NATIONAL RADIO NEWS

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Alumni Association News

APRIL-MAY
1937

VOL. 7

Tribute to the Radio

I am the Radio, made of metal, glass, and wood; every cubic inch of me is magic.

Out of the space there comes through my body the music of the spheres, divine symphonies flood the air, mighty choruses break forth, the organ peals, bands play, the voice of the singer enchants, stringed instruments enthrall the senses, countless orchestras interpret the spirit of jazz, and the saxaphone is heard through the land.

The actor and the entertainer tell their story to laughter or to tears. The lecturer lifts up his voice, and millions listen and learn, the statesman and the politician make their plea, and the destiny of a Nation is decided.

I am the conservator of Man, on land and in the air, on the sea, and under the water; in time of disaster my appeal goes forth and aid comes to the distressed.

What a boon I am to mankind. In the home of the rich and the cottage of the poor, in spacious apartment and lowly tenement, on the farm, and within prison walls, to young and old, to the sick and blind, I bring my message, in every tongue, and in every clime.

I am the Radio, God's great gift to humanity.

COL. ISAAC A. HEDGES.

(Courtesy of Radio Station KFRU, Columbia, Mo.)

Radio on the Zephyr Trains

(A letter from Student John R. Perna)

Sometime ago I promised you pictures of the Zephyr trains. I enclose a few which were successful. The day was not very good and I had to take them on the "run" so to speak. You see, the trains are usually kept inside until they are ready for shipment. This train was leaving for Chicago and I had to get pictures on the occasional stops it made before getting on the main track. Out of 16 "shots" these are the only successful ones. (*Only two of the "successful ones" are shown.—Editor*).

Rear view of Twin Cities Zephyr

This is the first train in which the *entire* Radio system installation was left in my hands. I am proud to say it is the first train built by Budd in which no trouble at all was encountered with the Radio system. I have just completed the second Radio system of the second Twin Cities train and it, too, has proven successful at the first "turnover." I have developed a test system by which, as I go along, I can detect errors or defects prior to passing the job over to the engineering department for testing.

The Radio proper is a Cosmopolitan Capehart Model 101 C.A.W. The chassis is a Capehart Model C.A.W. superheterodyne. It is an all-wave model. It also provides for the use of a microphone for making announcements through Radic speakers throughout the train and for an automatic phonograph for transmission of phonograph records throughout the Radio speaker system. The phonograph has a special table which turns over the records automatically after playing. This system enables one to play a complete opera, for instance, without once touching the machine.

The manipulation of the switching arrangements for various uses is a bit complicated. The Radio has the usual tuning dial control plus a vernier, QAVC control, volume control, tone control and maximum reception swing needle instead of a "shadow tuning" device. The switch for switching to Radio, phonograph, or off, has a visible change-over dial on the main dial so that one always knows what is being used. Likewise a small dial indicates the various broadcast bands in use. An "on-off" switch enables one to tune the Radio without using the speaker. Then another switch is used for matching output for any number of speakers up to ten. A small switch (rotary) is used for microphone compensation.

An electro-dynamic (field type) Capehart speaker is used in the cocktail lounge and bar car. Jensen (no field) electro-dynamic model PM speakers are used in all other cars.

A drawing room is located in one of the cars. This has a Stromberg-Carlson table model Radio. Unfortunately, I forgot to note the model number. This has its own Radio power (110 volts A.C.) and aerial. The Capehart Radio is also 110 volts A.C. and has its own aerial. Both aerials are Stromberg-Carlson all-wave types.

The power source is derived from the power car (head end power). In this car are three Cummins Diesel-driven 220 volts G.E. alternaters. Each car has a 5KVA-3p step-down transformer for Radio and convenience receptacle power 110

Student John R. Perna "on location"

volts and further step-down to 32 volts for conventional railway lighting. The cars are equipped with telephone service (also installed by myself).

Very sincerely yours,

JOHN R. PERNA,
Philadelphia, Pa.

Behind the Mikes

By L. J. MARKUS
N.R.I. Technical Editor

L. J. Markus

INAUGURAL week witnessed the greatest vasion in history of microphones, amplifi transmitters and associated Radio appara into the nation's capital; more people listened President Roosevelt's inaugural address th ever before in the history of America's presid tial ceremonies. Three great Radio broadc ing systems— the National Broadcasting C pany, Columbia Broadcasting System and Mutual network—vied in presenting the m dramatic and interesting accounts of the eve of January 20, 1937 to audiences of eager teners in every corner of the country, on high seas and even in foreign countries. E neers played no little part in the staging of greatest Radio show in history; let us, theref trace back from the scores of microphones s tered along the parade route and see exac how Radio engineers went about putting the auguration "on the air."

N. R. I. was in a particularly advantageous p tion to observe the work of Radio engineers this event, for two N. R. I. consulting engine

To the National Broadcasting Company, Columbia Broadcasting System and the Mutual Broadcasting System we extend our appreciation and thanks for the excellent cooperation given in the preparation of this article, and for the photographs supplied.

the 1937 Inaugural Broadcast

Paul Thomsen and Frank Cook, as well as a number of N. R. I. graduates, were "at the controls."

N. B. C. Set-up

The microphones of the National Broadcasting Company were so located along the parade route that neither the presidential party nor the parade were ever out of sight of an NBC announcer.

At each pick-up point the output of a microphone of either the dynamic, velocity or carbon type was boosted by a portable amplifier and the amplified audio signals sent out over ordinary telephone lines to a central point designated as the master control room and shown in photo *D*. At the left on the photo is the "cue channel" switchboard, from which orders were given to announcers at each of the pick-up points. On the table in the foreground are the portable amplifiers, equalizers and switching units; each line from a pick-up point has an individual gain control, equalizer and switching unit. A few minutes before a particular announcer goes on the air, preliminary tests are made and the controls adjusted to get the proper "gain" settings and make sure that everything is okay. Thus, while one announcer "has the air," these men are preparing for the switch-over to the next mike. It's just like a chess game; moves must be planned way ahead of time.

Although many different broadcasts enter the master control room, only one is leaving at any particular instant, and that goes directly to the regular NBC outlet switchboard for Washington, located in another room of the same building. The program was split three ways at this board —over telephone wires to the telephone company's radio switchboard, to local station WRC and to local station WMAL; at the telephone company were direct telephone connections to each and every radio station on the great NBC network, with telephone operators on duty to see that each station was switched in and out of the network at scheduled times.

NBC microphones were to be seen high up in the Capitol dome, on the Plaza where the oath of office was administered to Mr. Roosevelt and the inaugural address made, on the roofs of various buildings along the parade route, in the presidential reviewing stand, and even in a manhole having a specially constructed glass cover, where an announcer described what might be called a "worm's-eye view" of the parade passing

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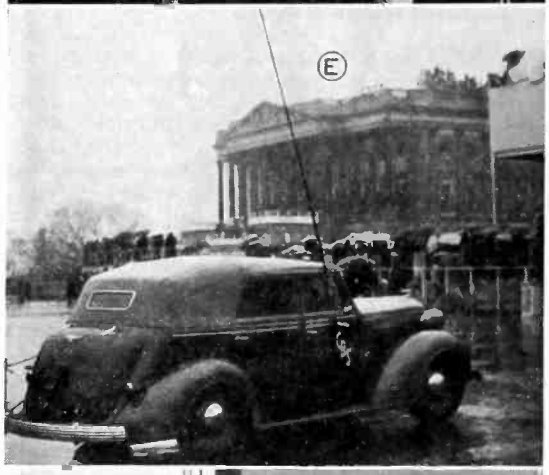

Behind the Mikes at the 1937 Inaugural Broadcast

overhead. Special parabolic microphones caught the strains of band music and the constant pounding of horses' hooves from roof-top vantage points.

NBC's famous silk hat transmitter, a micro-wave transmitter built into a silk hat, allowed one announcer to wander through the crowd and interview notable persons present. Naturally the micro-wave relay truck was always in sight of this roving announcer, for such a midget transmitter has very low power output and a relatively short transmitting range. The signals were picked up by a micro-wave receiver on the truck and fed into a more powerful short-wave transmitter which relayed the broadcast to receiving points either in the Capitol dome or the tip of the Washington Monument, depending upon which was closer to the truck. Here the signals were amplified and fed into telephone wires running to the master control room.

Two NBC mobile units, which are virtually traveling Radio stations mounted in automobiles, traveled in the parade to pick up music from various marching units and give running descriptions of the parade movements. The NBC short-wave receivers in the Capitol dome and in the Monument likewise picked up the signals from these roving mobile microphones.

NBC's "pack" transmitter gave good account of itself during the day. Although light enough to be carried by one person, this short-wave transmitter had sufficient power to enable broadcasts to be made from various points in front of the Capitol directly to the receiver up in the Capitol dome. Photo *A* shows the pack transmitter being tested in front of the Capitol a few days before the inauguration. It is interesting to note that the police officer is examining the licenses carried for the operation of the portable pack transmitter. Another NBC short-wave transmitter and microphone were rigged up on an Army caisson, a broadcast actually being made by an announcer on this caisson while it was moving along as a part of the parade. The Washington Monument was the receiving point for this portable pack transmitter. The announcer in full Army dress, riding high on the moving caisson while broadcasting to millions of listeners, is shown in photo *C*.

All in all, pick-ups were made from twenty-three different locations connected to the master control room by hundreds of miles of wire as well as by a number of Radio paths. It took ninety-seven NBC engineers, technicians and announcers to put across this elaborate broadcast and feed it into a network of some one hundred and twelve stations, including NBC short-wave station W3XAL at Bound Brook, N. J., which relayed the events of the day to Europe, South America and other foreign locations in five different languages. Representatives of German and British broadcasting companies used NBC facilities for special broadcasts to their own networks of stations.

A cold and dreary rain, continuing throughout the day and turning to snow and sleet at times, prevented a scheduled broadcast from a transport plane flying over the parade, but had no effects on the broadcast, even though the Radio men were very uncomfortable at times.

C. B. S. SET-UP

Another great array of microphones and Radio equipment picked up the inaugural day events for the great network of the Columbia Broadcasting System. Microphones stationed at pick-up points along the parade route fed into the amplifying, mixing and switching apparatus in the CBS master control room located at the Capitol. Mobile transmitters WIEK and WAAU, each with a power output of fifty watts and operating on 2090 kc. and 2830 kc. respectively, traveled with the parade and broadcast running descriptions to short-wave receivers located in the Capitol dome and in the Washington studios of station WJSV.

Columbia's pack transmitter W1OXZ, operating on a frequency of 37.6 megacycles with a power output of 1½ watts, was also used. Its broadcasts were picked up by an ultra-high frequency receiver on one of the mobile units and rebroadcast by the car's short-wave transmitter to short-wave receivers in the Capitol dome or in the WJSV studios, depending upon which gave the best reception at the time. Although the pack transmitter had no "cue" or talk-back circuit, it was always close enough to a mobile unit to receive instructions from the engineers in the car. The cue channel for each mobile unit was provided by an ultra-short wave receiver, tuned to a u.h.f. transmitter in the Washington Monument. Yes, it was sort of a "ring-around-the-rosie" affair; the mobile unit talked (or broadcast) to the master control room in the Capitol via short waves to the dome and thence down over telephone wires, while engineers in the control room talked to the mobile unit via telephone wires to the Monument and then over the u.h.f. transmitter to the u.h.f. receiver on the car.

Incidentally, Mr. Thomson and Mr. Cook of the National Radio Institute were at the controls of the short-wave receivers in the Capitol dome and WJSV studios, which picked up the broad-

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The Laboratory Page

By GEORGE J. ROHRICH

The purpose of this department is to furnish supplemental experiments to students who have completed their Home Laboratory Course, but who wish additional laboratory experience. You are not required to perform these experiments, but you will gain increased knowledge by doing so. Most of the material required will be that received as part of the Laboratory Course. Any other material necessary can be purchased very reasonably and will constitute an investment rather than an expense, as it will serve as replacements in service work or be useful in your shop later.

George J. Rohrich, Engineer in Charge N. R. I. Laboratory

EXPERIMENT NO. 55

Object: To show that a series combination of three devices, consisting of a resistor, coil and condenser can conduct more alternating current than when the coil or condenser is omitted.

Apparatus Required: Power supplied to outlet which is known to be A.C. with voltage between 100 and 120 volts; power limiting panel described for Fig. 81 and Fig. 82 in preceding laboratory page; a 10-watt lamp; test wires or test prods attached to plug; audio frequency transformer (Item No. 24); .5 mfd. condenser (Item No. 38 where A.C. is 60 c.p.s.) or a 3 mfd. condenser (where A.C. is 25 c.p.s.).

Apparatus Assembly: Connect the parts as shown previously for Fig. 83. Plug No. 1 may be inserted and used in socket No. 1 for A.C. in any convenient manner, but it is advisable to insert it in the special way explained for Fig. 81 so the lamp (or lamps) will be in the ungrounded side of the A.C. power line. Insert the plug with test wires in socket No. 2. Place one 10-watt lamp in one lamp socket in the power limiting panel.

Connect one terminal of the condenser to terminal B of the transformer. Use the specified condenser to suit the frequency of your power line for clearest observations.

Experimental Procedure:

1. Insert Plug No. 1 in the socket No. 1 for A.C.

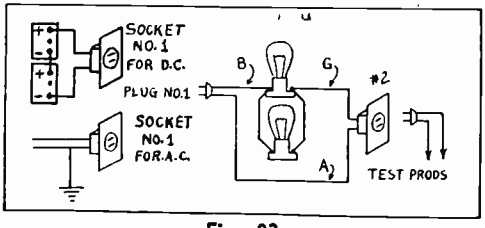

Fig. 83

2. Touch the two test prods together and note that the lamp lights.

3. Hold the test prods on terminals P and B of the audio transformer (Item No. 24) and note that the lamp lights again although somewhat more dimly.

4. Hold one test prod on terminal B and the other test prod on the free wire of the condenser. Note that the lamp lights again dimly.

5. Hold one test prod on terminal P and the other test prod on the free wire of the condenser. Note that the lamp lights brighter than in Procedures No. 3 or No. 4.

Observations: Procedure No. 2 above is a repetition of Experiment No. 51 where a resistor alone conducts A.C. Procedure No. 3 is a repetition of Experiment No. 53 where a resistor and coil conduct A.C., while Procedure No. 4 is a repetition of Experiment No. 54 where a resistor and condenser conduct A.C.

Procedure No. 5 allows you to observe the object of this Experiment No. 55 that more alternating current is conducted while using the three specified devices in a series combination.

At the beginning of this

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 (Continued from page 7)

series of supplementary experiments I mentioned that a coil, condenser or resistor acts in a peculiar manner when used alone with a source of power; when combined in various ways, different actions occur. Here we note that each device possesses the "peculiarity" or "property" of having "resisting ability." We would naturally expect that two devices acting together as in Procedures 3 and 4 of this experiment would have greater "resisting ability" or *impedance* to the electric current. When we come to using the particular combination of three devices as in Procedure No. 5 we might expect a still greater impedance than in Procedures 3 and 4, yet the property of this combination is that we have *more current* in the circuit, which means that we have *less impedance.*

When confronted with this peculiarity for the first time we cannot help but be astonished. Yet this peculiarity is used time and again to get maximum current from broadcast radio signals, so that we soon accept it as a commonplace fact and work with it, without being amazed. In other words we make use of this property while "tuning in" our favorite broadcast signals by selecting the proper value of capacity of our tuning condenser, just as we have to select the proper size of condenser in this experiment to suit the frequency of the power line.

Theory of Action: In experiment No. 53 it was pointed out that the "inductive reactance" of the coil between P and B on the transformer has a value of approximately 5460 ohms for a frequency of 60 cycles per second, while it has a value of approximately 2230 ohms for a frequency of 25 cycles per second.

In Experiment No. 54 it was pointed out that the "capacitive reactance" of the .5 mfd. condenser is approximately 5300 ohms for a frequency of 60 c.p.s., while the capacitive reactance of a 1 mfd. condenser is approximately 6360 ohms for 25 c.p.s. A 3 mfd. condenser has one-third this reactance or 2120 ohms.

The greatest current will flow when the value of "inductive reactance" has the same value as the "capacitive reactance." This is the important property which we use to our advantage so frequently when combining coils and condensers for getting the greatest current from radio frequencies.

The statement is made here that the *greatest current* will flow under the above conditions. If we change to a 100-watt or larger lamp we might expect that it would light also. Yet a test shows us this is not so. This is because the amounts of *power* which can be stored by the coil as well as by the condenser are the limiting factors under the applied voltages. In this particular case the capacity of the condenser is the limiting factor for 60 c.p.s. in that it will store not more than seven watts. This is sufficient to light a 10-watt lamp but not sufficient to light larger lamps.

This peculiarity of getting the greatest current, when the inductive reactance is equal to the capacitive reactance, is given a special name. It is called *resonance.*

When we speak of adjusting the capacity and inductance to resonance, we refer to resonance at a certain frequency.

Thus, we note when using the inductance of 14.5 henries which exists between terminals P and B, we need approximately a .5 mfd. condenser for resonance at 60 c.p.s. Yet, when using the 14.5 henries we need approximately 3 mfd. for resonance at 25 c.p.s.

We could also obtain resonance for the .5 mfd. condenser with 25 c.p.s. by using an inductance of 81 henries. The inductance of the winding between terminals G and F of the experimental transformer has a value slightly greater than 100 henries. Therefore, an approach to resonance will exist if we use the coil between G and F with the .5 mfd. condenser while the frequency is 25 c.p.s. Yet we must remember that this winding also has 3,000 ohms *resistance* in addition to *inductive reactance,* so that the 10-watt lamp hardly receives enough current to become heated when a test for resonance is made.

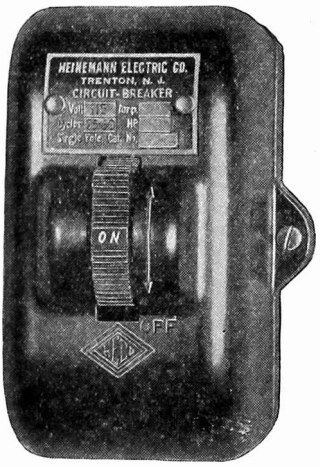
Similarly, when we desire to obtain resonance with the coil between F and G for 60 c.p.s. we need approximately .05 mfd. Here the resistance of 3,000 ohms also retards the current for lighting the 10-watt lamp. The small capacity of .05 mfd. further limits the amount of power because it can only store about .07 watts, this being entirely insufficient for lighting the 10-watt lamp.

In radio receivers we are not primarily interested in *power* but in greatest *voltage* at resonance. A test with a vacuum tube voltmeter will show that the voltage across the inductance or condenser increases greatly, even if the power in the circuits is small.

Yet the measured total voltage across both the inductance *and* the condenser is *less* than either voltage measured separately. This last peculiarity is explained by the fact that the two voltages are out of phase so they will cancel each other. If it were not for the resistance of the coil, the two voltages would cancel each other completely and the measured voltage across both would be zero.

Sensitive Circuit-Breaker Safeguards Tubes and Equipment

Costly tubes, transformers and condensers need no longer be junked through accidental overloads or short-circuits. The ingenious fully-magnetic, non-thermal Re-Cirk-It breaker available in capacities ranging from 50 milliamperes up to 35 amperes, fully safeguards the Radio amateur's major investment at insignificant cost. It is a product of the Heinemann Electric Co., Trenton, N. J.



The Re-Cirk-It breaker has a tumbler handle switching current on and off under normal circuit conditions. There are two types: instantaneous trip and time-delay action. The latter is provided with a hermetically-sealed magnetic trip which ruptures the circuit in from 5 seconds up to 8 minutes on a 125% load, or correspondingly faster on greater overloads, depending on which of four time-overload curves is selected. On short-circuits, it trips within ½ cycle on A.C., or 1/100 second on D.C. The instantaneous trip type may be adjusted for plus or minus 20% of rating.

Precise operation characterizes the Re-Cirk-It, thereby providing real protection for delicate tube filaments and associated equipment. Being fully magnetic and thereby free from usual bi-metallic strips or solder ratchets, the operation is accurate and lightning fast. It is unaffected by ambient temperature and reasonable vibration. Also, the circuit-breaker can be immediately closed after tripping on any overload or short-circuit, providing the abnormal condition no longer exists. The switch handle is simply thrown back to the "on" position.

For typical Radio work, the bakelite enclosed, exposed-mounting type is offered, measuring 4½ x 2⅝ x 3¾ inches. It mounts on switchboard, panel, control desk or other equipment. A behind-the-panel mounting unit is likewise available, also two and three pole units in steel safety cabinets.

Servicing Sets In the Flood Districts

It will be many a day before the distribution of receivers in the Mississippi and Ohio river flood districts reaches its pre-flood strength. Thousands of receivers were swept away entirely. Other thousands left in the wake of the flood for the present represent dead loss to the owners until they have been reconditioned.

In reconditioning sets subjected to flood waters it is first necessary to clean the chassis very carefully. If filled with dry mud, use a screw driver to loosen as much of the mud as possible, then brush out the loose particles. If it is impossible to remove all the mud from the chassis by this method, the next step is to place the chassis in a washtub full of water and soak it for about an hour, then use a toothbrush or some similar brush to remove the mud still adhering to the parts of the chassis, after which the chassis should be rinsed in clean water.

After all the mud has been removed, the receiver should be thoroughly dried. This may be done in several ways. One of the most practical is to place the receiver chassis in an ordinary oven with the temperature raised to about 150 degrees Fahrenheit. Another method is to place the receiver chassis about ten inches above an electrical heater with a large inverted washtub placed over the receiver chassis. The warm air escaping through and around the chassis will be held within the inverted washtub, thus raising the relative temperature about the chassis and drying it out that much more quickly. It will generally take from one to three days to dry out a chassis thoroughly by either of these methods.

Once the receiver is thoroughly cleaned and dried out, replacement of the damaged units is to be made. Usually it is necessary to replace the cone or the loudspeaker and the audio transformer. The power transformer may be satisfactorily restored by connecting a 50-watt lamp in series with the primary winding for several hours with the tube in the set. If any of the Radio frequency coils have been damaged, the proper replacements should be obtained. It is advisable to replace defective parts with those designed for the particular receiver being reconditioned.

Before repairing or reconditioning any receivers subjected to flood waters, however, it is well to determine whether it will be economical for the set owner. This is a problem for the individual serviceman's own good judgment.

An All-In-One Radio Service Book

P. R. Mallory & Company, Inc., of Indianapolis, Indiana, announces the publication of the Mallory-Yaxley Radio Service Encyclopedia, a 215-page reference book written by experienced servicemen to provide, in one handy volume, servicing information on all the models put out by each Radio receiver manufacturer. The book is sold by all Mallory-Yaxley distributors and can also be obtained from any of the large mail order Radio supply houses for about $1.50 (40% off from the list price of $2.50).

The main section of the book is the listing of receivers by manufacturer and model; for each model the proper replacement controls, condensers and vibrators (with the basic circuit for each part indicated by a reference number) are given, the types of tubes used are listed, the I.F. peak is given, and the type of power transformer circuit is indicated.

Schematic diagrams, showing all common circuit arrangements for each Radio device, are grouped conveniently together and numbered; the action of each circuit is explained. Tube charts, servicing formulas, color codes, the how and why of each part and circuit, and special servicing instructions for every type of circuit, including automatic frequency control, are just a few of the other outstanding features of this new book.

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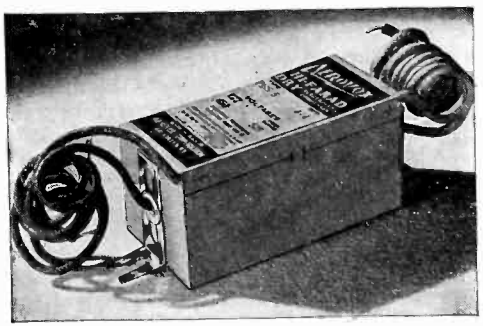
Universal Mounting Flanges for Cardboard Electrolytics

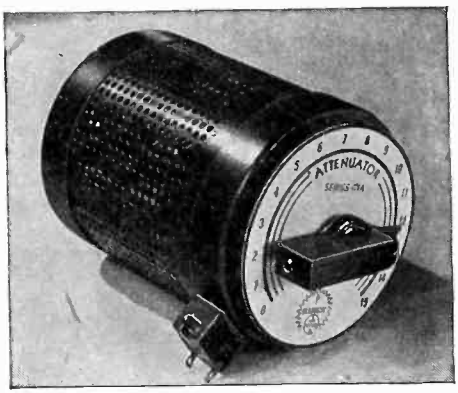
All PBS electrolytics manufactured by the Aerovox Corporation, Brooklyn, N. Y., are now equipped with universal mounting flanges. The slotted metal flanges are fully adjustable so



as to hold the unit flat against chassis, upright, or stacked by interlocking and soldering the flanges. The slatted flanges allow for variable spacing of mounting holes. Units are variable in 200 and 450 v. working ratings, all popular capacities, and in single, dual, and triple sections.

Constant-Impedance Output Attenuator

The long-felt need for a constant-impedance attenuator capable of handling considerable power with low insertion loss, has now been met by the Clarostat Series CIA output attenuator. This control is recommended as an output level control for power amplifiers, or as an input attenuator for individual loud-speakers in a public address system. It safely dissipates 25 watts of power continuously, regardless of setting, and



The Clorostat Constant-Impedance Output Attenuator

has a minimum insertion loss of 1.3 decibels. Standard surge or input impedances available are 8, 15, 50, 200, 250 and 500 ohms. Other impedances available to order.

Made by the Clarostat Mfg. Co., Inc., Brooklyn, N. Y., the new attenuator is in the form of a compact control with perforated metal case. It measures 4" long by 3¼" dia., and is provided with black circular metal dial plate and bar type knob. A special detent-action switch selects the 16 attenuation values, and prevents "in between" switch positions with accompanying impedance mis-matches. The three screw terminals are on the rear face. The control is linear up to 45 decibels, in steps of 3 decibels with an end position of infinite attenuation. Impedance from load end is approximately three times the line value.

A power switch is provided as an optional feature, actuated by the bar knob. The S P.S.T. switch may be used to turn speaker field on or off.

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The Wholesale Radio Service Co., Inc., 100 Sixth Avenue, New York, announces the release of their Spring and Summer catalog. This catalog, like its predecessors, may be obtained free of charge by writing the company.

Prospects for 1937

(from the New York Times)

Leaders of Radio Predict New Wonders—
Opinions Vary on Television

Leaders of the Radio industry say they have only to look back at the boom year, 1936, to confidently predict greater expansion and magic in 1937.

For the past seven years most of the Radio industrialists and broadcast executives have shied from new year prophecy. But this year many of them are optimistically forecasting, because 1936, noted as a year of economic recovery, consolidation of technical advances and research progress, has deeded to 1937 the scientific ammunition with which to cross new frontiers of science.

The leaders foresee as follows:

By Powel Crosley, Jr.,
President, The Crosley Radio Corporation

All indications are that business in 1937 will be very good. Only some unforeseen situation can alter the prospects. Were war to occur, it would change the course of business rather than lessen it. However, it is the hope that business will be permitted to follow its course of supplying constructive needs. With all basic industries such as steel, automotive and others showing great gains, it appears certain that business is advancing on a wide front.

Sales of 7,000,000 or 8,000,000 Radio receivers a year are distinct possibilities. It is estimated that the sales of auto-Radio sets for 1936 reached 1,600,000 to 1,750,000 units, compared with 1,200,000 auto-Radios sold in 1935. The figure for 1937 unquestionably will be still greater.

Radio, itself, has been one of the most important factors in business recovery, being a $400,000,000 a year industry. It is itself a great factor in business advancement.

By E. T. Cunningham,
President, RCA Manufacturing Company

There is still a vast market for the replacement of obsolete Radios, and opportunity for expansion in the farm and automobile Radio fields. With an almost unprecedented flow of new funds reaching the public through extra dividends, bonuses, wage increases and re-employment, I think we may look forward to another good year for Radio.

By Bond Geddes,
Vice-President, Radio Manufacturers Association

Wide growth of interest in international broadcasting has made a wild-fire demand for the modern Radio equipment, especially all-wave receivers. This has added tremendously to the enormous replacement market as 17,500,000 Radio sets now in use are obsolete, or without short-wave appliances.

By Dr. Alfred N. Goldsmith,
Consulting Industrial Engineer

Television is certain to be the subject of vigorous technical development during 1937. Experimentation in television program construction will continue intensively, thus laying the groundwork for later general public acceptance of television broadcasting.

By Larry E. Gubb,
President, Philco Radio and Television Corporation

It has been many years since business faced as bright a future as that which now greets us on the threshold of 1937. Basic industry, which had been lagging behind the recovery procession, is now catching up and is expected to make tremendous further strides during the coming twelve months. This will lay the "bottom" or foundation upon which any enduring improvement must be built.

Revival of basic industry is bound to be felt profoundly throughout the business structure and especially in merchandising. This means more business for the Radio industry. We have had our best year in 1936 and we know that 1937 will produce a much greater volume.

By Lenox R. Lohr,
President, National Broadcasting Company

Using the immediate past as a yardstick, I believe we can look forward to 1937 with reasonable confidence that it will be another record-breaking year.

Television has already emerged from the laboratory into the proving ground of studio transmission. Engineers and scientists are constantly at work on its problems, and I believe 1937 will see significant advances made through actual tests between transmitter and home.

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Prospects for 1937

(Continued from page 11)

By Gladstone Murray,
General Manager, Canadian Broadcasting Corporation

In Canada 1937 offers prospects of rapid development in Radio. Industrially the situation is singularly healthy. The manufacturers, distributors and the trade generally are building confidently for better business.

One feature of the plans of the Canadian Broadcasting Corporation for 1937 will be cooperation with American broadcasting to make available to the whole of Canada the concerts of the leading American symphony orchestras which have contributed so decisively to the spread of music appreciation not only in North America but throughout the whole world.

By Anning S. Prall,
Chairman, FCC

Coincident with the alleviation of the "depression" and the advent of new business generally, we may expect that the public and the Radio industry, during the year 1937, will benefit from the accumulated research of the laboratory.

The emergence from the laboratory stage of the newest development of Radio—television—will be undoubtedly enhanced by technical progress and by experience during 1937. This new marvel is fast approaching the day when it may be available as a practical service to the public, but, however, we must not expect television service immediately because there are many problems, both of a technical and economic nature, yet remaining to be solved.

By David Sarnoff,
President, Radio Corporation of America

During 1936 television moved out of the research laboratory into the field of engineering experiments under actual service conditions. The experimental field tests which have now been going on for six months will be continued during 1937, with many improvements and higher standards dictated by what has already been learned.

Television, aside from its fascination as an art, is noteworthy to the Radio scientist as tangible evidence of man's ever-growing mastery of the ultra-high frequency domain. In this realm of ultra-short waves lie many of the most alluring prospects for future invention and new services to mankind.

There is every reason to believe that during the year 1937 the progress of Radio, so significantly demonstrated during the twelve months just passed, will continue with accelerated vigor.

Behind the Mikes at the 1937 Inaugural Broadcast

(Continued from page 6)

casts from mobile units WIEK and WAAU. They maintained complete checks on receiver adjustments, for the intensities of the signals from the mobile units varied considerably as the cars passed between buildings of various heights. There was little difficulty, however, in keeping the receivers tuned properly during the broadcasts.

One of the CBS mobile units, conducting tests of its transmitting equipment on the Washington Monument grounds the day before the inauguration, appears at *B*, while the same car in action just before the parade started can be seen in photo *E*; the u.h.f. aerial can be seen on the right-hand door of the car, while the short-wave aerial is mounted on the rear bumper.

MUTUAL SET-UP

Microphones of the Mutual Broadcasting System were set up on the east steps of the Capitol, atop the Archives Building, on the street in front of the Archives Building and in the official reviewing stand on Pennsylvania Avenue before the White House, to give a complete coverage of the inauguration ceremonies for the coast-to-coast Mutual network. Microphones fed into the usual preamplifiers and then over telephone wires to the studios of WOL for additional amplification and switching before distribution to the stations of the Mutual network. The entire inaugural broadcast, including the inaugural address, was recorded; photo *F* shows Ray Lyon, WOR engineer, supervising the recording equipment.

And that's the story behind the mikes at the 1937 inauguration. Whether you listened to NBC, Columbia or Mutual, you heard an intensely interesting and carefully-planned broadcast of a history-making event. Four years from now, that same program will be repeated on an even greater scale. Who knows but what you yourself may be one of those engineers behind the mikes and perhaps the television pick-up cameras on that January 20, 1941 when, I prophecy, a limited group of listeners will see as well as hear, in their own homes, the inauguration of a new President.

Short Wave Notes

The coronation of King George VI on May 12 will be broadcast by General Electric's short wave stations, W2XAD and W2XAF, in Schenectady, starting at 6:15 A. M. Eastern Daylight Saving time, and continuing until noon. W2XAF, on 31.48 meters, will be particularly effective in the early hours in New Zealand and Australia, whereas W2XAD on 19.56 meters will undoubtedly be best for other countries.

Battery Problem Contest

On the Novel Radio Items page of the last issue was this problem: If there are 70 standard No. 6 dry cells in a giant battery having a voltage output of 7½ volts, how are the cells connected together? A number of prizes were offered to readers sending in the neatest correct answers: after carefully studying each and every one of the more than one thousand entries received, the following have been selected as winners:

FIRST PRIZE—one electric soldering iron: F. C. Parker, 1166 King Street, Charleston, S. C.

FIFTEEN SECOND PRIZES, each a spin-type socket wrench set:

Charles E. Gorman, Johnstown, Penna.
George C. Ruehl, Jr., Baltimore, Md.
R. F. Swanson, Lakewood, Ohio
James A. Fort, Atlantic City, N. J.
R. A. Norman, Virgin Islands
H. C. Harder, Calgary, Alta., Canada
Richard T. Merrill, Providence, R. I.
J. T. Kirkham, Calgary, Alta., Canada
Frank J. Dolan, Asbury Park, N. J.
David S. Blackwell, Skillman, N. J.
Arthur Stone, New York
Joseph Smith Kimball, Jr., Los Angeles, Calif.
G. H. Hopcott, North Vancouver, B. C., Canada
J. C. McKenzie, Huntington, W. Va.
W. L. Sonnenstuhl, Rawlins, Wyoming

This little problem seemed to have a fascination of some sort, for almost every answer indicated, either by a direct statement or by the care used in preparing the entry, that the entrant had enjoyed working the problem. Many expressed a wish for more problems of this nature; and here are a few interesting comments taken at random from the entries: "I think a contest like this every other month would keep some of us from going 'rusty in the thinker' " . . . "My 'bum' finger gave out on me, so I had my wife write this for me" . . . "Right or wrong in my solution, you may rest assured that I had lots of fun making the diagram" . . . "Just in case fools *do* have luck, I have a soldering iron but no socket wrenches" . . . "This problem leaves me in a peculiar frame of mind. Why? Well, I think it is a simple problem for any N. R. I. student, but then again I don't think it is simple for otherwise you would not have presented it as a problem. Now do you see what you have me doing? Well, it's going to be interesting watching the comments and result of this battery problem."

It was a pleasure to see that practically all of the entries contained the correct electrical connection to give 7½ volts. It was necessary, therefore, to judge essentially upon the neatness of the entries. The winning entry, submitted by F. C. Parker is: "Since a standard No. 6 dry cell has a terminal voltage of 1.5 volts, it will require five cells connected in series to produce a voltage of 7.5 volts. Since there is a total of 70 cells to be used, 70 divided by 5 will equal 14 groups of 5 cells each. Each of these groups of 5 cells will be connected in series and the 14 series-connected groups will then be connected in parallel, thus producing a terminal voltage of 7.5 volts. Each series group will have a voltage 5 times the voltage of one cell, and an amperage equal to one cell. The 14 groups connected in parallel will have a voltage equal to one group and an amperage 14 times the amperage of one group."

Incidentally, it is possible to secure a 7½ volt output from 70 dry cells by dividing the cells into five groups of 14 cells each, connecting each group in parallel, and then connecting the groups together in series, but this connection is inadvisable for practical purposes because the failure of any one cell would quickly cause failure of the other 13 cells in that group. In the first mentioned connection, failure of one cell will simply lower the voltage of a group of 5 cells slightly and will not cause immediate failure of any group of cells or an appreciable lowering of the output voltage or capacity.

Comments From India

Although I have taken a long time in congratulating you on your magazine, you may be pleased to know I look forward to each issue, for it contains everything to the betterment of the people who read it, and I for one feel sorry there isn't more when I come to the last page.

I have taken this opportunity to convey my compliments to Mr. James G. Hollingsworth for his helpful article in the October-November issue.

A. C. L. AUSTIN,
Anantapur, British India

Supreme's New Manual

The Supreme Instrument Corporation has just brought out Manual "A," Tube and Radio Test Instrument Design manual, illustrating and describing the practical design of meters and circuits employed in Supreme instruments. It contains some hitherto unpublished information on test instrument design. The manual is priced at 15c but the Supreme Instrument Corporation has offered to furnish free copies to readers of NATIONAL RADIO NEWS. To receive a free copy simply write to the Supreme Instrument Corporation, Greenwood, Miss.

Radio Rides

(from "Ra

"Attention all boats. Very urgent! Eight hundred people are marooned at 15th and Magnolia. Repeat. All available boats go to 15th and Magnolia at once. There are 800 people marooned there! This is very urgent!"

"Boats! Boats! . . . At 14th and Main rescue 56 people in a warehouse. Fire is approaching the warehouse. Rush!"

"Attention everyone! Attention everyone! The river is not on fire as reported. According to the official report from the city hall the river is not on fire."

"Boats! Urgent. At 10th and Congress, northeast corner. Two people have been calling for a boat since yesterday."

"Urgent! An ambulance is needed at 1315 West Madison. One person seriously ill. An ambulance can reach this address."

"Urgent . . . urgent . . . urgent . . ."

Hoarse, haggard, their eyes red-rimmed and swollen, their voices cracking under the shattering strain of desperate hours of talking, flood-country announcers stood before battery-powered microphones—microphones that might—and did—go dead without warning—to pour into the air their endless stream of life-and-death bulletins. By lamp-light and candle-light they read the hundreds upon hundreds of terse messages that must go on the air if lives were to be spared. And go on the air they did. Announcers were sick, lashed by fatigue almost into unconsciousness, their minds dulled by the enormity of a disaster too awful to be grasped—but in studios in Cincinnati, in Louisville, in Evansville, they hunched over their microphones in the flickering, uncertain light and they talked—talked until their voices literally were gone, until no effort however great would bring anything but a croaking whisper to their lips.

Radio had met—and routed—the worst peacetime disaster in its history. Radio had accepted a challenge that only Radio was capable of accepting, and indisputably, finally, Radio had saved the day.

"Warning, residents of Third and Hillcrest. Turn out all fires. Gas escaping from mains."

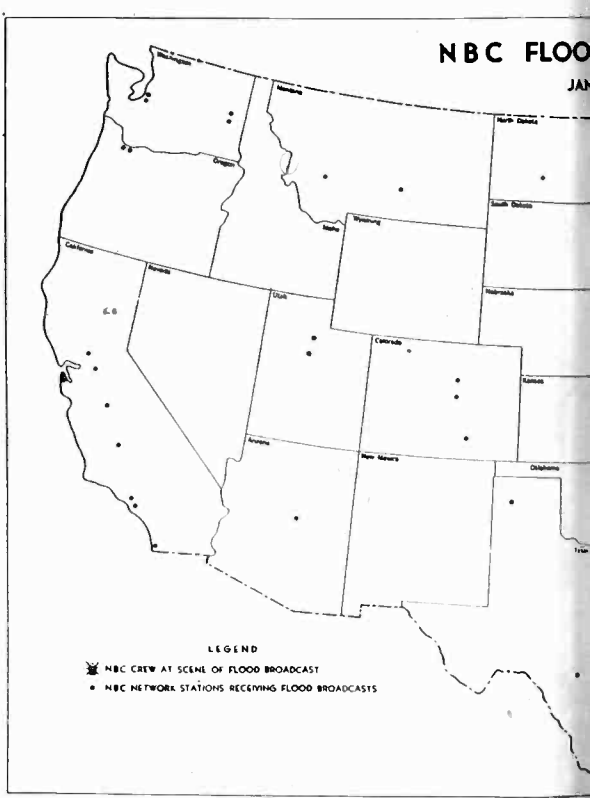
"Urgent! Boat go at once to 930 West Market; pneumonia and confinement case."

"Attention police. Go to the high school. Six hundred Negroes reported on the verge of a riot!"

Even Radio could not keep up with the stream of orders. Flood-battered couriers staggered into broadcasting studios in an endless stream, until the scribbled bulletins were piled hundreds deep. Announcers snatched them, hurled them into the air, grabbed for more, squinting in the lamplight as they rushed over the desperate words as fast as they dared, racing always with the awful moment when roaring water must crash into the transmitters and put an end to broadcasting.

"Urgent . . . urgent . . . urgent."

At the transmitters, engineers cursed as they fought to keep the rolling yellow waters from the precious equipment. Let even a few inches of water reach the switchboard and sending would stop—except for a four-word message to the announcers: *"We're off the air!"*



From every point along the Ohio and Mis

the Flood!

ieGuide")

The desperate technicians knew that merely to keep water away from their own transmitting equipment wasn't enough. It wasn't enough, but it was all they could do. They were helpless in the face of failure of city power plants. There would be nothing they could do then except generate their own current—and so they did just that: they seized every battery they could get their hands on and out of the conglomeration of odd sizes and assorted voltages expertly they rigged their own power plants, stayed on the air. Hell and high water were raging outside, but they stayed on the air.

"Looting reported along 4th Street. Police are authorized to shoot and shoot to kill. Anyone on official business should proceed down center of the street."

"Boat 'Glide Along' loaded with groceries taken away from Mr. Young by gang of men on 2nd Street. Try to rescue and return to Mr. Young, so he can resume distribution."

"This is an emergency! This is urgent . . . "

It's Sunday morning in water-logged Cincinnati. Eight floors above the street in the Crosley Radio plant, a desperate crew mans powerful WLW, on the air 24 hours a day since the Ohio rose to emergency flood stage on Thursday. The atmosphere in the studio is charged, tense, expectant. Announcer Bill Brown is on the air, Don Cordray is standing by waiting to relieve him. Tired, jumpy, Cordray realizes vaguely that there are gasoline fumes in the air. What of it? An estimated million gallons of gasoline is floating on Cincinnati's storm-waters. Everybody knows that. But—if someone should toss a cigarette . . .

"Fire! Everybody out!"

Cordray snaps a glance at the window. Eight stories below, red flames are leaping high. The gasoline has caught!

Listen to Bill Bailey, WLW publicity director: "I heard someone yell, *'Everybody out.'* The building's on fire! The building was full of gasoline fumes and I thought the fire was below in the factory. Looking out of the window I saw flames about 200 yards long spreading on the water. I grabbed my hat and coat. I passed Cordray and Brown in the hall. I made a round of the offices and studios shouting, *'Everybody out! Fire!'* Then paused for another look. Flames were leaping past the eighth-floor window and I took out."

WLW was off the air only briefly. At the height of the fire Engineer Philip Underwood and Bill Brown returned to the studio. A temporary newsroom was set up in another building. The fire? To the WLW staff, it was only an incident. They went back on the air, and they did more—they had the heroic impudence to put the fire on the air! As it crackled and howled around them, completely destroying eighteen buildings before it was controlled, WLW slammed an eye-witness account into the microphones. Then back to the routine business of life-saving.

"Boats! Boats! Four relief workers are marooned . . . they have had nothing to eat since yesterday morning . . . Urgent! Urgent!

One smoking, sputtering kerosene lamp flickers

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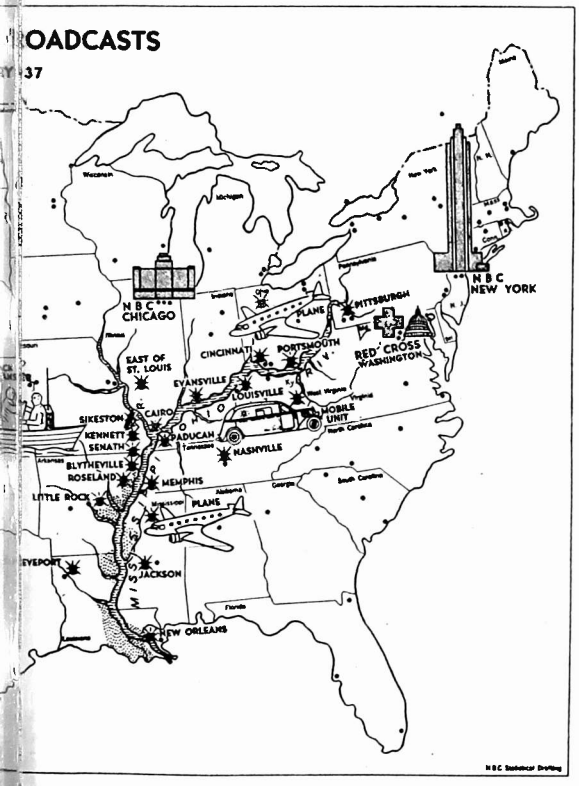

River, Radio Crews Covered the Flood

Radio Rides the Flood (Continued from page 17)

before a microphone at WHAS, Louisville. There is no other light. The station is on battery power. Time after time the ever-rising flood waters have pounded WHAS off the air, but every time, despite the rushing waters, despite agonies of fatigue, a heroic crew has risen to the new emergency and the microphones have leaped to life again. There is no longer any city power. Hastily rigged batteries furnish electricity, but not enough to hold the station on its own feet; not enough to hurl messages over the hundreds of square miles of flooded territory. WHAS has only just enough power to lob its traffic over to WSM in Nashville, there to be re-broadcast to the nation. But that much power is precious, to be able to get on the air at all is a Godsend, and for 24 hours a day, day after endless day, eight announcers take turns at the microphones.

"The mayor has just announced that martial law has been declared in Louisville. Troops from Fort Benjamin Harrison will arrive in the morning."

"If doctor is in neighborhood of 405 West Oak, two babies are ill there."

"Send a boat to Teller Court. Eight people are there; two babies are sick. This is the third call. This is urgent . . ."

Louisville's WAVE had played a similarly important part in flood rescue work until the failure of the city's electric power forced it off the air. A desperate message forced through to the National Broadcasting Company's Chicago headquarters brought prompt action. A 400-pound, gasoline-driven generator and four transmitting tubes were loaded into a plane and sent to WAVE. Operated at capacity, they enabled WAVE to broadcast on 5,000 watts, enough to reach the rescue boats operating in the river.

Cincinnati's WCKY set up an emergency Diesel generator when power failed, lighted one studio with candles and kerosene lamps, heated it with an oil stove, and stayed on the air! The Diesel unit burned out a bearing, the telephone wires leading to the transmitter came down; all during one night, WCKY engineers, cold and sopping wet, worked to repair the engine, and to string new wires to the transmitter, but WCKY stayed on the air!

The flood struck with stunning speed, but its speed was more than matched by Radio's response. Not only were individual stations heroic. Whole networks of stations sprang into being over night. Louisville's power failed at 11:39 Sunday night—at the height of the flood. In less than an hour, WBBM in Chicago, KMOX in St. Louis, WJR in Detroit and WSM in Nashville, the four most powerful stations in the flood area, were broadcasting over telephone circuits the emergency programs which could not be put on the air in Louisville. Before Louisville went off the air, relief workers in the flood lands were instructed to tune in WBBM, and at intervals throughout the night, WBBM broadcast an appeal to other stations to relay the emergency directions. Before dawn, 25 stations, NBC, CBS, and Mutual, had joined the volunteer network!

It is too soon accurately to appraise Radio's work in the flood emergency, but one indisputable fact stands out even now: awful as the disaster was, it would have been incalculably worse without Radio's tireless and omnipotent heroism. The staggering loss of life and property has not yet been finally set down, but it is certain that Radio, and Radio alone, prevented its being at least double what it is. In the bubbling, tossing darkness of a river gone mad, men, women and children were suddenly and irretrievably cut off from their fellows, from the governmental agencies that in normal times assure their safety. They were on their own! Starving, soaked, sick, without Radio it would have been up to them to save themselves if they were able, to die if they were not. Most of them would of course have died.

The scene is hard enough to imagine. Darkness and endless water, everywhere, as far as the eye can reach. Debris floating in the streets. Fires gone out. Shouted directions carry a pitifully few feet, screams for help go unheard. Without central direction, without communication, the police are almost helpless. Panic and nameless fright, inevitable by-products of disorganized humanity, are rampant. But somewhere in a half-lit room, an exhausted man who wonders vaguely what day it is, and whether he's talking to the world over a live microphone or to himself on a dead one, reads a terse command: *"A house is collapsing. Send a boat. Attention police. Ten persons in house collapsing at 2717 West Jefferson."*

Radio has stepped into the breach!

The heroic stature of Radio's fight against this flood—the most serious in United States' history—cannot yet be truly drawn. But some idea of the extent to which Radio adapted itself to the emergency—and grew greatly in the doing—can be gathered even now.

For the first time in Radio history, network stations, regardless of affiliation, joined in a national hook-up and stayed on the air for 24 hours straight.

(Page 21, please)

Radio Rides the Flood (Continued from page 18)

For the first time, a governor of a state spoke over an emergency telephone line in an appeal for aid from the nation. He was Gov. A. B. Chandler of Kentucky, speaking from the guardhouse of the engulfed and evacuated old Frankfort Prison where he had directed work of rescuing more than 2,700 imprisoned men.

For the first time, major broadcasting stations were employed as a direct and continuous link between relief heads, police and rescue squads. Flood emergency boats, tuning in network stations with battery receiving sets, got their orders as swiftly as police patrol cars.

For the first time, direct and regular co-ordination of commercial and amateur broadcasters was established on a large scale. Special and direct appeals for aid were organized by both, establishing a swift multi-way communication between relief headquarters, rescue squads and the general public.

In the first five days of the crisis, a total of at least 24 special broadcasts from 31 major points was made by one broadcasting system alone—the most ever recorded.

"Without Radio," said a WHAS announcer, "the great rescue job which is being done here could be nothing but utter chaos."

Listen to him. This is Announcer J. Kenneth Jones, one of WHAS' heroic staff.

"Perhaps the greatest physical task—certainly the most important from the relief and rescue standpoint—in this great emergency has been the establishment and maintenance of lines of communication, with all the regular lines, or most of them, out of commission or functioning only uncertainly. This has been Radio's job, but Radio has needed much, and, at times, very strange assistance in performing it. The station, we must remember, is but one-way communication. How have messages reached us, as we sit here glued to telephones with brave girl typists picking up every desperate word? Sergeant of Police Joseph Walling says this: 'I have received messages from as far away as 22 miles calling for aid in the stricken area. These messages have started by rowboat, been transferred to truck or motor cars, and handed on by them to pedestrians who have struggled through to the city hall relief headquarters. We, in turn, have put these messages on the direct lines to Station WHAS where they have been broadcast. Thus relief workers in remote parts of the country have been guided in their rescue work.'"

Other messages have come in from fortunate and heroic people who have gone into the flood area with wire-tapping equipment, climbed poles, and from their perilous perches relayed messages over lines remaining up. In instances too numerous to detail rescue has been effected within a very few blocks of a relief station because of telegrams or long distance calls coming in to rescue headquarters from cities as remote as New York, Chicago, and, in one case, Miami.

And what about headquarters, where these messages have been coming in? One must shout to be heard as lines fail one by one and frantic efforts are made to maintain communication. Men manning the old fashioned standard telephone and needing both hands to work with, have receivers strapped to their heads with adhesive tape and the rest of the instrument secured to their chests with their belts . . .

"*A warning has just come in: Please keep all paper off desks and tables so that when lamps turn over, there will be less danger of fire!*"

"*A doctor is imperatively needed at 22nd and Main Streets.*"

The battle goes on.

Mrs. Mattie Gerken, 82, seriously ill of influenza, lies helpless in her bed on the second floor of a Cincinnati house. She is unable to move, too sick fully to realize her danger. Someone stumbles through the flood waters to a telephone, Radio answers the call for help, she is taken down a ladder, into a row-boat to safety. Radio can chalk up another life saved, another tragedy averted.

"*A stretcher case at 1023 South 4th Street.*"

"*Police, attention! A store is being broken into at this moment at 15th and Jefferson. Go there at once and stop looting.*"

And all night long, and all day, and all the next night, the endless stream of bulletins pounds over the airwaves. Radio, saving innumerable lives, preventing the destruction of millions of dollars worth of property, integrating rescue work too vast for one man to comprehend. Radio, doing more than the rest of the world could do!

Radio, coming into its own!

———*n r t*———

High Flyer

"Now, Miss, what gear were you in at the time of the accident?"

"Oh, I had on a black beret, tan shoes and a tweed sports dress."

Novel Radio Items

—BY L. J. MARKUS—

Grid is Missing in New Triode Tube!

Scarcely larger than a package of chewing gum is a new Radio tube developed in Germany. A wire mesh surrounding the filament serves as the plate, and a metallic layer sputtered on the inside surface of the pancake-like glass envelope controls the plate current electrostatically through the openings in the plate.

n r i

CANADIAN COWS HAVE SIT-DOWN STRIKE! A radio receiver installed in a Nova Scotia dairy barn proved so popular with the pure-bred cows that failure of the set resulted in a "sit-down" strike. The cows stamped and bawled, developing a state of nervousness as their way of saying "No music, no milk!" Emergency repairs on the receiver averted a prolonged milk strike.

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A metal roof located across the street from a certain amateur Radio transmitter acts just like a loudspeaker, clearly reproducing the signals being broadcast . . . Another Radio amateur complains that an electric cooking range downstairs, just below his transmitter, likewise repeats every word he tells his microphone . . . In Massachusetts, scientists are predicting weather by observing how ultra-short-wave Radio signals change in intensity from time to time . . . Down in Texas, they say, there's a metal flagpole which has a "listening hole;" put your ear against this hole and you hear the music sent out by a local radio transmitter . . . A certain Radio loudspeaker, 'tis said, caused a vase-full of carnations to face away from the source of sound as if in agony; have any NATIONAL RADIO NEWS readers noticed whether other flowers are unfriendly to Radio music?

RADIO SETS ARE CRANKED IN INDIA! Batteryless radio receivers, each containing a dynamoelectric generator which must be cranked by hand continually to provide power are now being used as "community" radio sets in native villages of India. Man power being far cheaper than battery power in India, these new sets should prove popular.

n r i

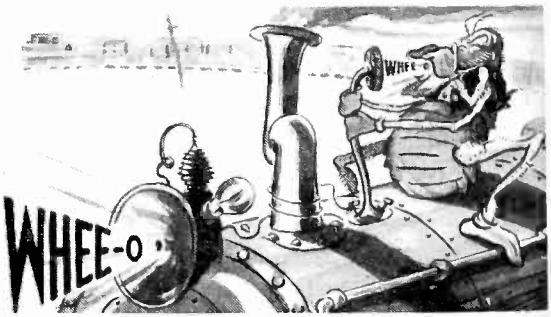
Telephoning Above the Clouds!

One of the world's smallest telephone systems may be flying over your head this very minute, for each of the giant new three-mile-a-minute transports placed in service by United Air Lines has a 30-foot long telephone line which allows the stewardess to keep in touch with the pilot.

n r i

New Radios Have 7-Foot Long Dials!

The dial used on some 1937 Radios is printed on movie film, which is so controlled by the tuning knob that a 10-times-enlarged image of the desired dial section appears on a screen. A 7-foot long film is thus enlarged to a 7-foot long dial.



CAN FLEAS SQUEAL? If they can, Dr. Phillips Thomas of Westinghouse asserts that radio engineers could amplify that weaker-than-a-whisper noise so greatly that any steam locomotive in the land would be proud to use a flea for a whistle.

N.R.I. ALUMNI NEWS

Secretary Merryman Gives Aid in Flood Emergency

(from The Washington Evening Star)

"Water, water everywhere and none to wash your face with—unless you go to a barber shop."

That's one of the lasting impressions brought back from flooded Louisville by Earl Merryman, station WJSV (Washington, D. C.) supervisor.

A week in the inundated Kentucky city, working constantly by candlelight and oil lamp so the only means of communication with the outside world might go on uninterrupted, left Merryman somewhat haggard when he returned last night.

Hip boots was the first purchase he made when he flew into the city to provide relief for the staff of Louisville's Station WHAS.

Just how hard the beleaguered Radio men have been working was shown when one of them tried to explain Merryman's duties, but was able only to give vent to a slight "croaking" sound.

Five-day Broadcast

Five days without a break in the control room located on the second floor of the Courier-Journal Building has made robots out of announcers, engineers and other technicians.

"Knock-out" pills, administered in lieu of aspirin, were given several of the operators to get them away from their posts when relief arrived.

Of all the harrowing sights Merryman saw, the most vivid was that of a woman giving birth to a child just after she had been placed in a row-boat to be taken to safety.

Another time he saw a pontoon bridge, constructed on hundreds of charred whisky barrels worth $20 apiece, capsize and throw scores of persons into murky waters.

"That's all been written about, of course," Merryman shrugged, "but maybe you don't know about the hotel situation.

"For $3.20 you can get a room at any hotel, but you must be your own chamber maid. You get a shot in the arm, a lantern, a pillow, sheets and a cake of soap.

Bed Always Occupied

"Your bed, however, is always occupied. You shake the fellow who's there when you go up and tell him it's your turn. And then after you've slept awhile—usually an 8-hour shift that seems like 20 minutes—somebody else routs you.

"My room was on the eighth floor and I climbed. The elevators naturally are not working.

"The soap was useless because there wasn't any running water. I got my first face-wash after I had been there several days. Everybody in the broadcasting studio who could leave dashed out when the word came that a barber shop was open.

"Although they all needed a shave, they really went for the wash. The barber had a tub of water boiling on a stove. Everybody had the same towel slapped on their face, but it felt good."

Smoking Is Taboo

A strange sight was a huge sidewheeler river boat tied up between two buildings on one of the main streets. It drifted over the dock when the river rose and now it is in such shallow water that it probably will have to be dismantled.

Smoking along the water front is taboo because

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—BY L.J. MARKUS—

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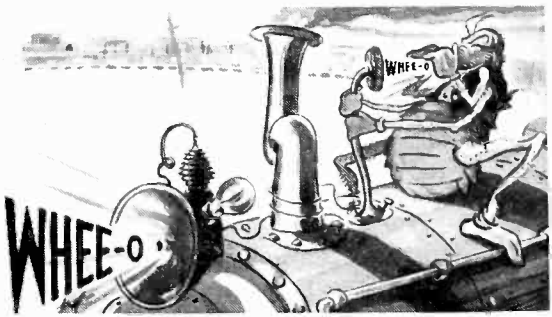

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N.R.I. ALUMNI NEWS

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Earl Bennett, Clarence Stokes ..... Vice-Presidents
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Secretary Merryman Gives Aid in Flood Emergency

(from The Washington Evening Star)

Water, water everywhere and none to wash your face with—unless you go to a barber shop!

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Just how hard the beleaguered Radio men have been working was shown when one of them tried to explain Merryman's duties, but was able only to give vent to a slight "croaking" sound.

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Five days without a break in the control room, located on the second floor of the Courier Journal Building, has made robots out of announcers, engineers and other technicians.

"Knock out" pills administered in lieu of aspirin, were given several of the operators to get them away from their posts when relief arrived.

Of all the harrowing sights Merryman saw, the most vivid was that of a woman giving birth to a child just after she had been placed in a row-boat to be taken to safety.

Another time he saw a pontoon bridge constructed on hundreds of charred whisky barrels, worth $20 apiece—capsize and throw scores of persons into murky waters.

"That's all been written about, of course," Merryman shrugged, "but maybe you don't know about the hotel situation.

"For $3.50 you can get a room at any hotel, but you must be your own chamber maid. You get a shot in the arm, a lantern, a pillow, sheets and a cake of soap.

Bed Always Occupied

"Your bed, however, is always occupied. You shake the fellow who's there when you go up and tell him it's your turn. And then after you've slept awhile—usually an 8-hour shift that seems like 20 minutes—somebody else routes you.

"My room was on the eighth floor and I climbed. The elevators naturally are not working.

"The soap was useless because there wasn't any running water. I got my first face-wash after I had been there several days. Everybody in the broadcasting studio who could leave dashed out when the word came that a barber shop was open.

"Although they all needed a shave, they really went for the wash. The barber had a tub of water boiling on a stove. Everybody had the same towel slapped on their face, but it felt good."

Smoking Is Taboo

A strange sight was a huge sidewheeler river boat tied up between two buildings on one of the main streets. It drifted over the dock when the river rose and now it is in such shallow water that it probably will have to be dismantled.

Smoking along the water front is taboo because

(Page 28, please)

Novel Radio Items

—BY L.J. MARKUS—

Grid is Missing in New Triode Tube!

Scarcely larger than a package of chewing gum is a new Radio tube developed in Germany. A wire mesh surrounding the filament serves as the plate, and a metallic layer sputtered on the inside surface of the pancake-like glass envelope controls the plate current electrostatically through the openings in the plate.

n r i

CANADIAN COWS HAVE SIT-DOWN STRIKE! A radio receiver installed in a Nova Scotia dairy barn proved so popular with the pure-bred cows that failure of the set resulted in a "sit-down" strike. The cows stamped and bawled, developing a state of nervousness as their way of saying "No music, no milk!" Emergency repairs on the receiver averted a prolonged milk strike.

n r i

Radio Plays Many Queer Pranks!

A metal roof located across the street from a certain amateur Radio transmitter acts just like a loudspeaker, clearly reproducing the signals being broadcast . . . Another Radio amateur complains that an electric cooking range downstairs, just below his transmitter, likewise repeats every word he tells his microphone . . . In Massachusetts, scientists are predicting weather by observing how ultra-short-wave Radio signals change in intensity from time to time . . . Down in Texas, they say, there's a metal flagpole which has a "listening hole;" put your ear against this hole and you hear the music sent out by a local radio transmitter . . . A certain Radio loudspeaker, 'tis said, caused a vase-full of carnations to face away from the source of sound as if in agony; have any NATIONAL RADIO NEWS readers noticed whether other flowers are unfriendly to Radio music?

RADIO SETS ARE CRANKED IN INDIA! Batteryless radio receivers, each containing a dynamoelectric generator which must be cranked by hand continually to provide power are now being used as "community" radio sets in native villages of India. Man power being far cheaper than battery power in India, these new sets should prove popular.

n r i

Telephoning Above the Clouds!

One of the world's smallest telephone systems may be flying over your head this very minute, for each of the giant new three-mile-a-minute transports placed in service by United Air Lines has a 30-foot long telephone line which allows the stewardess to keep in touch with the pilot.

n r i

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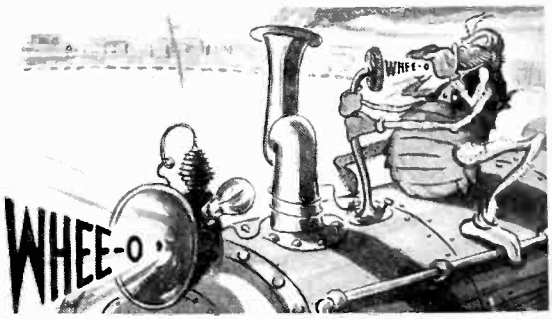

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(Page 28, please)

The Bulletin issued by the Chicago Chapter seems to grow better with each succeeding issue. Much credit is due Editor C. D. Morehead, who is ably assisted by Technical Editor, Earl R. Bennett.

The following well prepared Editorial is taken from a recent issue of the Chicago Chapter Chatter and is worthy of a careful reading by all members of the N. R. I. A. A.

"This is a most appropriate time for a sort of inventory of the reasons for affiliation with such an organization as the National Radio Institute Alumni Association. We have taken the Radio course and completed it to the best of our ability, what possible further benefit can it provide?

"In the constantly developing field of Radio it is necessary to study continuously to keep up with progress. Intelligent reading must form the foundation of this study, but discussion of the subject with other men interested in the same thing can be a most valuable supplement and aid to a thorough understanding of what is read. And every person who applies his science develops pet kinks and methods of accomplishing his objectives, so that by interchange of ideas our members can always benefit.

"For a second major reason, one may look to the improvement of working and other conditions in his profession. The Radio industry, particularly the servicing branch, has long been beset by numerous ills which have bestowed upon it a most luminous ebony optic. The confidence of the public has so often been betrayed by unscrupulous and ignorant individuals posing as servicemen, by dealers who have foisted inferior merchandise upon it at exorbitant prices, by worthless guarantees and other things that the servicing industry must take steps to redeem itself before it can enjoy a rightful prosperity. An organization which can help to do this has more than justified its own existence.

"For a third major reason we may step aside from the purely material and look to the social side. Especially in a large city does this take on importance, since one may live next door to many people for years without becoming acquainted or forming friendships. On the other hand, one cannot belong to an association of persons having similar aims and inclinations without becoming well acquainted, and unless there is something radically wrong with an individual he will certainly find some of these acquaintances ripening into friendships. With these common interests as a basis there is much better chance of satisfactory social intercourse than with mere random acquaintances.

"In similar vein 'all work and no play makes Jack a dull boy.' Few people can concentrate on their work to the extent that no other activity is desirable and remain satisfied with themselves or any of their surroundings. The N. R. I. A. A. provides a refreshing diversion with the added advantage of accomplishing something of material benefit."

Officers have been elected by the Chicago Chapter for 1937. The following will serve during the ensuing year.

A. Kettlehut, Chairman.
L. Lewandowski, Secretary.
E. Sorge, Financial Committee.
F. W. Pesek, Financial Committee.

Inasmuch as the position of Editor of the Chicago Chapter Chatter is appointive and not elective, Mr. Morehead remains in that capacity and he was also re-elected to the post of Librarian. Mr. Earl Bennett, who is also International Vice-President of the N. R. I. Alumni Association, has taken the position of technical Adviser and Editor of the Chicago Chapter Chatter.

Mr. Kettlehut is a newcomer to Chicago but in the short time he has been in the great Metropolis on Lake Michigan he has made his presence felt in the Chapter's activities and has taken a very important part in all of the meetings. Because of his natural aggressiveness and inherent ability to lead, the members of the Chicago Chapter felt he would make an able leader for the forthcoming year. It is the private opinion of some of the members that the Radio industry of Chicago is going to wake up to the fact that there *is* an N. R. I. A. A. Chapter in their midst.

Mr. Lewandowski is an old-timer, in point of service, being a charter member of the Chapter and one of the big three in attendance. He will make a very able assistant to Mr. Kettlehut.

Mr. Kettlehut's first act in office was to appoint Mr. Juricek, Mr. Morehead, and Mr. Bennett as an entertainment committee of three, with instructions to prepare a plan of social activities for the ensuing year. These plans will be announced as soon as formulated.

Mr. Kettlehut also informed the Chapter that he will soon suggest a plan for conducting a membership drive designed to make the Chicago Chapter a real influence in its vicinity.

The Service Forum

Conducted by

J. B. Straughn, N. R. I. Service Consultant

AETNA MODEL 652 — **LOCAL RECEPTION ONLY**

Check band switch for broken wire. These receivers are sold by the Walgreen Drug Company.

JOHN HOTIS, New York.

n r i

AETNA MODEL 253 — **HUM**

Look for shorted leads to the dial light or defective electrolytic condensers. If intermittent reception is the complaint look for short in leads from tuning condensers as they pass through the chassis.

JOHN HOTIS, New York.

n r i

PHILCO MODEL 37-650 — **HUM**

Often due to defective electrolytic condensers part No. 30-2163. One is the 20 mfd. input filter condenser marked 59A in the schematic. The other is marked 59, has a value of 10 mfds. and is used as the bleeder resistor by-pass.

n r i

GENERAL ELECTRIC MODEL E81-E86 — **BACKGROUND NOISE**

Change cathode bias resistor of 6K7 first I. F. from 2200 ohms to 25,000 ohms.

WILLIAM H. COE, New York.

n r i

GENERAL ELECTRIC MODELS E91, E95, E101, E105, E106, E155 — **BACKGROUND NOISE**

Cathode of 6K7 first I. F. is grounded. Break connection and bias with 10,000 ohm ½ watt resistor, by-passing with .05 microfarad condenser.

WILLIAM H. COE, New York.

Editor's Note: The above Service Notes on General Electrics for curing background noise will in our opinion decrease the sensitivity of the receiver considerably.

n r i

CROSLEY MODEL 42S — **DISTORTION**

Check for leakage between the double .5 mfd. condensers used across the bias resistors of the detector and first A. F. stages. Disconnect the condensers from their respective cathodes when making this test. 200-volt replacement condensers can be used.

GENERAL ELECTRIC MODELS A63 AND A65 — **WEAK**

Check for an open 4 mfd. condenser in the condenser block. The condenser is marked C26 in the schematic and may be identified in the set by the fact that it has a red lead running to the oscillator coil. Any good grade 4 mfd. dry electrolytic can be used as a replacement although the manufacturers' part number is RC-507.

n r i

BELMONT MODEL 675 — **INTERMITTENT RECEPTION**

Try a new 2A6 type tube regardless of the manner in which the present one tests.

EDDIE SPRAGUE, *Maine.*

n r i

LYRIC MODEL S57 — **DISTORTION**

Check the two resistors shunting the speaker field and used to bias the 47. The grounded resistor has a value of 200,000 ohms while the other is a 1 megohm unit. Also try a new 300,000 ohm grid leak and check the by-pass and coupling condensers.

n r i

CROSLEY MODEL 167 — **DEAD**

The mica trimmers often short to the chassis due to faulty dielectric spacers, move trimmers with screwdriver and listen if signal comes through with a blast indicating that a new piece of mica should be used.

FRANCIS J. KMETZ, Pennsylvania.

n r i

CROSLEY MODEL 167 — **DISTORTS**

The flexible wire wound resistor from electrolytic condenser to ground shorts and causes either weak or distorted signals.

FRANCIS J. KMETZ, Pennsylvania.

n r i

CROSLEY MODEL 1014 — **WEAK AND UNSELECTIVE**

If no plate voltage is received on the 6F7 tube check the I. F. coil adjoining it. This coil very often opens cutting off plate supply for the tube.

FRANCIS J. KMETZ, Pennsylvania.

(Page 27, please)

Philadelphia-Camden Chapter

Chairman Helmig announces that the members voted to change the meeting night from Thursday to Wednesday. The business meeting will be held on the first Wednesday of the month and all meetings start promptly at 8:15. Forty-five minutes of each service meeting will be devoted to a quiz based on the questions in the N. R. I. text books. The member who answers the most questions correctly will receive a suitable reward at the end of the year. The second meeting in each month will include instructions and demonstrations in salesmanship. The third monthly meeting will be devoted chiefly to a practical demonstration of Radio servicing, augmented by a blackboard discussion. And the fourth meeting of the month will be given to an open forum of advanced Radio subjects.

All graduates in the Philadelphia-Camden area are invited. Headquarters are located at 3347 N. Front St., Philadelphia, Penna.

New officers for 1937 have been installed. Here is the impressive roster.

Joseph N. Helmig, Chairman
James Mooney, Vice Chairman
James M. Hornbrook, Recording Secretary
Joseph Keenan, Financial Secretary
Clarence E. Stokes, Treasurer
Charles Spurdens, Sergeant-at-Arms
Adolph Zinter, Sergeant-at-Arms
Alfred Wysoczanski, Librarian
Committee Chairmen:
Joseph Strano, Membership
Charles Fehn, Publicity
James M. Hornbrook, Constitution and By-Laws

n r i

Directory of Chapters

Baltimore—I. A. Willett, Secretary, 2411 Arunah Ave., Baltimore, Md.

Philadelphia-Camden—Clarence Stokes, Treasurer, 3347 N. Front St., Philadelphia, Pa.

New York—L. J. Kunert, 66-11 74th St., Middle Village, L. I., N. Y.

Buffalo—T. J. Telaak, Chairman, 657 Broadway, Buffalo, N. Y.

Toronto—Ed. Witherstone, Secretary, 363 Nairn Ave., Toronto, Ont., Canada.

Chicago—L. Lewandowski, Secretary, 3130 So. 55th Court, Cicero, Ill.

Pittsburgh—Albert Maas, Secretary, 9 S. Howard Ave., Bellevue, Pa.

Detroit—C. H. Mills, Secretary, 5458 15th St., Detroit, Mich.

New York Chapter

A series of "Shop Nights" are being conducted, demonstrating the use of the cathode ray tube equipment. This is a most novel and instructive demonstration and Chairman Arndt and Secretary Kunert report an unusual amount of interest. But the officers of this up-and-doing Chapter will not feel entirely satisfied until their attendance is 100%. And, listen buddy, that isn't possible if even you stay away. These demonstrations are very interesting and you really cannot afford to miss them. Your Chapter is going places this year but they need and want your support. Some interesting programs are scheduled for the immediate future.

The following officers have been elected for 1937.

Allen Arndt, Chairman
William Little, Vice Chairman
Lou J. Kunert, Recording Secretary
John H. Struble, Financial Sec'y and Treas.

n r i

Chapters' Recommendations Requested by Federal Communications Commission

James M. Hornbrook, Recording Secretary, Philadelphia-Camden Chapter, writes that his Chapter is very proud of the recognition afforded them by the Federal Communications Commission in requesting their opinion regarding blanket interference from broadcast stations. The Federal Communications Commission explained that it had before it a proposal to change its present policy with regard to the location of transmitters of broadcast stations. The present policy was outlined in a lengthy memorandum and the proposed changes were discussed in a letter which was also submitted with the request that an expression of opinion on this subject and a statement of experience was desirable from Radio receiver servicemen's organizations.

It was further requested that after due consideration a report be made direct to the Commission. Baltimore and a number of other Chapters received a similar request from the Federal Communications Commission which indicates that the Commission highly regards the experiences of men who belong to organizations such as the N. R. I. Alumni Association.

The Service Forum (Continued from page 25)

CROSLEY MODEL 148 — **WEAK, DEAD OR DISTORTED**

The tapped 5 watt resistor often opens. This resistor can be found connected between the +B and screen grid lead of the 58 I. F. amplifier tube.

FRANCIS J. KMETZ, Pennsylvania.

n r i

PHILCO MODEL 116 — **HUM**

This is generally due to an open in the filter condenser block.

FRANCIS J. KMETZ, Pennsylvania.

n r i

PHILCO MODEL 610 — **DEAD**

If this occurs only when the tone control is turned to the bass position, melt the pitch out of the tone control unit and insert in place of the defective condenser a .02 mfd. 600 volt condenser.

FRANCIS J. KMETZ, Pennsylvania.

n r i

SILVERTONE MODEL 140 — **DEAD, WEAK OR DISTORTED**

Check the .1 microfarad condensers in the R. F. circuit.

FRANCIS J. KMETZ, Pennsylvania.

n r i

SILVERTONE MODEL 94 — **DEAD**

Check and if necessary replace the .1 microfarad by-pass condenser in the coil unit (mounted underneath the center coil).

FRANCIS J. KMETZ, Pennsylvania.

n r i

GRUNOW MODEL 566 — **DISTORTS**

Check centering of voice coil making sure that it does not rub against the pole pieces. This is done by moving the cone in and out with your fingers lightly pressing against the rim.

FRANCIS J. KMETZ, Pennsylvania.

n r i

EMERSON MODEL 26 — **WEAK AND DISTORTED**

Replace the 250,000 ohm resistor from the screen of the 47 to the plate of the 57.

FRANCIS J. KMETZ, Pennsylvania.

n r i

JACKSON BELL MODELS 62, 63 AND 64 — **LOSS OF SENSITIVITY AND SELECTIVITY**

This complaint generally indicates poor alignment. In aligning this set you will find that the trimmers are inside the R. F. coil can, on the coils. Set may hold alignment for a short time and then go out again. Remove coil shield cans and the adjusting screws on the trimmers will be found to have pulled out of the fibre composition of the coils. Use a slightly larger set screw and realign.

P. M. OHLINGER, Iowa.

PLUG-IN C BATTERY CLIPS

When installing new C batteries, care should be taken to see that the plug-in clips fit tightly. Several cases have been found where the B battery drain measured twice that of normal. Radio sounded satisfactory but a clip on battery supplying bias to power tube was loose. Tightening clip in socket caused B battery drain to return to normal when C bias was restored.

P. M. OHLINGER, Iowa.

n r i

CLARION MODEL 220 — **DEAD**

When this condition occurs with lack of D. C. voltages, look for a short in the trimmer condenser in the plate circuit of the first I. F. transformer. A green corroded spot on the trimmer indicates passage of current.

P. M. OHLINGER, Iowa.

n r i

ATWATER KENT MODELS 40, 42 AND 52 — **NOISE**

This is often due to a partially opened detector grid leak. Use a 2 megohm replacement.

P. M. OHLINGER, Iowa.

n r i

RCA VICTOR MODELS RE32—45 — **WEAK**

If the filament voltage on the 26 tubes is low go over the soldered connections in the circuit with a hot soldering iron as the trouble is often due to a resin joint.

P. M. OHLINGER, Iowa.

n r i

UNITED MOTORS MODEL 4037 — **PECULIARITY**

This set would only play when car motor was running. Storage battery was O. K. The set of points used as the rectifier in the synchronous vibrator were spaced slightly too far apart so when the set was operated at normal 6 volts, points were not closing. When car motor was run, increase in voltage speeded up vibrator causing points to close. Resetting points cleared up trouble.

P. M. OHLINGER, Iowa.

n r i

ZENITH MODELS 6V27 AND 6V62 — **DIES OUT**

If the receiver plays when first turned on and then stops, check the No. 15 tubes. If dead test the ¼ watt 100 ohm shunt resistor across the filaments of the two tubes before installing new tubes. Also measure the storage battery voltage under load as it may be below normal.

P. M. OHLINGER, Iowa.

n r i

IMPROVING TONE QUALITY

Barrel tone can be eliminated in some cabinets by lining them with celotex and painting the inside with aluminum paint.

P. M. OHLINGER, Iowa.

(Page 29, please)

Detroit Chapter

Chairman F. E. Oliver is burning the midnight oil in preparation for a series of discussions on technical Radio problems which he will lead. The advance schedule includes some fine subjects—so don't miss any of the meetings, fellows—you can't afford to.

Officers for the ensuing year are as follows:

F. E. Oliver, Chairman
J. Perkins, Assistant Chairman
C. H. Mills, Secretary
R. Briggs, Assistant Secretary
S. Bantoft, Librarian
W. Webster, Financial Committee
J. Stanish, Financial Committee
J. Stanish, Editor
R. E. Davis, Assistant Editor

Chairman Oliver wishes the following message to reach all N. R. I. graduates in the Detroit Area:

"To have and hold an efficient Local, and keep it growing, we need the help of every one of you. We need your comments and ideas, no matter how trivial they may seem to you. But most of all we need your presence at our meetings. In order to bring good speakers to our meetings we must show them we can provide an appreciative audience. It is up to you to do this. How about it?"

Well done and very true, Chairman Oliver. And incidentally, you fellows in the Detroit Chapter certainly made an impression on President Dunn. He is still talking about the fine meeting he attended.

n r i

Secretary Merryman Gives Aid in Flood Emergency

(Continued from page 23)

of the presence of oil and gasoline in the water. Merryman saw a man about to light a cigarette near a soldier.

"The soldier said 'drop it,' and the man told him to 'go to hell.' Pulling his gun, the soldier said: 'Okay, I'll put you both out.' There was no smoking."

It will be a long time before Louisville is restored to normal, according to Merryman. The park around the city hall has been dug up to a depth of 15 feet to fill sandbags; buildings, cracking at the base, will have to be razed, and streets, split down the middle, will have to be replaced.

n r i

"Have received the N. R. I. Alumni Pin and think it is swell! Enclosed is one dollar in payment for it."

KENNETH CONN, Mt. Union, Penna.

Baltimore Chapter

On Tuesday, January 19, L. L. Menne, and J. B. Straughn of Headquarters, attended the meeting of the Baltimore Chapter. After the regular meeting which was ably conducted by the new Chairman, W. W. Jensen, an open forum was conducted with Mr. Straughn acting as technical adviser. The boys shot some mighty stiff questions at Straughn, but all agreed his clear and complete explanations, often illustrated by blackboard drawings, were just the thing to add zest to an already lively meeting. President Dunn was present to lend a hand to the interesting proceedings.

Baltimore Chapter is planning some big things for this year, beginning with another dance, inspired by the tremendous success of the one held several months ago.

Officers elected for the current year are as follows:

W. W. Jensen, Chairman
O. J. Ruth, Jr., Vice Chairman
I. A. Willett, Secretary-Treasurer
G. D. Parlett, Asst. Secretary-Treasurer
A. Grollman, Librarian
J. A. Fekays, Sergeant-at-Arms
P. J. Dunn, Financial Committee
F. Provini, Financial Committee
H. M. Cohen, Financial Committee

n r i

Vice-Pres. Earl Bennett Is Old-Timer

The members of the N. R. I. Alumni Association certainly made a good choice when they elected Earl Bennett to the office of Vice-President for 1937. He is one of the first graduates of N. R. I. His student number was 181. During all these years he has been a guiding spirit in the activities of Chicago Chapter and is one of the hardest workers in the Association. By the way, that's a record of longevity, or sumpin'. Can anyone beat it?

n r i

Directory of Officers

(To Serve Until January, 1938)

President—P. J. Dunn, Baltimore, Md.

Vice-Presidents—Earl Bennett, Evanston, Ill.
R. H. Rood, Los Angeles, Calif.
F. E. Oliver, Detroit, Mich.
Clarence Stokes, Phila., Pa.

Secretary—Earl Merryman, Washington, D. C.

Executive Secretary — L. L. Menne, National Headquarters, Washington, D. C.

The Service Forum (Continued from page 27)

ATWATER KENT MODEL 43 — **INTERMITTENT RECEPTION**

Open center tapped filament resistor and ground return, shunted across filaments of the 71A power tubes. Wire break is not noticeable as it is covered with shellac and heating and cooling causes make and break contact. Resistor is located in power pack under fibre top terminal board.

P. M. OHLINGER, Iowa.

———*n r i*———

GENERAL ELECTRIC MODEL J107 — **HUM AND MOTORBOATING**

The 46 type power tubes should be chosen so that they will have equal plate currents. An open in the 10 microfarad electrolytic condenser connected from the filter choke in the high D. C. voltage side of the 82 rectifier to the filter choke going to the center tap of the high voltage winding of the 82 rectifier will also cause this trouble.

P. M. OHLINGER, Iowa.

———*n r i*———

GRUNOW MODEL 7A — **DEAD OR VERY WEAK**

Check the .25 microfarad decoupling condenser in the plate supply circuit of the second detector (.75). This condenser connects from the junction of the two 100,000 ohm resistors located on resistor board to the chassis. The condenser is in the condenser block and its lead is the black-yellow wire. If condenser is leaky the set will be weak and if shorted dead.

W. B. RITCHIE, Pennsylvania.

———*n r i*———

APEX MODEL 8 — **EXTREME DISTORTION**

Replace 550 ohm section of candohm strip.

R. E. MCKERRAL, Iowa.

———*n r i*———

ATWATER KENT MODEL 376 — **WEAK AND DISTORTED**

Check the 30,000 ohm resistor connected from the cathode of the 2A6 to the screens of the 58 and 2A7 type tubes. If this is O. K. look for trouble in the band change switch.

R. E. MCKERRAL, Iowa.

———*n r i*———

ATWATER KENT MODEL 70-L CHASSIS — **WEAK AND DISTORTED**

Check for an open in the detector bias resistor (all white).

R. E. MCKERRAL, Iowa.

———*n r i*———

AUTOMATIC DELUX — **NO RECEPTION**

If there are no plate voltages and the vibrator is O. K. look for bad buffer condensers or broken wires in the base of the power pack.

R. E. MCKERRAL, Iowa.

CHEVROLET MODEL 601814 — **NOISY AND INTERMITTENT**

Look for a partial open in the I. F. transformer.

R. E. MCKERRAL, Iowa.

———*n r i*———

STEWART WARNER MODEL 1431 — **DEAD**

If this symptom accompanied by high battery drain occurs, check for a shorted .01 microfarad condenser across power transformer. Use a 2000 volt oil filled replacement.

R. E. MCKERRAL, Iowa.

———*n r i*———

GENERAL ELECTRIC MODEL C-70 — **INTERMITTENT**

If this receiver cuts out or is dead on the high frequency end of the dial, replace the 1C6 tube. Clean and tighten all spring contacts in main switch.

R. E. MCKERRAL, Iowa.

———*n r i*———

STEWART WARNER MODEL R-102A — **INTERMITTENT RECEPTION**

Replace the .1 microfarad condenser shunting the 6,000 ohm resistor in the cathode circuit of the 24 type tube used as the first detector.

R. E. MCKERRAL, Iowa.

———*n r i*———

SPARTON 400 — **NOISY**

Check volume control and if defective replace with a new one.

NAT GOODIS, Canada.

———*n r i*———

SPARTON MODELS 400, 410 AND 420 — **WEAK AND DISTORTED**

There is a small three section condenser can underneath chassis. Check sections one by one. You will probably find one of these .3 microfarad sections defective. Replace with a new condenser, having a capacity of either .5 or .25 microfarad.

NAT GOODIS, Canada.

———*n r i*———

SPARTON MODEL 89A — **DEAD**

If all voltages are O. K. check for a shorted .00025 microfarad condenser across the secondary of the output transformer.

NAT GOODIS, Canada.

———*n r i*———

PHILCO MODEL A91 — **NOISY**

Check volume control and replace with new one if found defective.

NAT GOODIS, Canada.

———*n r i*———

SPARTON MODEL 800 — **DEAD**

If the plates of the 81 type tubes become red hot look for a shorted 4 microfarad condenser in the filter section. Replace with a new one to restore normal operation.

NAT GOODIS, Canada.

Here and There Among Alumni Members

Your Executive Secretary is very enthusiastic over an idea for a new column for these pages. He wants to become better acquainted with the members of the Alumni Association and he wants the members of the Alumni Association to become better acquainted among themselves.

The thought is to head a column which will appear each issue under the above title and which will contain personal and news items pertaining to members of the N. R. I. Alumni Association.

In a sense any organization is a big family. So it is with our Association. We want to know what our fellow members are doing. Although separated by state lines, and even by the high seas, through this column we can exchange bits of comments which touch briefly upon the activities of fellows who are with us heart and soul in the work of the Association, but most of whom we will never meet in person.

Even the individual officers and members of Local Chapters will have a chance to come in for personal mention, and the thousands of members who are not connected with a Local Chapter will have a place here to learn what other members are doing and tell others what they are doing.

But the success of this column depends upon the individual members. The editor must have material and the members must supply it. It should be brief and of general interest to Alumni members. It may be news regarding a promotion, a new job, a marriage, some unusual achievement or just an expression of loyalty to the organization.

The editor has agreed to give this space to this column if you fellows will supply the material. Your Executive Secretary worked hard to sell this idea to the editor and hopes for an enthusiastic response so that we can make this a big, newsy column of genuine interest.

Of course the editor reserves the right to accept only such items as he thinks are appropriate and for which there is space.

Send your news items to the Executive Secretary, N. R. I. Alumni Association, 16th and You Streets N. W., Washington, D. C. At the top of your letter designate it "For Here and There Column." This is the idea. Here we go:

Mahlon C. Atwood of Fredericksburg, Virginia, is Service Manager for the Smith-Hackley Company of that city. This is a new position for Atwood and he writes that he is getting along exceedingly well.

When you fellows in the vicinity of Indianapolis go to see the professional baseball games in that city this summer you will hear the announcements through a new P. A. system which was built by William A. Brown, who is P. A. operator at Perry Stadium.

n r i

Joseph Cooper of Cornwall, Ontario, Canada, is planning to go to England this spring to try for a job in Television.

n r i

Stuart Armstrong of Headquarters pulled up to the building in his new car the other morning, took a last drag of his cigarette and then tossed it out of the window—only the window wasn't open. For two hours little Mr. Cigarette kept digging into the cushion and then things really started to happen. Result: Fire Department, axes, good-bye new car.

n r i

Guy K. Burgett and J. L. Kinnard write that they do all the Radio work for Sears, Roebuck & Company at Nashville, Tennessee. A good team.

n r i

We are sorry to learn that M. Clive Keemer of Dayton, Ohio, is confined to a hospital as this issue goes to press. Here's hoping you get out in record breaking time, Clive, and that you will soon be enjoying your usual good health.

n r i

The head technician in the Radio Service Department of the local R. C. A. Victor distributor, Moscow, Idaho, is none other than our fellow member Oliver B. Hill. A good man in a good job.

n r i

J. A. Cordero graduated in 1930 and has been operating a profitable spare time Radio business ever since. He has one of the best equipped shops in South Chicago, as is evidenced by an excellent photograph which he sent to Headquarters. Incidentally, Cordero is one of the hardest workers in the Chicago Chapter.

n r i

Howard Waitt of New York Chapter called at Headquarters recently, accompanied by his fine son. Father and son are doing a very good Radio business. And you ought to see the P. A. system they have rigged up on their car! Howard is a man of ideas and tremendously enthusiastic about the Alumni Association.

n r i

Speaking of auto Radios, the hustling young fellow in charge of Radio servicing and installation for the Backus Chevrolet Company of Baltimore, Maryland, is Herman H. Kramer whose home is in Ellicott City, Maryland.

n r i

This is only the beginning, folks. More in the next issue! In the meantime let us hear from you.

Has No Preferences

sure do enjoy reading the NATIONAL RADIO EWS. It is the most interesting Radio magazine ut. I can't very well name what parts of it I ke best, for I like it all.

ELDER BARBER,
La Fayette, Ala.

n r i

Wants Correspondents

find the Service Tips in the Service Forum to be great help and expect to derive a great deal of enefit from them in the future.

would be glad to correspond with any service-nen who care to write to me.

R. E. MCKERRAL,
Green Mountain, Iowa.

n r i

Finds License Easy to Get

I am sending you a station card from amateur station W210R, owned and operated by graduate King J. Fothergill. It will be a pleasure to see my call letters appear in the ever-growing list of N. R. I. Ham stations.

Might also add, had it not been for the training that I secured from the N. R. I., it would have been much harder to secure my license and build the transmitter you see on the card.

The National Radio Institute sure has one swell publication, and I certainly enjoy each issue of it.

Graduate KING J. FOTHERGILL,
Brooklyn, N. Y.

n r i

Submits Service Tip

"Watch those duplex houses for several aerial outlets connected together when the complaint is erratic performance or fading. I have found several cases where the receivers had checked O. K. in various shops. Individual aerials corrected the trouble."

FRANK M. SATTERWHITE,
Pomona, California.

Additions to N.R.I. Ham List

The call letters of amateur stations appearing below have been received since the last issue of the NEWS. If you haven't submitted yours yet, be sure to do so in time to catch the next issue.

Roy P. Reisch—W3GQR—Millersburg, Pa.
Kenneth R. Waltz—W6JIY—Cambria, Calif.
Earle Davis—W2KEX—New York, N. Y.
J. C. Slack—W2DGJ—Jamaica, L. I., N. Y.
Joseph P. Skutnik—W2JWK—Pine Island, N. Y.
Clyde Van Dusen—W8QNE—Palmyra, N. Y.
King J. Fothergill—W210R—Brooklyn, N. Y.
Fred C. Massetti—W6NVZ—Madera, Calif.
Herbert E. Arrowsmith—W2AUZ—St. Alban's, L. I., N. Y.
Alvin L. Anderson—W9VAL—Noonan, N. Dak.

n r i

Offers Suggestion

Thank you for your excellent magazine NATIONAL RADIO NEWS; it is one of the best news magazines devoted to Radio a student can obtain.

I read Mr. Gus Sankey's suggestion about the Service Forum and I am sorry to say I don't agree with him. May I suggest something with which I am sure everybody will agree?

I suggest that the Service Forum be arranged the same way as the Service Sheets, say page 9-10 and 23-24. This way the service notes could be taken out without spoiling anything in the magazine, and filed in a Radio-Trician's service binder.

H. SEGELL,
Johannesburg, South Africa.

n r i

Wish Comes True

Hope we're going to "hear" something by way of the NEWS about the Inauguration, seeing as how N. R. I. is right there in Washington in the midst of all the celebrations. How about it?

BOB AINSLEE,
Chicago, Ill.

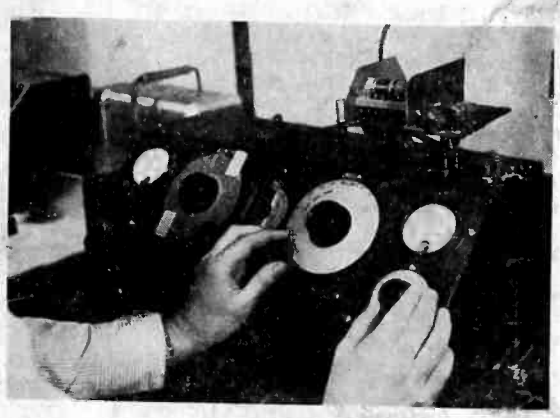
You get your wish partner. See page 4.—Editor.

A Correction

As an N. R. I. student and also an employee of the Boonton Radio Corporation, I take the liberty of calling your attention to an error in the December 1936-January 1937 issue of National Radio News. I refer to the article on the Q-Meter on the back page. While the article itself is quite correct, the photo is not that of a Q-Meter but of a QX-Checker, an instrument we also manufacture.

The QX-Checker is a production instrument which does not give readings in direct Q, but in percent Q. A standard is inserted in the instrument and the panel meter is adjusted to read one hundred percent. The production coils or condenser, etc., are then checked in comparison with the standard. Limits are set up and units falling below or above are rejected.

Q readings can be obtained through graph and chart. The Q-Meter (see illustration) is a different instrument in appearance from the QX-Checker and Q readings are obtained as stated in the article.



The Q-Meter in use

Your magazine deserves much compliment. The articles are very educational and interesting. I extend my best wishes for its continued success.

S. R. THIERFELDER,
Boonton, N. J.

Thank you, Student Thierfelder, for calling this to our attention and also for your very clear explanation of the respective purposes of the Q-Meter and QX-Checker.—Editor.

———n r i———

New Catalog Announced

An extensive line of Radio supplies is offered in the new catalog just brought out by the United Radio Company—successors to the Radio Trading Company and the Airex Company. United's address is 58 Market Street, Newark, N. J.

NATIONAL RADIO NEWS

FROM N.R.I. TRAINING HEADQUARTERS

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T. E. ROSE, EDITOR
S. M. ARMSTRONG, MANAGING EDITOR

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