

NATIONAL RADIO NEWS

A stylized graphic featuring the U.S. Capitol dome in the center, surrounded by jagged lightning bolts. The text 'NATIONAL RADIO NEWS' is overlaid in a bold, sans-serif font.

VOL 4—NO. 8

WASHINGTON, D. C.

MARCH, 1932



J. E. SMITH

President, National Radio Institute



JAMES ERNEST SMITH



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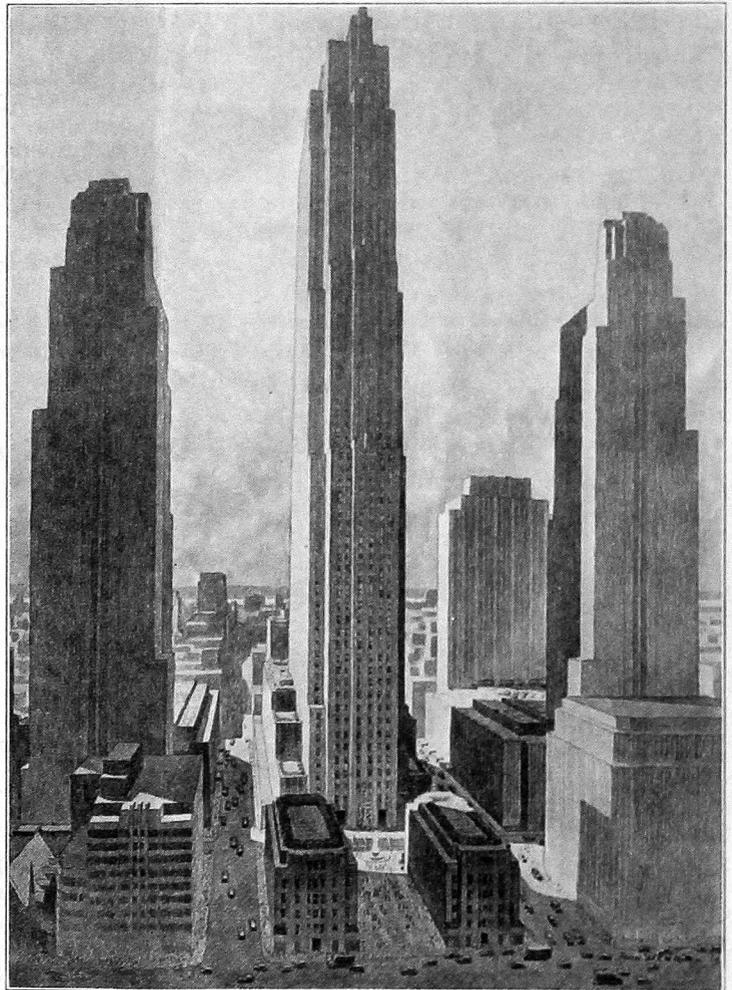
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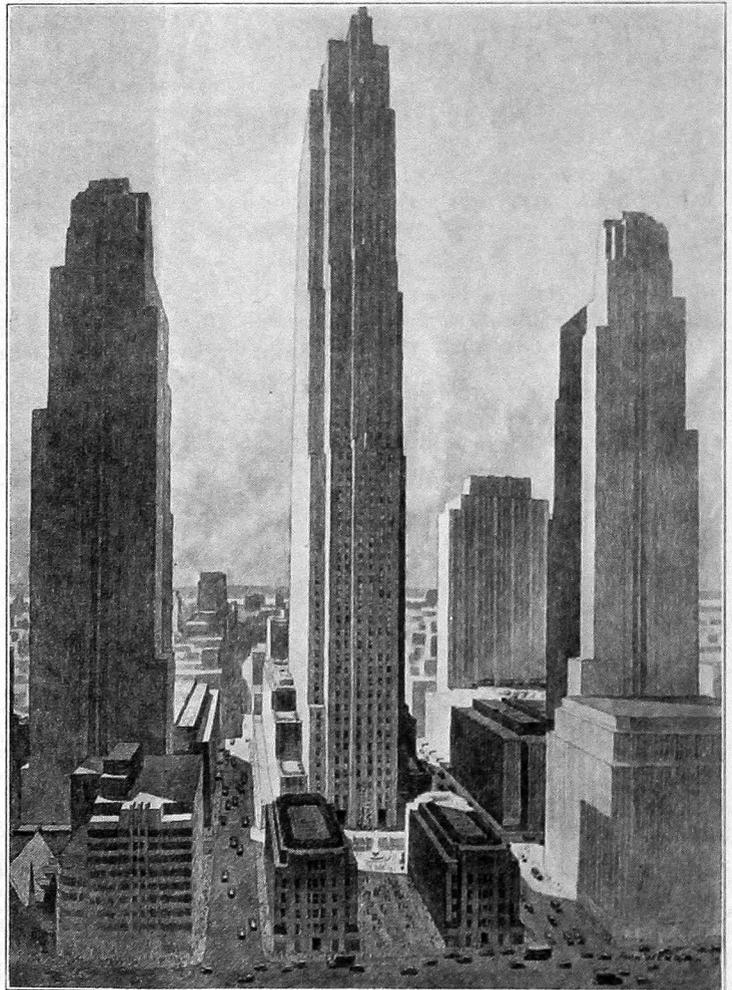
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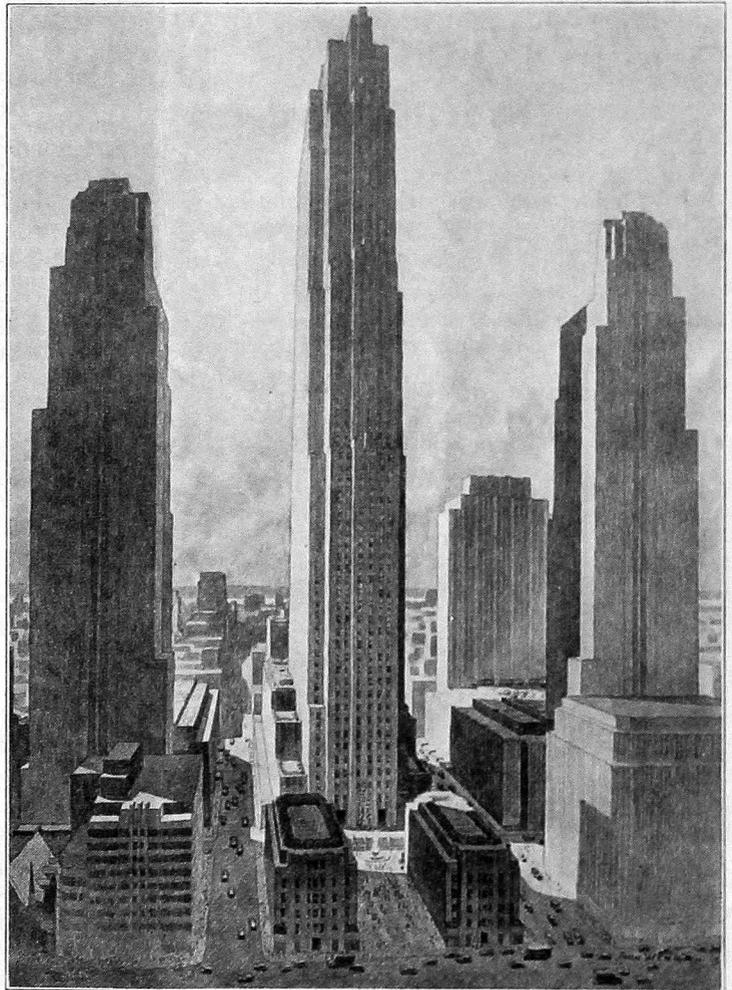
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A Chat With the N. R. I. Director

WE plan, starting now and continuing through the next several months, to bring you a series of articles bearing on the various members of the Faculty and Staff of N. R. I.

Our desire is that you know better the men responsible for training you for Success in Radio; we want you to have a more personal knowledge of them and what they do to help you toward your goal—a thorough understanding of Radio and the resultant profits.

But more than merely learning to know these men, you will be impressed by the fact that in nearly every case their lives are inspirations. Every one fought for success—every one had to overcome obstacles. They reached their present positions by work—hard work—frequently hard knocks.

And not one of them has quit working for greater success. A man who has quit trying to improve—quit studying ways and means to do a better job has no place at N. R. I.

We're proud of our school—your school. We honestly believe it to be the most efficient organization of its kind in existence and we know you'll find ample reason to agree with us when you're better acquainted with the men behind the guns here at N. R. I. It is entirely fitting that we should start our series with our President, Mr. J. E. Smith. (See front cover and Page 1.)

Page Four

A new device, operating on the principles of a short wave Radio transmitter is now being used for the cure of rheumatism. The machine is known as the "Radio Therm" and it is reported that more than 500 treatments have already been given by this method.

"No one need fear that opportunities do not exist today. The next quarter century will see more happen and offer more opportunities than have the past twenty-five years. There is much to be done in the Radio and Television field . . ."—David Sarnoff.

On January 3, this year, "Wire-Wireless" became "of age." For twenty-one years, experiments have been carried on to bring out the possibilities of this plan to bring programs to the homes of the millions by means of the electric light wires.

Graduates of N. R. I. who attended the fifteenth anniversary convention in 1929 will remember Major General George O. Squier, pioneer of Wire-Wireless and member of the Advisory Board of the National Radio Institute, for his stirring talk on the future of that scientific development.

On the day that Wire-Wireless celebrated its 21st anniversary, General Squier gave a very interesting lecture on that subject, at the N. R. I. laboratory, to all members of the Institute's Instruction and Technical Staff.

The popularity of Radio and its opportunities are clearly indicated in the opening of a New York hotel with loud speakers in each room.

The guests are given a choice of six different programs, and a volume control is installed on each speaker.

Five hundred vacuum tubes are utilized in the control room and two thousand loud speakers are required for the complete installation.

RADIO-TRICIAN SERVICE SHEET

REG. U. S. PAT. OFF.

COMPILED SOLELY FOR STUDENTS & GRADUATES



MAJESTIC MODEL 15 AND 15B CHASSIS ELLSWOOD, SHERWOOD AND FYFEWOOD MODELS

Alignment

In checking the alignment of Model 15 (and also the 25) chassis the intermediate frequency transformers should not be aligned unless there is a definite reason to believe that they are out of alignment. The alignment of these transformers at the factory is more or less permanent and should not need further adjustment except in rare cases. In all alignment procedure an output meter must be used.

R. F. and Oscillator Alignment

Tune in station in the vicinity of 1500 kilocycles, or put output of local oscillator (if available) into receiver. Align R. F. stage, and oscillator tuning condenser. The R. F. stage and oscillator aligning condensers are on the gang condenser.

Oscillator Tracking Condenser Alignment

Tune in local oscillator to 600 kilocycles.

Adjust both tuning control and tracking condenser simultaneously to give maximum signal as noted on output

meter. This will be obtained by rocking tuning control across resonance point while adjusting tracking condenser to give maximum output at the point of resonance. This operation cannot be performed without local oscillator and output meter.

Method of Biasing

The necessary bias is obtained on the first detector and oscillator stage through a 10,000 ohm resistor between cathode and ground. The intermediate frequency amplifier is biased through the volume control and a balance resistor of 264 ohms which is contained in the volume control. The second detector is biased through a 40,000 ohm resistor to ground in the cathode circuit.

Volume Control System

Control of volume is obtained in the Model 15 chassis by a 11,500 ohm control which controls the bias of the oscillator, first detector and I. F. amplifier stages. This control is so arranged in the circuit that in addition to controlling the bias of these two tubes, it also controls the input voltage to the pre-selector stage.

MODEL 15 CHASSIS
Table of Voltages to Ground

| Tube | | Fil. Volts A. C. | Plate Volts D. C. | Grid Volts D. C. | Cathode Volts D. C. | Plate Current M. A.— D. C. | Screen Volts D. C. |
|--------------------------|--------|---------------------|----------------------|---------------------|------------------------|----------------------------------|-----------------------|
| Purpose | Type | | | | | | |
| 1st Det.—Osc..... | G-24 | 2.5 | 250 | ----- | 9 | 0.9 | 90 |
| I. F. Amplifier..... | G-51-S | 2.5 | 250 | ----- | 3.0** | 7.0 | 90 |
| 2nd Detector | G-24-S | 2.5 | 250 | ----- | 9 | 0.17 | 90 |
| Power and Amplifier..... | G-47 | 2.5 | 250 | -16.5* | ----- | 32 | 250 |
| Rectifier | G-80 | 5.0 | ----- | ----- | ----- | 54 | ----- |

*This cannot be measured with the customary 1000 ohm per volt meter because of the high resistance between the grid and ground. If there is any doubt about the pentode bias, check the 100,000 ohm, 1 megohm, 200,000 and 300,000 ohm resistors and .25 M.F.D. Condenser in this circuit and be sure the speaker field voltage is correct, 112 volts. Also measure the pentode plate and screen voltages and if they are 250 volts, the plate current should be 32 M.A.

**This should rise to 42 when the volume control is turned to minimum.

Readers who file Service Data in separate binders remove page carefully; trim on dotted line for same size as Data published heretofore.

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Vol. 4 No. 8

March, 1932

Published monthly in the interest of the students
and Alumni Association of the

NATIONAL RADIO INSTITUTE
Washington, D. C.

J. E. SMITH, President.

E. R. HAAS, Director.

The Official Organ of the N. R. I. Alumni Association

SOUND PROJECTION TROUBLES— THEIR LOCATION AND CORRECTION

PART II

Troubles With Sound-on-Disc

If no sound is available at the loudspeakers there are many possible causes for the trouble.

- (a) The switches and rheostats are not set correctly.
- (b) The "film-disc" transfer switch is not properly set.
- (c) The fader switch is set for the wrong projector.
- (d) The phonograph pickup is defective. This can be determined by rubbing the end of the needle with your finger. The thing to do is to try a new pickup.
- (e) The amplifier system may be defective. As in the case of sound-on-film reproduction, examine the amplifier system for defective tubes, blown fuses, and make sure that the converting equipment, if motor-generator sets are used, is in operation.
- (f) The last of the possible causes of no sound with sound-on-disc reproduction would be due to the fact that the loudspeakers on the stage are not plugged in to the speaker cable.

Low Volume With Sound-on-Disc Reproduction

- (a) Check the condition of the storage battery. If the battery is discharged, replace it with a fully charged battery.
- (b) The magnetic pickup may be defective. This may be determined by low volume on one projector. The remedy in this case is to use a new pickup if the other projector gives decidedly better results.
- (c) The voltage amplifier and power amplifier may be the cause of trouble for low volume just as it was a possible cause of trouble under the heading "No Sound With Sound-on-Film Reproduction." A check-up of the tubes, fuses, power supply, and converting equipment will indicate the trouble in this case.

Poor Quality With Sound-on-Disc Reproduction

As before we shall list the possible causes for poor quality with disc reproduction.

- (a) Possibly the record is old or worn which will result in distortion.
- (b) Possibly the record is dirty, there are dust particles in the record grooves. This can be overcome by wiping off the record very carefully with a piece of cloth such as velvet.
- (c) Under the heading "Poor Quality With Sound-on-Disc Reproduction," we find the defective pickup. As before, if a new pickup gives better results on the other projector, the thing to do is to substitute a new one in the first machine.
- (d) We come now to the voltage and power amplifier under the heading of "Poor Quality," and in this instance, the trouble lies in a defective or burned out tube in the voltage amplifier or power amplifier.

(e) The last place to look for possible causes of trouble under the heading "Poor Quality" would be the loudspeakers. It is possible that the loudspeakers are out of adjustment. This can be determined by holding your ear close to each loudspeaker. Simply cut out the defective loudspeaker by disconnecting the field plug from it.

Film Breaks Below Upper Feed Sprocket When Running Record

The procedure when this type of trouble occurs is as follows: The picture and the sound are still synchronized, therefore do not lift the pickup from the disc. The next thing to do is to close the dowser. Then stop the projector motor. Snap the fada switch to the side corresponding to the other projector. Rethread the projector without taking the film from the upper feed sprocket. Then start the projector motor again. When the motor has attained normal running speed, open the dowser and fade in the sound by snapping the fada switch.

A word of caution regarding splicing of the film when such a film break occurs. When splicing the film, always keep the film of constant length by inserting a strip of black leader equal to the length of the piece cut out.

Film Breaks Above Upper Feed Sprocket When Running a Record

The procedure to follow when this type of trouble occurs is as follows: First, the picture and sound are no longer in synchronism. As before, close the dowser, stop the projector, snap the fada switch to the side corresponding to the other projector, rethread the projector, start projector motor. When the motor attains normal running speed, open the dowser. When this particular type of trouble occurs, the

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STARTING *and* OPERATING a RADIO BUSINESS

Part I

By P. J. Murray, Manager,
N. R. I. Graduate Service Department

In writing this article, Mr. Murray has reduced to a minimum theoretical comments. The information has been tested and proved in practical experience, not by the author alone, but in the cases of the many N. R. I. Graduates whom he is daily helping to succeed in Radio.—EDITOR.



It has taken several months to get this article in form for the printer. In that time many pages were written. When the time came to publish it, the necessity arose for cutting it down to the bone; eliminating all that was not absolutely essential to the purpose.

So there are no bouquets to be tossed—no flowery phrases used, just plain, cut and dried, hard-boiled facts.

I'm writing to a class of men who want to succeed—men who have their own way to make in the world—and who want to make their successes just as rapidly as possible. I doubt if this article will fall into the hands of any who do not come in that category, but if it does, I hope they will stop reading right here—before they get their feelings hurt by being ignored—because I'm not talking to them at all.

The fellow who goes into the Radio business for himself these days has the advantage of getting into a game which is thriving on public popularity. The public is sold, and sold hard on Radio. It is getting so that people with insufficient clothing in their wardrobe insist on having their Radio. They go further than that. They not only want a set, but they want one better than the fellow next door—and the consequence is resale of new models—with new improvements when they come out. And they are coming out plenty fast.

Radio has come to a point where it is considered indispensable for homes where there are growing children, due to the educational programs being broadcast. It is the ideal recreation for the aged and the sick. The housewife looks to it for her home-making ideas. Every one in the family finds programs that fit in with his or her needs and desires.

Is it hard, then, to see why the popularity of Radio should be turned into dollars for the wide-awake Radio man?

I know of very few businesses into which a man can start with as little capital. Knowledge of the subject, personality and a big measure of "I WILL" are the chief necessities. Back-bone is essential. If a fellow can't take a bump once in a while and come up smiling—if he isn't willing to put in as many hours a day as he'd have to give an employer if working for a salary; then he'd better not try the business end of the game. For this end of the Radio game is not one for weaklings—nor for the fellow looking for a cinch. There's nothing soft about it. He'll have to work and he must have ability. Unless he can put these characteristics into the business he'd better leave that phase of the matter to somebody else. It is the place for men, however, who are willing to pay the price and who want to take the profits.

The Radio man going into business has the choice of going either into the sales end or attacking it from the service angle. Or he can combine the two and do both. Most prefer, especially if they are starting with a small capital, to go after service business first and gradually work around to the combination of the two after enough profit has been made through following up the first choice.

A mighty valuable point to remember is that the majority of Radio dealers are not trained men themselves. Unless they are hiring competent service men, theirs is the hit and miss method in the large majority of cases. And they are not rendering the type of service that the Radio public has been educated to expect.

(Page fourteen, please)

OUR BROADCASTING SYSTEM

The Federal Radio Commission believes that the American system of broadcasting has produced the best form of radio entertainment that can be found in the world.

This system is one which is based entirely upon the use of radio broadcasting stations for advertising purposes. It is a highly competitive system and is carried on by private enterprise. There is but one other system—the European system. That system is governmental. Under that system, broadcasting is conducted either by the government or by some company chartered by the government. There is no practical medium between the two systems. It is either the American system or the European system.

The principal objection to programs under our system arises out of the kind of advertising that is allowed to be made a part of them.

The Commission recognizes that the industry is young, that many policies must grow out of experience, and that some stations today are making efforts to constantly raise the standards of broadcasting, but the problem cannot be solved by a few stations. There is not a single station that can escape responsibility. A heavy responsibility rests upon all chain companies. Today, approximately 550 persons, firms or companies hold licenses which give them the right to use the air to its maximum capacity for radio broadcasting purposes. There are 123,000,000 people in the United States wholly dependent upon these few persons for their radio entertainment. Their rights in this new art cannot be denied. And if their share of this form of entertainment can be received only at the expense of advertising statements or claims which are false, deceptive or exaggerated, or at the expense of programs which contain matter which would be commonly regarded as offensive to persons of recognized types of political, social and religious belief, then they are justified in demanding a change in the system.

The good will of the listener is the station's only asset, and, therefore, this problem first should rest with the licensees of stations. The

problem should not be taken out of their hands until they have had full opportunity to make the necessary corrections. If they decline the opportunity, or seizing it, fail, the matter should be treated with proper legislation. As an aid and a guide in the matter, the Commission commends to the licensee of each radio broadcasting station for his most serious consideration the following code of ethics which has been adopted by the National Association of Broadcasters. The Commission believes this code to be fair and just to the broadcaster and to the listener, and that it is an avenue by which the industry can regulate itself.

CODE OF ETHICS

Adopted by the National Association of Broadcasters

1. Recognizing that the radio audience includes persons of all ages and all types of political, social and religious belief, every broadcaster will endeavor to prevent the broadcasting of any matter which would commonly be regarded as offensive.
2. When the facilities of a broadcaster are used by others than the owner, the broadcaster shall ascertain the financial responsibility and character of such client, that no dishonest, fraudulent or dangerous person, firm or organization may gain access to the radio audience.
3. Matter which is barred from the mails as fraudulent, deceptive or obscene shall not be broadcast.
4. Every broadcaster shall exercise great caution in accepting any advertising matter regarding products or services which may be injurious to health.
5. No broadcaster shall permit the broadcasting of advertising statements or claims which he knows or believes to be false, deceptive or grossly exaggerated.
6. Every broadcaster shall strictly follow the provisions of the Radio Act of 1927 regarding the clear identification of sponsored or paid-for material.
7. Care shall be taken to prevent the broadcasting of statements derogatory to other stations, to individuals, or to competing products or services, except where the law specifically provides that the station has no right of censorship.
8. Where charges of violation of any article of the Code of Ethics of The National Association of Broadcasters are filed in writing with the managing Director, the Board of Directors shall investigate such charges and notify the station of its findings.

TROUBLES WITH SOUND-ON-DISC

(Continued from page seven)

sound must not be faded in but the film must be run solid, that is, with no sound accompaniment.

In every case where there is a film break, it is necessary to keep the film of constant length by inserting a strip of black leader equal in length to the piece of film which was cut out.

Needle of Pickup Jumps Groove on Record

When this type of trouble occurs, the picture and the sound are no longer synchronized. The only thing that can be done is to snap the fada switch to the side corresponding to the other projector and run the film without sound accompaniment. In the meantime, inspect the tone-arm and see whether or not it binds or catches at any point as the pickup moves over the record. As a further precaution, it is not advisable to use a record again on which the needle has once jumped a groove. When the needle comes to this bad part in the record, it is apt to jump again.

GENERAL TROUBLES WHICH OCCUR IN EITHER SOUND-ON-FILM OR SOUND-ON-DISC REPRODUCTION

Noise or Intermittent Sounds With Film or Record Reproduction

(a) This type of trouble may be caused by dirt or acid at the top of the storage battery. The obvious

thing to do is to use a spare storage battery and clean the dirty one.

(b) Possibly the storage battery is "gassing." This type of trouble occurs when the battery is put into use too soon after charging. A storage battery should not be used until at least one-half hour has elapsed after the battery has been fully charged.

(c) Possibly the storage battery terminal connections are loose. They should be cleaned and tightened.

(d) Some sound reproduction systems employ dry batteries. Possibly there are loose connections on the dry battery. They should be cleaned and tightened.

(e) Check up on the ground connection. A good ground connection is absolutely essential. It should be cleaned and tightened.

Motor Stops When Running, Either Sound-on-Film or Sound-on-Disc

(a) Check up on the motor supply line. Possibly it is open.

(b) Check up on the supply circuit switches and fuses. If the fuses are defective, replace them once. If they blow a second time, there is something radically wrong with the power supply system.

(c) Check up on the converting equipment (motor-generator sets) if this type of equipment is used, and make sure that it is running properly.

(d) Check over the projector driving mechanism of the driving motor for hot bearings. A new motor will have to be provided for operating the projector if this trouble occurs.

A LETTER FROM THE OTHER SIDE OF THE WORLD

After taking the N. R. I. Course I became Manager of one of the largest Radio Departments in the city, and although only 20 years of age did all the buying, local and import.

Later I visited Melbourne and obtained a position with a large Radio firm testing sample sets prior to ordering, and in Retail sales.

Went to sea in charge of Radio on the S. S. Newton Beech and visited Egypt, Italy, England, Ireland.

Returning to Australia I am now engineer in charge of 6ML at Perth on 1010 kc. Thanks to N. R. I. lessons I've put my jobs across without difficulty.

HENRY SIMMONS,
Perth, Western Australia.

NRA ALUMNI News



CANNED NOISE

By J. A. Dowie
Chief Instructor



Broadcasting a drama is put over by sound only. Costume, make-up or scenery cannot be used to convey action or to delineate character to the listener. Sound and only sound registers. This sound may be the voice of the performer or the sound of a variety of devices which convey realism and promote action. Bells, closing doors, breaking china, etc., all aid both action and realism.

At WGY's Studio the technical staff now has the equipment and sound facilities to build up a library of sound to meet every need of the play director. It is therefore no longer necessary to use appliances to imitate the sounds of locomotives, chickens, dogs, cats, lions, water-falls, thunder, wind, or street riots. With a portable recorder they get the sound at the source, keep it in storage and use it over and over again, when needed. If the action of the play takes place at a busy street corner, a reproduction of the sound at a busy corner will be available.

If the manuscript calls for the take-off of a single-engine motor or a tri-motored plane, the sound of either will be on file. The sound of water lapping the sandy shore of an inland lake, the surf at Cape Cod or the roar of a stormy sea on Maine's rock-bound coast will be found, properly indexed.

Some folks enjoy a concert by a singer or an orchestra better if the number is followed by applause. It is possible to follow a studio-produced musical selection by applause equal in volume to that accorded the prima donna at the Metropolitan, because the applause at the Metropolitan will be recorded and reproduced when and where desired. However, extreme care must be taken that the record of the Metropolitan applause is not used in place of a political convention or a football game applause.

Recently a commercial client desiring to give talks in poultry, wanted to promote realism by bringing a coop of hens to the studio. It was his belief that the cackle of the hens would give a novel and appropriate background. The hens and lusty rooster were brought to the studio. A plentiful supply of corn was scattered near the microphone. The microphone was connected to the sound recorder and as the chickens expressed their delight with the corn, every sound of the cluck and cackle traced a design on the recording film. The sound of chicken and chanticleer are now indelibly recorded and will live long after these feathered birds have passed over the dining table.

Some difficulty was found in making the sound record as the chickens found the WGY studio surroundings somewhat strange and developed microphone

fright. In attempting to get them to cluck in natural fashion one of the control men "shushed" them. When the first film was developed it sounded like the midnight raid on a hen roost. Corn placed about the microphone was next resorted to and the hens pecked at the food with enthusiasm. However, when this film was reproduced the rapid pecking sounded like a Pat Rooney tap dance. The problem was solved on the next sound record by scattering the corn on a felt mat.

The Alumni Association hopes the following figures will be of interest and assistance to students and graduates:

| State | Number Families | Number Radio Sets |
|--------------------------|-----------------|-------------------|
| Maine | 198,372 | 77,803 |
| New Hampshire | 119,660 | 53,111 |
| Vermont | 89,439 | 39,913 |
| Massachusetts | 1,024,527 | 590,105 |
| Rhode Island | 165,811 | 94,594 |
| Connecticut | 389,596 | 213,821 |
| New York | 3,162,118 | 1,829,123 |
| New Jersey | 987,616 | 625,639 |
| Pennsylvania | 2,239,179 | 1,076,770 |
| Ohio | 1,700,877 | 810,767 |
| Indiana | 844,463 | 351,540 |
| Illinois | 1,934,445 | 1,075,134 |
| Michigan | 1,183,157 | 599,196 |
| Wisconsin | 713,576 | 364,425 |
| Minnesota | 608,398 | 287,880 |
| Iowa | 636,905 | 309,327 |
| Missouri | 941,821 | 352,252 |
| North Dakota | 145,382 | 59,352 |
| South Dakota | 161,332 | 71,361 |
| Nebraska | 343,781 | 164,324 |
| Kansas | 488,055 | 189,527 |
| Delaware | 59,295 | 27,183 |
| Maryland | 386,087 | 165,465 |
| District of Columbia | 126,014 | 67,880 |
| Virginia | 530,092 | 96,599 |
| West Virginia | 374,646 | 87,469 |
| North Carolina | 645,245 | 72,329 |
| South Carolina | 366,265 | 28,007 |
| Georgia | 654,009 | 64,908 |
| Florida | 377,823 | 58,446 |
| Kentucky | 610,288 | 111,452 |
| Tennessee | 601,578 | 86,229 |
| Alabama | 592,530 | 56,491 |
| Mississippi | 472,354 | 25,475 |
| Arkansas | 439,408 | 40,248 |
| Oklahoma | 565,348 | 121,973 |
| Louisiana | 486,424 | 54,364 |
| Texas | 1,383,280 | 257,686 |
| Montana | 137,010 | 43,809 |
| Idaho | 108,515 | 32,869 |
| Wyoming | 57,218 | 19,482 |
| Colorado | 268,531 | 101,376 |
| New Mexico | 98,820 | 11,404 |
| Arizona | 106,630 | 19,295 |
| Utah | 116,254 | 47,729 |
| Nevada | 25,730 | 7,869 |
| Washington | 426,019 | 180,229 |
| Oregon | 267,690 | 116,299 |
| California | 1,618,533 | 839,846 |
| United States of America | 29,980,146 | 12,078,345 |

STARTING and OPERATING a RADIO BUSINESS

(Continued from page eight)

These dealers are looking for sales and not for service. Their methods are such that they cannot operate a Service Department on a paying basis. Does this not point out one very good class of business-building opportunity—in localities served by the untrained dealers?

We see failures in the Radio business quite frequently. Do not let this frighten you or lead you to believe that it is the fault of Radio. On the contrary—most of the failures are due to men getting into a business of which they have only a “half-baked” idea—or no knowledge at all. I have one case very definitely in mind where a man had been in the (——) business for twenty years, was operating it successfully and making good money. He knew his game. Then he took on an electrical specialty, of which he knew nothing, and he failed. He did not realize that after a period of months he would be required to service the device—and when that time came—well, he just isn't in business any more.

Keep away from any business, especially one which requires servicing electrical or mechanical equipment, unless you are trained thoroughly in the operation and maintenance of the product.

Another reason for failure is jumping into a proposition without the proper amount of forethought—in other words, analysis of the field. But as this is a large subject in itself I'll cover it later in the proper place.

Then we hear of other failures, due to spending capital foolishly, but this really comes under the head of not using good common sense, in most cases, and the person who doesn't possess that qualification should not be in any business for himself, Radio or otherwise.

(Watch for the next installment of “STARTING AND OPERATING A RADIO BUSINESS” in the April issue of National Radio News.)

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Trade Notices

Trade Notices in this column are not accepted as advertising and National Radio News assumes no responsibility. Please handle any correspondence with the firms direct. In writing them please mention National Radio News.—Editor.

ELECTRAD

Electrad, Inc., 175 Varick Street, New York, has a new catalog of Volume Controls, Voltage Dividers, Resistors, Amplifiers and other devices for Radio men which they'll gladly mail free to anyone requesting a copy.

Their Resistor Replacement Handbook is also of great interest to the service man. The price is \$1.00.

INTERNATIONAL RESISTANCE COMPANY

The International Resistance Company, Philadelphia, Pa., announces its metallized resistor replacement kit. A handy box with sliding cover contains twenty 1-watt resistors of the most used resistance values from 500 ohms to 3 megohms. By following instructions packed with each kit, thousands of resistance values may be obtained to meet precise requirements. The factory seal applied to this certified kit insures new and genuine resistors of the indicated values.

DON'T SEND CASH

When you send money—cash—to National Radio Institute, or elsewhere, there is always a possibility it may get lost.

And there's no way possible to trace it and recover—so your hard earned cash is gone.

But you can send money, safely, by check, post office or express money order—and KNOW you are safe. Because, even though lost, only the person for whom it is intended can get the money.

Make a practice of sending your money in one of the safe ways. All business houses do and your money is as valuable to you as theirs is to them.

S. M. ARMSTRONG,
Student Service Director.

THE MAILBAG

H. J. LANNEN, KATALLA, ALASKA

Had a case of stray noises in the audio circuit of a battery job. Overcame it by placing a 2 mfd. condenser from 180 volt power to ground, losing not more than one per cent of signal volume.

SCAR E. CARLSON, SEASIDE PARK, N. J.

Here is a tip that I think some of your students can use. In planning my Wheatstone Bridge I intended to use a battery and buzzer to deliver alternating current. This was according to your article in Methods of Testing Radio Receivers.

I decided to use the 110 volt A. C. for my alternating current. Of course, this was too high a voltage. First I decided to use a bell ringing transformer to deliver a reduced voltage. But when I read the article on F. Oscillators, and constructed one, I got the idea using a 25 watt bulb to furnish my alternating current.

This worked out perfectly and I think it is a worthwhile idea for other persons who are planning to construct a Slide Wire Wheatstone Bridge or wish to improve their present one by making it more compact and efficient, for the intensity of the 60 cycle hum may be increased by use of a higher wattage bulb.

The man who does things has very little time for anything else.

D. B. HANEL, LYNCHBURG, VIRGINIA

I am now working for "Montgomery Ward" as head of the Radio Department of their store. Your cards obtained the job for me. Many thanks.

H. CARTER, MOUNT HAMILTON, CANADA

I repaired a Fada Radio using 227 tubes and a 171A power tube. It worked like a charm on my own speaker.

So I took it back, put it in the cabinet and encountered an audio howl in the machine. I asked the owner she heard that noise before and she told me the howl was there when she bought the machine. I found that the magnetic speaker had a metal casing over it which rested directly under the shelf where the chassis was. The next time I came I placed a piece of sheet rubber between the speaker plate and the chassis. This insulation stopped the howl. The machine is similar to the Fada A. C. 7 but does not use a loop antenna.

C. W. TEWS, MILWAUKEE, WISCONSIN

Here is a suggestion to stop fading in an Eveready Model No. 52. It has a double volume control. Such a set upon which I am working would fade on every station and when the volume control was turned it produced a crackling noise. I took the volume control apart and found it had two graphite elements—they looked O. K., so I just bent the pressure arms so the rocking disc would make better contact with the resistance elements. After I did this, the set worked fine.

The set had a bad hum so I tested the filter condensers and found the middle section was leaky. I replaced this with a 2 mfd. 400 volt condenser and this reduced the hum, however, not altogether eliminating it. I replaced the screen grid tubes with Arcturus No. 124 tubes and every bit of hum was gone. This last mentioned hum was only heard when a station was tuned in.

If you ever run across an Audio Transformer with an open primary and can't obtain one—or the people don't want to buy one, just place a 1/10 megohm resistor across the primary and connect between the plate and grid terminals a 1/10 mfd. condenser.

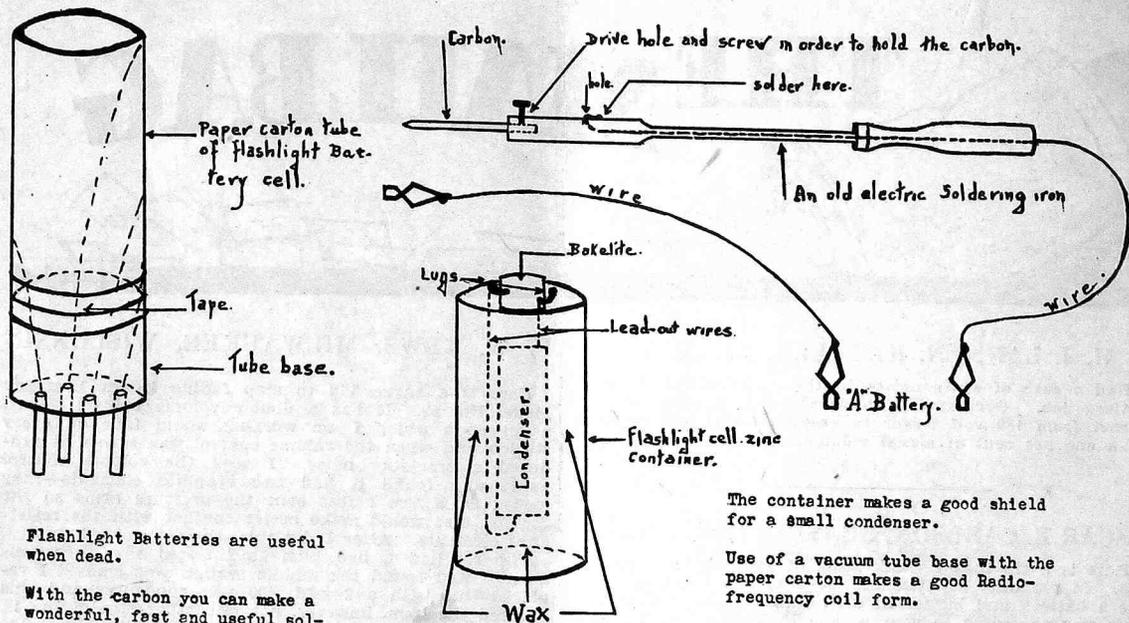
One single idea may have greater weight than the labor of all the men, animals and engines for a century.

—RALPH WALDO EMERSON.

CHAS. W. WILSON, WILKINSBURG, PA.

In servicing a Philco 87 receiver, I encountered a noise resembling a vibrator charger. It took quite some time to locate the source of noise. First, I went over all connections—making sure they were right. Next, I replaced 280 tube volume control, and voltage divider but still the noise remained. I examined the speaker which proved to be O. K. Then I removed the speaker field choke from chassis of receiver and tore away the insulation from the bottom of choke and here I found the trouble. The wire connecting the choke to speaker was stranded wire. Only two strands of wire were making connection—the others being loose. A spark was continually jumping across this connection. I resoldered the connection and replaced the choke. This eliminated the noise entirely.

Student Michael Blanski, Jr., says: To change the tone of a Pilot Super Wasp S. W. set, try putting a fixed condensed .004 between "G" and "A" on the last stage A. F. transformers.



Flashlight Batteries are useful when dead.

With the carbon you can make a wonderful, fast and useful soldering iron.

The container makes a good shield for a small condenser.

Use of a vacuum tube base with the paper carton makes a good Radio-frequency coil form.

R. A. Cordero
Chicago

ATWATER KENT SERIES 20

EDWARD E. JONES, SCRANTON, PA.

I enjoyed the January issue of the News immensely. May I offer a suggestion to the rest of our boys?

When an A. K. series No. 20—battery or "A-Box" operated, loses its selectivity and volume, watch the resistor fastened to the back of the first variable condenser. It may be either shorted or burnt out. There is a resistor on each condenser except the detector stage—but the first one seems to have a tendency to go flooey.

Albert came home with a new book. "It's a prize, mother," he said. "What for, dear?" "Teacher asked how many legs an ostrich had and I said three." "But an ostrich has two legs." "Yes, mother, but the rest of the class said four; so I was nearest."

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— IMPORTANT —

DO YOUR CUSTOMERS LIKE YOUR WORK?

Quite frequently students and graduates get letters of approval from satisfied customers.

These letters tell of jobs well done—fair prices—Radios repaired where others failed. They make interesting reading.

We want every student or graduate who receives such a letter to send in a copy with the following notation on the bottom: "Permission for publication granted" and your signature.

Address your letter to The Editor, National Radio News, 1536 You St., Washington, D. C.

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