WESTING-  
HOUSE ELECTRIC & MANUFACTURING COMPANY . . .  
DETROIT EDISON COMPANY . . . SPARKS-WITHING-  
TON . . . PAN-AMERICAN AIRWAYS . . . R. C. A.-  
VICTOR . . . SEARS ROEBUCK . . . ELECTRICAL  
RESEARCH PRODUCTS COMPANY . . . GENERAL  
ELECTRIC . . . NEW YORK EDISON COMPANY  
. . . WHOLESALE RADIO SERVICE COMPANY . . .  
AKRON POLICE RADIO STATION . . . CROSLEY  
. . . FIRESTONE TIRE AND RUBBER COMPANY . . .  
AMERICAN AIRWAYS . . . CANADIAN NATIONAL  
RAILWAYS . . . R. C. A. PHOTOPHONE . . .  
NATIONAL BROADCASTING COMPANY . . . U. S. GOV-  
ERNMENT' . . . BROADCASTING STATIONS WJTL  
. . . KALE . . . WJBY . . . WABC . . . KYA . . .  
KXO . . . KGIW . . . WTIC . . . WRC . . . WOL  
. . . WJSV . . . WJAX . . . WTOC . . . KYW . . .  
WBOW . . . KWCR . . . WREN . . . WCSH . . . WBAL  
. . . WKZO . . . WQBC . . . KMBC . . . WEAN . . .  
KGBX . . . KGBZ . . . KMMJ . . . WBT . . . WPTF  
. . . KCCU . . . WLW . . . KSOO . . . KGFL . . .  
KIT . . . KFIO . . . WHIS . . . WOMT . . . WKJC  
. . . AND HUNDREDS OF STORES AND OTHER  
CONCERNS DEALING IN RADIO APPARATUS. THIS  
IS A PARTIAL LIST. I HAVE GIVEN THE NAMES  
OF CONCERNS AND BROADCASTING STATIONS WITH  
WHICH YOU ARE FAMILIAR. THERE ARE HUNDREDS  
OF OTHERS.

# The Story of Two Men

**They . . .  
started even  
—but  
read what  
happened**

**By J. E. SMITH**

**A** FEW years ago when I was in touch with these two men, they had many things in common. They were about the same age, had had the same schooling, both were interested in getting ahead—making something worthwhile of themselves.

Radio attracted them. "It's growing fast," they read. "It offers a good job. Train for it."

An N.R.I. advertisement attracted their attention and they both wrote me. Fetzter decided to act at once—he enrolled, as I recall, the same day he got my book.

In a few days Fetzter received his first assignment of lessons. He didn't lose a minute—dug right in.

In a few weeks he was ready to start making money in spare time. In a short time—about a year—he was ready for his first full time Radio job.

Let's see what happened to Tegler. There were several things that he had to do the day he got my book, so he put off getting started. Some friends dropped by the next evening. Valuable days, valuable weeks, valuable months slipped by. He had other interests that kept him busy. Finally he wrote me: "I'm not interested."



C. S. TEGLER



J. E. FETZER



Fetzter now has an important Radio position, as you can read from his letter on opposite page.

Tegler is just getting by. He's barely meeting expenses. He feels that the whole world is down on him now; he is discouraged. Thinks he hasn't had a chance.

I've been in touch with many "Teglers"—fellows who have passed up opportunities to make something worthwhile of themselves—I used that name to illustrate this story.

I wanted you to know what a difference, what an enormous difference, one act of yours—a comparatively small act—can mean in your ultimate success.

What you do today, or what you fail to do, can decide what you are going to be, what you are going to make in the future. Success does not fall into a man's lap. If it were that easy we would all be successful. It has to be earned. You must go after it.

Now it is up to you. Whose example are you going to follow? Tegler's? If so, I can't do a thing for you. Fetzter's? That calls for action—immediate action—your immediate enrollment.



You want a better job—you want to make more money—here's a training that can fit you to do it. Success comes to the industrious—the frugal—the thoughtful. It comes to those who go after it. We have done your planning—we have laid out the route—all you need do is



follow it. N.R.I. Training is tried, tested, proven—there's only one unknown factor. It is you. Will you do your part? Will you start doing it today? You face the success test—now. What you do may determine your whole future.

# YOU WANT SUCCESS ACT NOW!



**I** AM ready. My Training is ready. My staff is ready. You want success—act now—enroll. The Radio field is big enough, broad enough, to absorb many more well trained men. It is growing now—it will continue to grow. Once you get into Radio you will have many excellent opportunities for advancement.



When hundreds of men and young men, just average fellows too, with no special education, no special experience or knowledge, can take N.R.I. Training, then step into Radio and quickly make much more money than they made in other fields where they were working for years, it surely proves that the money making opportunities are greater here.

The one purpose of this Course is to fit you to make more money—to help you get the better job you want. You have two ways to know in advance that N.R.I. will do its part. First, the men I have trained have been satisfied. You will find letters from many of them in this book. But you do not have to take my word or their word for it. Under the terms of our Money Back Agreement, you will be the judge of the training you receive. You can get

back every cent you pay for tuition if, upon completing, you are not satisfied with the lessons and instruction service you received.

To make it easy for you to start, I have enclosed an enrollment blank offering you easy monthly terms.

Now it's up to you. If you wait until tomorrow, you will have lost today. If you wait until next week, you will have lost this week. If you wait until next month, you will have lost this month. You will have lost more than time—you will have lost money. Fill out the enclosed enrollment blank today—this minute—and mail it.

It will be a genuine pleasure to have you as my partner in what I regard the most important undertaking of any man—that of fitting himself to get ahead. Act now. This very moment you are facing a test which

decides whether you are made of the stuff that makes for success—whether you put off acting for any one or many reasons, or whether you weigh a situation and act promptly.

To be successful, to hold responsible positions, to get more out of life than the average person, you must learn to judge accurately, and act quickly. I believe that you are made of the stuff that makes for success. I have prepared a first assignment of lessons. I am ready. **ACT NOW—ENROLL.**

*J. E. Smith*  
President.

**National Radio Institute**  
**16th and U Streets N.W.**  
**Washington, D. C.**

## President, WKZO, Inc.

Radio Station WKZO,  
Kalamazoo, Mich.

DEAR MR. SMITH:

It is a pleasure to tell you about my activities since I graduated. For a number of years I practiced Radio Engineering, specializing in the design and construction of broadcast transmitters. During the past several years these transmitters have been used in well known stations throughout the Central West.

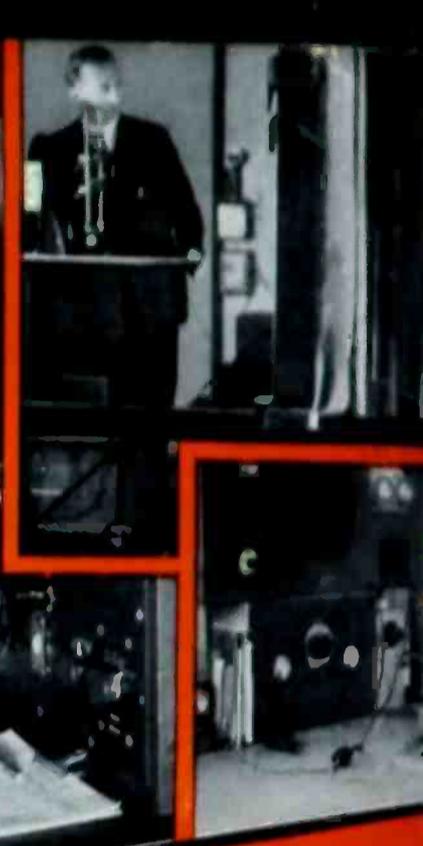
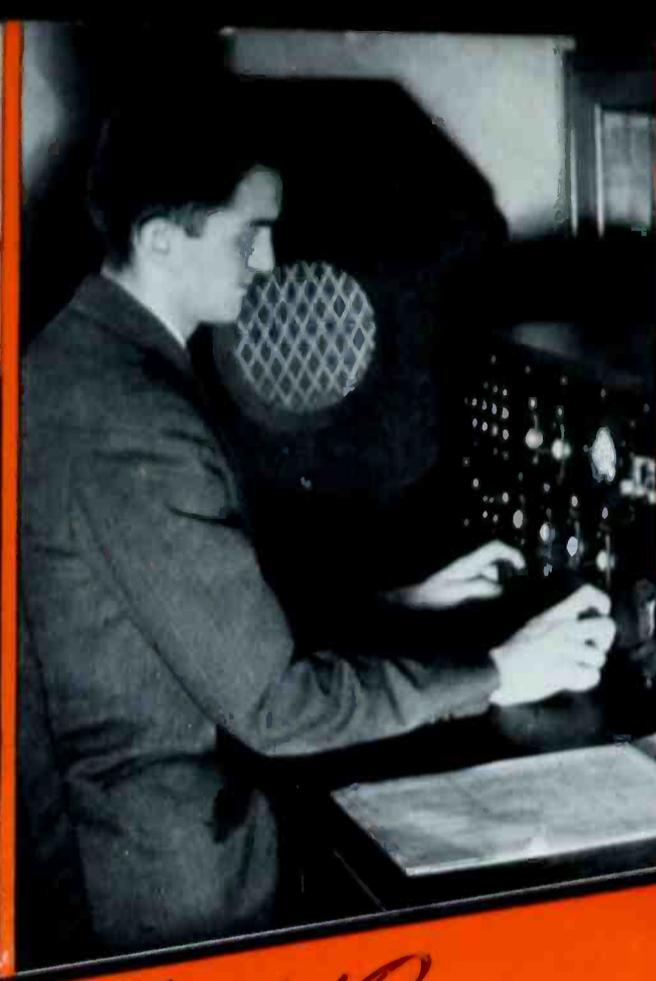
I have traveled extensively throughout the Eastern part of the United States and in Europe, in the interest of Radio research. At present I am President of WKZO, Inc. I designed and constructed the broadcast transmitter we use. Occasionally I find



time to write articles for newspapers and magazines on Radio. I also do quite a little speaking before luncheon clubs on Radio subjects. I am a member of the Institute of Radio Engineers, the American Institute of Electrical Engineers, and the American Society of Military Engineers. I shall always be grateful to N.R.I. for kindling my interest in matters pertaining to Radio, and for the fine contacts I have made as the result of my connection with your institution. In my opinion, commercial broadcasting will be much more prosperous in the next five years. Undoubtedly this will make it possible for more stations to be erected, and as a consequence, hundreds of new jobs should be created for Radio technicians, operators, and general Radio station personnel.

Yours very truly,

JOHN E. FETZER.



*Dr. Neff's Radio*

# Be a Radio Expert

