

NATIONAL



RADIO



NEWS

FROM N. R. I. TRAINING HEADQUARTERS

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Alumni Association Number



The Vice President of the United States, the Honorable Charles Curtis, paid a high tribute to the seventy-two N. R. I. graduates who met in Washington recently. The Vice President, who is seen standing in the front row, in addressing these men said, "There is no greater opportunity in America today than Radio for men and young men seeking a profession." These graduates then met and organized an Alumni Association to promote the interests and welfare of N. R. I. men everywhere! See pages 2, 3 and 11.



J. E. SMITH

The PRESIDENT'S PAGE

THE only justification for existence is to be of service—to do good. The man or organization with nothing to contribute to fellow-men is in a sorry plight. A very definite PURPOSE is and has been the driving force behind the Institute—and that to equip the greatest possible number of men for a successful career in Radio. And now, with the formation of the N. R. I. Alumni Association, our graduates will carry on and broaden that PURPOSE!

The 72 graduates who met in Washington recently to form this Association laid the groundwork for a world-wide organization of men closely knit together by the same training and the same determination to share the best that Radio offers. It provides N. R. I. men with a new means of contact—the chance to help one another and boost each other along in Radio whenever the opportunity permits. Naturally N. R. I. men like to see other N. R. I. men get ahead. The 6000 graduates now in the Radio field will not only cooperate closer with each other, but will also give a helping hand to students who graduate and become Members of the Association.

We of the Institute anxiously watch the development of the Association. We want to see its advantages extended, and hope that every graduate will join with President Fetzer in making the most of it. In seeing the success and happiness of N. R. I. men promoted this way we are reassured again and again that the PURPOSE behind the Institute itself is a truly worthy one that will always demand of our staff the very best service and instruction we can give!

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OVER 2,000 Radio patent applications are before the U. S. Patent Office. More are pouring in every day. This is

just another indication of the tremendous development going on in Radio. New ideas that will make fortunes for their inventors and more good jobs for the Radio-trained man!

* * * * *

EVER on the alert to give better service and Radio instruction, we have added to our staff Mr. Joseph Kaufman, who holds his degrees in Engineering from Massachusetts Institute of Technology, and Mr. J. E. Miller from Johns Hopkins. They will assist Mr. Dowie and myself in giving N. R. I. men the best possible technical training.

* * * * *

303 broadcast stations cooperate with the U. S. Department of Agriculture in sending agricultural topics, weather forecasts, market news and general farm information to the farmer. The modern farmer must be equipped to receive these valuable broadcasts. The new battery operated sets will appeal to him. So the farm market is now one of Radio's best bets! Start listing and selling your farm prospects now!

* * * * *

HAVE you ever considered that nearly twice as many men are taking home-study training as are attending all the colleges and universities combined? And that 53% of all college graduates get their real specialized training through home study? And that Premier MacDonald of England, Walter Chrysler and George Goethals, who built the Panama Canal, are correspondence-trained men? Stick everlastingly to your lessons, N. R. I. men—don't slight the opportunity you have to succeed in a big way in a big field!

J. E. SMITH.

A Statement to the ALUMNI OF THE N. R. I.

By JOHN E. FETZER
President N. R. I. Alumni Association



THE organization of graduates into alumni associations in schools of learning is purely an American idea. There is little in the schools of continental Europe to hold the graduates together after they have finished their course of instruction. As a result, in these lands we find meager exhibitions of school loyalty among alumni as contrasted with the high type of school spirit manifested in the average American alumni association.

Yale organized the first resident school alumni association in 1792, "that the influence and patronage of those it has educated may be united for its support, protection and improvement." So in 1929 the first home-study school in the world to organize an alumni association was our own National Radio Institute. The purpose of this new-born association, while just as lofty as that of the first organization, is much more extensive, in that it was formed, "to cultivate fraternal relations among the Alumni of the National Radio Institute, to promote the welfare of each Alumnus by interchange of helpful information, to foster the spirit of unity and loyalty to our Alma Mater, to encourage the Institute in its dissemination of Radio knowledge and to promote its interests by such means as the Alumni Association may from time to time deem best."

This, then in a nutshell, is the object of the formation of our Alumni Association. Every graduate of the National Radio Institute ought to deem it a privilege to help bring about mutual fellowship between the Alumni. To do this we must have concerted action and what can do this more effectively than the Alumni Association. One of the avowed purposes of the Association is that of exchanging Radio information not only between the Alumni members, but also between the members as individuals and the National Radio Institute. In the rank and file of N. R. I. graduates we find men who are experts in every branch of Radio activity. To form contact with such a host of intelligentsia is an opportunity which cannot be overlooked by any enterprising N. R. I. man.

For years we have seen no end to the praise which graduates have been heaping upon the National Radio Institute for the excellent instruction it has given them. N. R. I. men have shown their loyalty to their Alma Mater as a mark of respect and distinction. Now is the time to unify this loyalty under the banner of the Alumni Association that the National Radio Institute may be further encouraged to disseminate Radio knowledge broadcast over the entire land. Someone has said, "The purpose of every Alumni Association should be, to substitute organized alumni loyalty for unorganized good will and to secure the maximum of efficiency for every ounce of alumni effort invested." Alumni of the N. R. I. should carry through a similar purpose.

The officers of the Association have put forth a lot of effort to plan the Alumni work, now what we need is one hundred per cent Alumni to work the plan. To be a member of the Alumni Association of the National Radio Institute is a mark of distinction exceeded only by being a graduate of that institution. To be an Alumni member affords the only organized contact which the graduate can enjoy with the Institute and its graduates. Remember "the Alumni body is a conservator—a balance wheel," which is bound to react to the good of every Alumnus. Each graduate should realize that by keeping in touch with the Alumni Association he is doing his part to maintain not only N. R. I. standards, but the intellectual and cultural Radio standards of the republic. It takes a high sense of duty to maintain such ideals. I believe that this is the stuff out of which N. R. I. men are built. I believe they will come to the Alumni Association en masse. Let each Alumnus resolve to speedily become a member of the Association and assume his full share of responsibility in building up the Alumni work. The best men will join. In a moment of reflection just ask yourself this question—

"What kind of an Association would ours be

If every Alumnus were just like me?"

WHAT I LOOK FOR IN A YOUNG MAN

By BRUCE BARTON

THE president of one of the largest corporations in the world has a son named Joe who graduated from Boston Tech three years ago. A year after his graduation I said to his father, "Where is Joe?"

"In the foundry of the Blank Company," the father replied, naming a big concern which manufactures and sells agricultural implements.

I asked if the president of the Blank Company knew his boy was there, for the president is a close friend of the father.

"No, the president doesn't know it," he replied, "but the foreman of the foundry has noticed him already. The other day he complimented Joe on being the hardest working and most ambitious man in the gang."

That was two years ago. The other day I received a second report on Joe. He has graduated from the foundry, has spent a year in the factory, and is now selling harvesting machines up in the northern end of North Dakota. Last winter the temperature in his territory was sometimes thirty below zero.

I tell this story because it is the first installment of the biography of a new industrial leader. If this boy lives and keeps his health it is difficult to see how anything can prevent him from rising to the top. And he will get there without any pull or influence on his father's part. He will get there because he will know business from the bottom up, in all its processes and departments.

"What do I look for in a young man?" I am varying the question a little because I personally haven't very much to do with hiring the young men who come into our business. That important task, and there is no other more important, is handled by one of my partners who knows much better than I do what the requirements of our business are at any given time.

Instead of telling what I look for in young men, therefore, I should like to say just a word of encouragement about the opportunities in present-day business.

One of the pleasant surprises about growing older is that one learns from his own experience that a lot of the things which had been told him in his younger days are actually true.

For example, we are all taught in childhood that "honesty is the best policy." Maybe we wonder whether this

is strictly true or whether it is just a pious statement handed down from those who have attained comfort and become respectable. Then we grow up and discover that, while an occasional man makes a little money by sharp practice, the really big successes are invariably built upon a foundation of integrity.

Again, we are told that "there is plenty of room at the top" and that "the opportunities in business were never so great as today." And we think perhaps that this is Pollyanna stuff, fed out to keep the men below quiet and contented and hopeful.

I am not in any big corporation. I hold no brief for any of them. I think I can claim to be an unprejudiced observer of big business from the outside. And I know that there is no problem which worries the men at the top of these big enterprises so much as the question, "Who is going to carry on when we are through?"

An official of one such company said to me recently: "We have nearly a hundred thousand men, yet there are not thirty young men who have enough all-around experience in all departments of our big business to fit them for the highest offices."

Thirty out of a hundred thousand!

So many men have only a superficial knowledge of their own jobs, just enough to get by. So many are quickly contented with a minor position and the hope of an old age pension. So few are willing to start at the bottom and kick their way up through enough different departments so that they arrive at the top with a working knowledge of the whole enterprise. But for these few it is certainly true, and I myself have lived long enough to see it, that "the opportunities are bigger today than ever before in business."

The men whom I have seen succeed best in life have always been cheerful and hopeful men, who went about their business with a smile on their faces, and took the chances and chances of this mortal life like men, facing rough and smooth alike as it came.

—Chas. Kingsley.



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Dead Skin



A FACTOR in any man's success is the degree to which his mental equipment functions smoothly and efficiently. Scientists tell us that the average man actually uses only about 25% of his brain power. A funny creature man is—he will take his car rated, let's

say, at 55, and drive it at a straining speed of 75. He'll punish his body by denying it sufficient sleep and rest or the proper food. But, his mental equipment—ah, that's another story. He calls on it for only 25% production. He doesn't know how to discipline and USE the other 75%. He doesn't know how to harness it up and make it MAKE HIM. No—he lets it rust away and become callous like the dead skin that forms in the palm of a laborer's hand!

Everybody starts out with about the same mental equipment. Nobody has a monopoly on brains. But, it's the man who trains and knows HOW to use his mental power—he's the fellow who usually reaches the top first.

Mental training and discipline is something that each person must do for himself. Check up on your mental habits. When you strike a tough problem do you concentrate and go right through it or do you begin day-dreaming or lay your book aside and reach for the sport section. Concentration is something to work for. The woodman wouldn't get far if he should hit a couple of licks and then batter his sharp axe against a rock. That same thing happens when the mind wanders off the problems it's trying to solve—it gets dulled and battered up by meaningless and pointless thoughts. If you can concentrate your thinking powers on a subject for 1½ minutes without it flashing to some other matter you are a rare and fortunate person. By practicing concentration or sustained mental thought you will gradually bring into use your full mental equipment. Think it over.

E. R. HAAS,

Vice President and Director.

NRI MEN IN THE LIMELIGHT

S. L. HICKS

Down in "Ole Alabam" there is an N. R. I. man who is making a name for himself. It was while working with an electrical firm that he first became interested in Radio. In January, 1927, he enrolled with the National Radio Institute, and within three years he had built up such a good reputation that he was given full charge of installing the equipment for Radio Station WAPI and handling other Radio jobs requiring broad technical knowledge and skill.

It was not long after starting the course that Mr. Hicks began experimenting and doing a little extra service and repair work along with his course. Some of his first jobs were installing aerials, testing batteries and tubes. As a beginner he had his hard jobs the same as others making their start in Radio. Early in the course one of his first service jobs was to balance a Bosch battery set. It was a tough one but he finally mastered it. He claims that the mastery of that one job gave him a lot of confidence to tackle the next and more difficult ones.

Later, he became associated with the Southern States Radio Company of Birmingham as a service man. He knew the truth of the statement that the bigger jobs come only after establishing a record of doing well each little job entrusted to him. That has led to promotion for others and it worked the same for Mr. Hicks, for a short time later his company was awarded the contract to install all the equipment for WAPI. Hicks got the job and did a splendid piece of work. He was later sent to Montgomery, Alabama, to install a speech input board of the Western Electric type which was to be used as remote control. WAPI is operated and controlled by the three leading universities in Alabama. Mr. Hicks is chief control room operator and handles all the remote control jobs as well as looks after the upkeep of the elaborate equipment.

His chief assistant, Mr. Polk Perdue, also an N. R. I. graduate, is a regular operator with a good record and a promising future. We shall hear more about him later. Both of these men are coming fellows and we expect them in the next 10 years to be two of the South's outstanding Radio men.



Alumni Association

Open Only
to Graduates

By

S. M. ARMSTRONG
Student Service Director



Another advantage of being an N. R. I. Graduate!

You will then be qualified for membership in the N. R. I. Alumni Association.

You ask, "What will this mean to me?"

First, as a member of the N. R. I. Alumni Association, you will exchange ideas with other members. The value of such an exchange of ideas is best illustrated by this quotation from a prominent business magazine:

"You have a dollar—I have a dollar. We exchange dollars. Neither of us gains a thing.

"You have an idea—I have an idea. We exchange ideas. Now, we both have two ideas—we are both richer because of our association."

It will not take you long to realize the value of exchanging ideas and co-operating in many ways with hundreds of successful N. R. I. Graduates.

Then, there is the social side of it. You'll surely enjoy meeting and talking with the successful Radio man in your community.

Of course, the future of this Association depends on just what you put into it—any organization does. And I feel mighty sure that each succeeding year will see the N. R. I. Alumni Association growing in power, influence, and benefits to its members.

Here is a hint for shielding radio frequency coils: I purchased some aluminum drinking cups at a local hardware store, which have an inside measurement of 3 inches in diameter and 3 inches in depth, making them ideal for shielding the small, fine wire wound coils (which are used extensively even in manufactured sets). Instead of being perfectly round, the ones I have are polygonal, having 16 faces which present an even more finished appearance than round cans. They may be mounted by the handle or by fashioning brackets to suit the constructor.—Graduate Buser, Bradley, Ill.

N. R. I. SERVICE MANUAL

ON

Stewart Warner Receiver

SERIES 900 AND 950

The circuit used in the 900 series A. C. radio receiver is of the balanced bridge type. It differs from the usual circuit of its kind in that it makes use of shunt feed through separate choke coils and by-pass condensers, thus separating all R. F. and power circuits, which makes for greater stability, allowing amplification to be carried to a further point without oscillation. The complete circuit diagram is shown in Fig. 1. Note that in addition to the resistance and capacity values shown the part numbers are also given. These numbers should be used in ordering replacement parts.

In the earlier sets of this series, the small 1.5 mfd. condenser before the main one (part No. 66059, Fig. 1) was omitted, and a fixed center tap resistor (61648) was used instead of the variable one (part No. 66060, Fig. 1). These two changes were made to reduce hum. Should one of the earlier receivers produce an objectionable hum, the set may be brought up-to-date by installing the variable resistor and condenser. The bracket used for the latter is Number 66058.

The circuit used in the 950 Radio receiver is of the screen grid type and uses a combination of inductive and capacitive coupling in the Radio frequency stages. The coupling capacities are the small adjustable condensers on the right side of the main tuning condensers. Power detection is used which feeds into a resistance coupled stage of audio amplification and this in turn into a push-pull stage using 2-45 type tubes. The complete circuit diagram is shown in Figure 2.

Servicing

Undoubtedly the quickest method of servicing a radio receiver is to run through the routine tests as given in the instructions for the set tester in use. The voltage readings obtained in this manner are the surest guide to the trouble, since they locate the exact circuit that is defective.

The standard test with a suitable radio set tester will indicate more or less closely in what circuit the defect may be found. It then becomes necessary to

make a series of continuity tests to locate exactly the source of the trouble.

CONTINUITY TEST. Note that a continuity test may be made with only a voltmeter and a C battery. It is therefore not absolutely necessary to use the more elaborate set testers for this purpose. To make up a continuity tester, connect one terminal of the S battery to the corresponding terminal of the voltmeter, and the two test leads to the ends of the circuit. A full reading indicates a closed circuit, a partial deflection indicates a high resistance in the circuit and no reading indicates an open circuit.

Balancing and Calibrating

The process hereinafter called "balancing" might also be termed aligning, trimming or synchronizing. Balancing is the adjustment of the compensating or trimming plates (found on the left side of the gang tuning condenser in the 950 series and on the right side in the 900 series) which brings each radio frequency stage into step or balance; that is, the stages will tune to the same wave length or frequency at the same time.

Bear in mind that very seldom does a receiver that has not been tampered with after it has left the factory require readjustment of the trimming plates. Every 900 and 950 receiver leaving the factory is carefully balanced by experienced operators with the aid of extremely accurate test equipment that removes, as much as is possible, the human element responsible for error. After the receiver has been balanced and doubly checked, the adjusting screws are cemented to obviate any possible variance from setting.

Balancing adjustment on a receiver whose circuits tune as sharply as the 950 series is necessarily critical. If in repair work or inspection, the relative position of the wiring of the tuned circuits is varied, or a coil other than the antenna coil, is replaced, or condenser plates are bent due to careless handling, the receiver may be thrown out of balance. Only in this case, or when the cement on the adjusting screws may be loosened as a result of tampering or injury, will it be necessary to rebalance the set.

Respectfully yours,

(Signed) R. S. MOFFETT,
Box 104, Coyville, Kansas.

the signal will decrease, indicating that it is either O. K. or high. The same procedure is followed on the C (third R.F.) and B (second R.F.) sections. If in all cases the signal decreases approximately the same amount, the next operation is in order. If, however, the volume increases or remains seemingly constant as the plunger is inserted, this indicates that capacity should be added to that section which is done by turning in the screw of the trimmer plates a small fraction of a turn at a time, until, when using the plunger in that section, the decrease in volume is approximately the same as in the other sections. If it is necessary to turn the trimmer screw a considerable amount, the set should be retuned before further comparison is made. It is unnecessary to balance the first R.F. or A stage, as the antenna trimmer control takes care of all variations.

Regarding the above as Operation One, Operation Two is now in order. The tuning condenser is turned out about two points on the dial, thus reducing the total capacity of each section. This will considerably reduce but not lose the signal as all sections are brought below resonance.

Operation One is again repeated, the plunger being inserted between the stator plates of each section. If the set is correctly or nearly balanced, the signal will become slightly louder as the plunger is inserted into each section. Careful attention must be paid to the signal intensity as the change in volume is not very great. The speaker must be quite close to the balancer. If on inserting the plunger the signal remains seemingly constant or decreases, this is an indication that the capacity of that section is high and should be reduced by turning out the adjusting screw. Adjust and check the C and B stages until the increase in volume on inserting the plunger is the same in the B, C and D stages.

When properly performed, Operation One will indicate a lack of capacity in any tested sections or tuned stages. Operation Two will indicate an excess of capacity in any of the tuned stages. Both operations should be followed exactly, keeping in mind the following precautions; first, the receiver must be properly grounded; second, the volume control must be on full; third, the oscillator signal must be absolutely steady, it must not be too broad nor too loud; fourth, speaker should be placed close to the ear.

Care should be taken that the trimmer plates are not turned too far in, since this will necessitate a trimmer on the D section which normally is not necessary;

and further, it will throw the dial off calibration, particularly at the high frequencies. Normally only one combination of trimmer settings will bring a set into balance, while with a trimmer on the D section, various combinations of settings may be obtained to balance the set. Care should be taken in this connection that the trimmers are not turned more than two-thirds in, in which approximate position, the set should be in calibration.

The adjusting screws of the condenser plates found on the right-hand side of the 950 series gang condenser should never be touched. These are not trimming, balancing or neutralizing condensers, but are coupling condensers, very accurately set at the factory to 16 micro-microfarads to insure uniform amplifications of all frequencies.

The Lynch Manufacturing Co., 1775 Broadway, New York City, invites N.R.I. men to write for a free copy of "Resistance, the Control Valve of Radio." This is an interesting booklet giving a lot of technical information on resistors, etc. It formerly sold for 25c. The supply is limited. Any N. R. I. man wanting a copy had better write for it at once.

The Aerovox Wireless Corporation, 70 Washington St., Brooklyn, N. Y., extends to all N. R. I. men an invitation to receive the "Aerovox Condenser and Resistor Manual" every month without charge. This monthly bulletin gives valuable information on condensers and resistors compiled by the engineering staff of Aerovox.

NOTICE

An application for membership in the Alumni Association of the N. R. I. is enclosed with this issue of the National Radio News going to graduates.

All graduates are urged to make application for membership in the Association now. A 100% membership in the Association will enable us to work together and thus promote the interests of N. R. I. graduates everywhere.

Since students are not eligible for membership it is suggested that they preserve this issue of the News in which the Constitution and By-laws appear, and to make application for membership as soon as they graduate.

EARL MERRYMAN, Secretary,
N. R. I. Alumni Association.

Full Speed Ahead!

The four Vice Presidents of the Alumni Association are loyally cooperating with President Fetzer and Secretary Merryman in promoting the Association. They have each prepared a brief statement to N. R. I. men:



I am confident that N. R. I. graduates will not overlook or underestimate the value of the fraternal bond which the Alumni Association provides.—Vice President Hoyt Moore, Indianapolis.



The N. R. I. Alumni Association should bring all graduates closer to each other, encourage and assist N. R. I. students, and promote the interests of the Radio profession as a whole. Vice President Harry O. Barschdorf, Adams, Mass.



The interests of N. R. I. men everywhere can be promoted through their mutual cooperation in the Alumni Association. I hope every graduate will become a member, for in unity there is power.—Vice President Donnell O'Connor, WBT, Charlotte, N. C.



Our N. R. I. training has placed us forward as experts in the Radio field. Through our combined effort and loyalty to the standards of the N. R. I. and its Alumni Association we will become even better recognized as a body of experts to whom already the Industry turns for help.—Vice President Alphy L. Blais, Thetford Mines, Quebec, Canada.

The Editors regret that at the time of going to press it has not available a picture of the Association's hard working Secretary, Mr. E. A. Merryman. You'll find it a lot of pleasure to cooperate with him. Merryman holds down a fine position with WRC, the Nation's Capital pick-up on the N. B. C. chains.

N. R. I. Men Making Good With Ozarka

January 21, 1930.

Mr. P. J. Murray,
Employment Manager,
N. R. I.

Dear Mr. Murray: We are very glad to comply with your request of January 14th in giving you the number of active dealers and representatives in the Ozarka organization at this time who are students or graduates of the National Radio Institute.

We have sixty-four (64) National Radio Institute men who we consider to be preferred dealers or representatives from the large amount of business they do each month. Then there are 226 men who are more or less new in our organization having come with us since the first of July, 1929, making a total of 290 men with whom we are glad to be connected and who are surely highly indicative of the high scholastic standards upheld by the Institute.

If there is any other information that we have here that would be of benefit to you, don't hesitate to ask for it because we are indeed glad to cooperate with you towards making N. R. I. more readily known and more greatly appreciated.

Yours very truly,

OZARKA, INCORPORATED.

By H. R. ACKERMAN,
Sales Manager.

HRA:RK

SPARKS from the N.R.I. LAB

The N. R. I. lab has outgrown its quarters and has recently moved into the old N. R. I. building at 14th and U Sts. Mr. George Rohrich, specialist in Radio mathematics and a Radio Engineer of great ability, is in charge. He is assisted by Mr. Bayard Keough, an N. R. I. graduate and night operator of WJSV, Washington's 10,000-watt station. Many experiments and tests are made in the laboratory. Service manuals and other technical material can be tested out here before considering it for the course. Being only a short distance from the Administration building, the laboratory is easily accessible to Chief Instructor Dowie and other members of the staff.

Watch this column in future issues of the NEWS, for these two practical minded Radio scientists promise some fascinating technical tips for you.

