

Eliminating Static Interference by Underground Antennas, by E. T. Jones;
 New Portable Transmitter-Receiver; Advance Programs: A-B-C Radio Lessons

Radio Digest

EVERY WEEK **Illustrated** TEN CENTS

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Vol. IX

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SATURDAY, JUNE 28, 1924

No. 12

TO MAKE GIANT STATIONS

AIR VOTE NEW HOPE IN PRESIDENT RACE

FRESH CHANCE SEEN FOR
 THE SPELLBINDERS

"Who Will Get It?" 25,000,000 Fans
 Offer Good Field for
 Politicians

WASHINGTON.—The presidential campaign this year is fraught with a new and exceedingly interesting question: Who will get the vote of some 25,000,000 Radiophans? Undoubtedly the host of listeners will be influenced in their voting by spell binders of each party as soon as the candidates for president and vice-president are named. The candidates themselves, will soon be on the air, voicing their platforms and aims.

Some of those mentioned as possible candidates and others more certain to be nominated, have already been heard in practically all the states of the Union. They have impressed the millions of fans one way or another, and it is the first time in political history, that as many citizens have come into contact in any way with aspirants for high national honors. To be sure, not many fans have seen the man who will be selected to stand for election in the fall, but many have heard, or will hear them speak before they vote.

London Hears Argentine CB8

LONDON.—Two British amateurs recently picked up the signals of Station CB8, Argentina, while that station was calling American 1XAM, John Reinartz, Hartford, Connecticut.

Billie Rudell, below, the charming Radio actress who recently appeared in a one-act play, "A Matter of Husbands," which was broadcast through Station WEAF.



A. T. & T. CO. TELLS ABOUT NEW PLANTS

5,000-Watt Power Broadcasters
 Soon to be Ready
 for Delivery

Indicates Better Radio

Authorities Believe Super Equipment Will Be Allowed by Third Hoover Radio Conference

NEW YORK.—Giant broadcasters, capable of reaching every corner of the United States at any time, day or night, summer or winter, are foretold by the recent announcement by the American Telephone and Telegraph company of a new five-kilowatt station, deliveries on which can be made in from six to eight months.

The advantages of super Radioeast equipment, it is pointed out, are numerous, and are desirable even though the present Radio regulations limit the power of such apparatus to one kilowatt (1,000 watts)

(Continued on page 4)

Alice McEnney, pianist, recently appeared in a recital given by the pupils of the Academy of Holy Names, which was broadcast by the General Electric Station WGT, Schenectady.



Mme. Dorothy Haegen Talbot, coloratura soprano, whose infant daughter was recently christened before the microphone of Station KPQ, Hale Brothers, San Francisco.

WCAY, Milwaukee, Now Civic Station

Ten Firms Co-operate to Give City
 Best Available

MILWAUKEE.—Station WCAY, formerly operated and owned by the Kesselman O'Driscoll company here, has been donated by that firm to the city of Milwaukee and opened as the Milwaukee Civic Broadcasting Station, Inc. Ten firms, supporting the station co-operatively, contribute \$2,500 each annually to defray the cost of operating.

The power of WCAY is 250 watts, which soon will be increased to 500 watts. Plans for better programs include establishing an artist financing fund.

MR. ROBIN SINGS HIS SONG TO ALL WORLD

Redbreast's Concert Arouses Mail
 Bag of Applause

IOWA CITY, IA.—An uninvited Radio entertainer, a red-breasted robin, invaded the program from the University of Iowa station, WHAA, here recently, and aroused a mail bag full of applause.

The robin chose for its audience a crowd of several thousand persons who had gathered under the campus elms to hear Rev. John A. Ryan of Washington, D. C., give a baccalaureate sermon. Quite unwittingly the robin actually sang to a nation through the university broadcast station. It burst into song early in the program and was heard intermittently.



No. 6 OFFICIAL BALLOT

Announcers' Contest

RADIO DIGEST FIRST ANNUAL GOLD CUP AWARD

Gold Cup Award Editor, Radio Digest,
510 North Dearborn St., Chicago, Ill.

Please credit this ballot as one vote for:

..... of Station.....
(Announcer's name) (Call letters)

Signed.....

Address.....

City..... State.....

If you desire, tell below in five or less words what you most like about the announcer for whom you have cast this ballot.

HOLD BALLOTS BACK FOR SPECIAL BONUS

LISTENERS TOLD DETAILS OF ANNOUNCERS' AWARD

Entrant Needs But One Nomination—Total of Ninety-Three Now After Gold Cup

Although a total of ninety-three announcers have been nominated to date in the Radio Digest First Annual Gold Cup Award, the award editor is still receiving many nominations for men whose names have already appeared. It is emphasized that but one nomination is needed for any one announcer.

All a Radiophan desiring to vote for his favorite need to do is look at the latest list of nominees. If his favorite's name does not appear, then a nomination is in order. If the name has been given in Radio Digest, no further nomination is required. Just save the voting ballots appearing on this page. In all cases it is wise to save these ballots for bonus votes.

How Bonus Votes Are Obtained

When four consecutive ballots are sent in one group, the announcer for whom they are cast will receive fourteen instead of merely four votes. When eight consecutive ballots are sent in one group, the count will be thirty-three instead of eight votes. Twelve consecutive ballots will count for sixty-two votes, while the entire series of sixteen ballots will have a weight of ninety-one votes for the announcer for whom they are cast.

It is therefore particularly of advantage to save the ballots as they appear and cast them all at once, or in smaller groups as outlined above. Ballot number 16 will not appear until the September 6 issue. Ballot number 6 appears this week.

Announcers Nominated Now

- The announcers nominated to date, their stations and locations, are:
- Adair, Sam, WOQ, Kansas City.
 - Arlin, H. W., KDKA, East Pittsburgh.
 - Arnoux, G. C., WBAP, Fort Worth.
 - Baoh, A. E. W., WBZ, Springfield.
 - Bachman, Miss Alberta, WBAH, Minneapolis.
 - Barnes, E. T., WGY, Schenectady.
 - Barnett, S. W., WOC, Davenport.
 - Becker, Otto, WGR, Buffalo.
 - Buell, Earle, WLAG, Minneapolis.
 - Cartier, Jacques, CKAC, Montreal, Canada.
 - Clark, David C., WCRD, Rochester.
 - Claussing, Leroy, WEBB, Chicago.
 - Coats, Mr., CKY, Winnipeg.
 - Coggesil, A. O., WGY, Schenectady.
 - Cole, N. D., WHO, Des Moines.
 - Cooperman, Tess, WLAG, Minneapolis.
 - Cadigan, John J., WFAT, Boston.
 - Carlin, Phil, KFEB, New York.
 - Cowan, Thomas H., WJZ and WJY, New York.
 - Cross, Milton J., WJZ and WJY, New York.
 - Daggett, Uncle John, KHJ, Los Angeles.
 - Darling, Walter, CFCE, Montreal.
 - DeFew, J. H., WCRD, Rochester.
 - Eastman, M. L., KYW, Chicago.
 - Entrekin, C. A., WCAH, Columbus.
 - Erbstein, Charles, WTAS, Elgin.
 - Ehrhart, Harry E., WDAR, Philadelphia.
 - Emery, C. R., WGI, Medford Hillside.
 - Fanning, Mejer J., WNAC, Boston.
 - Field, Henry, KFEB, New York.
 - Fitzpatrick, Leo, WDAF, Kansas City.
 - Gaal, C. A., KUO, San Francisco.
 - Graham, C. W., WIP, Philadelphia.
 - Granlund, N. T., WHN, New York.
 - Greene, P. A., WSAI, Cincinnati.
 - Hammond, Carl E., KFOA, Seattle.
 - Harrington, Ted, WGY, Schenectady.
 - Harris, Credo, WHAS, Louisville.
 - Hay, Bill, KFCK, Hastings.
 - Hays, George, WLS, Chicago.
 - Hayner, Rutherford, WHAZ, Troy.
 - Hired Hand, WDAF, Ft. Worth.
 - Haller, Richard V., KGW, Portland.

- Randall, C. R., WCAG, New Orleans.
- Reese, Paul, KFI, Los Angeles.
- Reid, J. Lewis, WJZ, New York.
- Reilly, John, WJAR, Providence.
- Reynolds, R. F., WEAN, Providence.
- Rice, —, CJCA, Edmonton, Canada.
- Robinson, Irving B., WMAQ, Boston.
- Rockafel, S. L. (Roxie), WEAH, New York.
- Rouse, Gene, WOAW, Omaha.
- Sartory, Joseph, WCAE, Pittsburgh.
- Salyer, Harold A., WHAS, Louisville.
- Schilling, John T., WHB, Kansas City.
- Smith, Fred, WLW, Cincinnati.
- Smith, Edward H., WGY, Schenectady.
- Stefan, Karl, WJAG, Norfolk.
- Sullivan, Jerry, WOC, Chicago.
- Tomy, C. D., WCX, Detroit.
- Trumbull, Steve, KYW, Chicago.
- Tyson, Edwin L., WWJ, Detroit.
- Uncle Kaybee, WCAE, Pittsburgh.
- White, Major Andrew, WJZ, New York.
- Weidaw, Robert, WGY, Schenectady.
- Whitney, Robert S., WMAQ, Chicago.
- Willets, G. V., WOC, Chicago.
- Wilson, R. H., KDKA, East Pittsburgh.
- Wilson, Walter, KYW, Chicago.
- Witten, J. M., WOS, Jefferson City.

Announcers to Help Out Fans

Because many listeners were having a hard time finding out who was doing the announcing at the various broadcast stations, Radio Digest recently requested the "men behind the mikes" to divulge their identity by some sign when beginning or closing a program. The announcers have been more than willing to co-operate and are unanimous in their consent.

They will hereafter (those who are not already doing so) use either their names, initials, nicknames or some identifying symbol to let the public know whose voice it is hearing. Radio Digest will know what announcer is meant if ballots are marked with these other "signatures."

The complete rules of the contest were given last issue. They will be repeated in an early issue.

WGY Boisclair Organ Program

SCHENECTADY, N. Y.—Organ recitals, Tuesday and Thursday evenings, have been added to the weekly program of WGY here. Every Tuesday at 10:15 p. m. and at 5:15 p. m. Thursday night, Stephen E. Boisclair gives a program of organ music.

The broadcasting station at Madrid, Spain, is now working regularly with two and one-half kilowatts in the antenna.

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Looking Ahead

How to Make Your Own Static-Free Antenna will be told next issue by E. T. Jones in the second article of his series on the underground aerial. His first article this week tells of experimental work that has gone before. You can do your own experimenting after reading next week's contribution by Mr. Jones.

Another Article Devoted to Static Elimination is that by Dr. J. G. Gray, who will tell next issue's readers about the special hook-up he has found especially adapted to warm weather reception. "It defies static," says Dr. Gray. We shall see.

In "The Power Voice of Radio" Paul Edelman covers a great deal of ground in the realm of amplification. He will tell all the beginner wants to know about interstage Radio and audio frequency transformers and their application. Yes, his analogies and sketches will be easily understood, as usual.

Then Too, Don't Forget the week's program in advance from all the more powerful stations, the announcer picture puzzle and the broadcasting station directory will be found in the next issue.

Take Radio Digest with You on Your Vacation

WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

Publisher Radio Digest,
510 N. Dearborn St.,
Chicago, Illinois.

Please find enclosed check M. O. for Five Dollars (Six, Foreign) for One Year's Subscription to Radio Digest, Illustrated.

Name.....

Address.....

City..... State.....



A Wonder in Sales and a Wonder in Performance

Never has any Radio Receiving Set made such a record in the appropriation accorded it by the public. Thousands of homes have been made happy by this little Crosley Model V. In twenty-four days from its first appearance it was selling at the rate of 1,000 per day and hundreds of letters expressing appreciation of its excellent performance assured us that it was a favorite.

One of its two tubes is the noted Armstrong regenerative detector with the hook-up made popular in the Crosley Type V. Added to this is one tube of Audio Frequency Amplification giving loud speaker volume on local stations at all times and on distant stations under fair receiving conditions. Otherwise head phones should be used for distant reception.

This Crosley two tube marvel has been a surprise in the Radio World and has proven the biggest seller on the market today.

There is a Crosley priced for every home

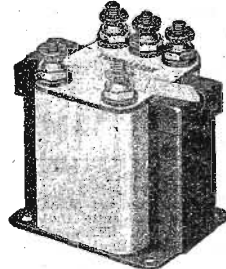
- CROSLY MODEL V—our noted one tube receiver famous for distant reception.....\$16.00
 - CROSLY MODEL VI—two tube receiver incorporating radio frequency amplification..... 24.00
 - CROSLY TYPE B—three tube regenerative set noted for excellent performance..... 32.00
 - CROSLY MODEL X—four tube receiver with radio and audio frequency amplification 55.00
 - CROSLY MODEL X-L—a console set, with loud speaker, built like a piece of furniture.....120.00
- Between these are priced the Super VI, the Super X-J, the S-C Console and others.
- All Crosley Regenerative Sets are Licensed Under Armstrong Patent No. 1,113,149

Before you buy see the Crosley line For sale by good dealers everywhere

THE CROSLY RADIO CORPORATION

Powel Crosley, Jr., President
Formerly THE PRECISION EQUIPMENT CO. AND CROSLY MANUFACTURING CO.
6494 Alfred St., Cincinnati, Ohio
CROSLY OWNS AND OPERATES BROADCASTING STATION WLW

THORDARSON



POWER AMPLIFYING TRANSFORMERS

Price per pair, \$13.00

The new Thordarson Power Amplifying Transformers (push pull) are designed for use as third stage audio frequency amplifiers, to provide high power amplification for operating loud speaking devices.

With power amplification, not only is it possible to increase volume, but, since two tubes replace the usual one, the distortion and howling which usually accompany the overloading of a single tube on the third stage is done away with entirely.

The Thordarson Power Amplifying Transformers are well constructed electrically and are capable of indefinitely carrying the additional load without breaking down.

In total purity these transformers equal the Thordarson Super Audio Frequency transformer whose rich quality and even amplification has made it the popular transformer of the day.

THORDARSON
ELECT. MFG. CO.
500 W. Huron St. CHICAGO

SEES RADIO AS NEW PUPILS' INSTRUCTOR

RADIO MAY BECOME AID TO SCHOOL TEACHER

Researchers Put Forth Theory That Airphone Will Help Advancement Education

OAKLAND, CALIF.—More voluntary attention by a child in school may be secured by aid of Radio, if tests now being conducted in the Oakland public schools and at KGO, the General Electric station in this city, prove to be successful. Dr. Virgil Dickson, research director of the Oakland public schools, has announced that a committee working on the Radio problem is divided into two groups differing in opinions. Group one believes that a lesson by Radio will be limited to a message of special importance by some special speaker who is able to give better than anyone else. This is the lecture type of lesson and will be limited to specialists.

The opinion of group two in that finding points to Radio as a means for giving actual classroom lessons. It is their belief that the Radio teacher may take the place of the classroom teacher and give the same kind of lesson; however, the regular classroom teacher will listen in and point out upon maps, globes or charts, topics referred to by the Radio teacher. The regular classroom teacher will also direct operations of the class and see that the pupils make proper notes as required by the Radio instructor.

Music Helps Keep Pupil Interest

The lecture plan as advocated by group one of the committee has been tried out by broadcasting one lesson in music and another on Indian customs. Returns from various schools listening in indicate that both lessons were successful. Opinions of group two of the committee have not yet been verified, as the test lessons in geography, Shakespeare and commercial arithmetic have not yet been fully tabulated. Under both systems the Radio teacher was assisted by pupils also speaking into the microphone, creating classroom atmosphere.

Attention of the students is held by aid of music. Plans for the Shakespeare lesson included music played for five minutes in the beginning, five minutes in the middle and five minutes at the end of the talk. By this means minds of students and teachers were freshened for the strict attention necessary to grasp the main points in the talk. Five minutes of music in the middle of the lesson enabled slower pupils to catch up with their note taking and relieved the attention of quicker students who had already completed their notes. At the end of the lesson the five minutes of music seemed to rouse the entire class and put them in smiling humor before dismissal.

HAMS EARN TRIP FOR AIDING SHIP

9DOE Saves S. S. Huronic Twelve Hours in Break of Ice Blockade

DULUTH, MINN.—Two Duluth boys recently received their reward for a service rendered the Great Lakes passenger steamer Huronic, when it was tied up in an ice blockade at the entrance to the Duluth harbor for four days this spring.

The boys, Alfred Bergtold and Louis Gonberg, operators of Station 9DOE, Duluth, were in constant communication with the Huronic during the blockade, and by their service enabled the boat to get into port twelve hours earlier than would have been possible otherwise.

The reward came about when W. H. Childersleeve, president of the company owning the Huronic, recently wrote the boys a letter of appreciation, enclosing two tickets, and accommodation passes for a round trip to Detroit on the boat

IDENTIFY HIS RADIO VOICE; CASH CHECK

IOWA CITY, IA.—Prof. Forest C. Ensign of the University of Iowa here was able to cash a personal check in a strange bank in another city recently, with the sound of his Radio voice as his only identification. An officer of the bank recognized Professor Ensign's voice as one he had heard a short time ago giving an address from the University of Iowa Radio station, WHAA.

PAREE RACE CROWDS STALKED BY "MIKE"

PARIS.—While broadcasting the six-day race here recently, several times the listeners were surprised to hear scraps of conversation seeming to come from groups of people, and sometimes quite amusing. No explanation was given at first, but it was found that the announcer, "Radiola," had been stalking the conversing groups with the "mike," while the people were unaware.

PARKING WITH HER PORTABLE



Gladys Smith, a Radiophan reader, sends the above picture to illustrate how she does her "parking" in Forest Park, St. Louis, by listening in on her two-tube portable set, using neither aerial nor ground, but hearing KSD regardless.

PEANUT SETS HEAR SHENANDOAH'S HUM

PICK UP TALK BETWEEN WGR AND DIRIGIBLE

Crystal Outfits Have Their Inning While Giant Craft Hoovers Over Niagara Falls

BUFFALO, N. Y.—For once the owner of the peanut set has had his inning. All owners of crystal sets, homemade sets of every description, single-tubers and the like, please take note.

For when the United States Navy dirigible Shenandoah came to Buffalo recently, the listeners with big, sensitive sets had to dial back and forth from the 319-meter wave of WGR to the 550-meter wave length of the Shenandoah as it hovered over Niagara Falls and Buffalo, while all those with the cheaper sets had to do with to tune for the Shenandoah and they would get WGR, as usual, without so much as attempting to tune.

It was this way: WGR and the operator of the Shenandoah carried on a friendly conversation back and forth for nearly an hour while the Shenandoah was in the vicinity and fans in the vicinity got the thrill of their lives listening to this conversation in the air, out of the air.

Fans Hear Shenandoah Motors Hum

This aerial tele-a-tete between WGR and the Shenandoah followed the operator of the Shenandoah giving WGR some official and personal messages for transmission to Washington, Lakehurst, N. J., and other points. Buffalo was the farthest inland point of the Shenandoah's twenty-four hour trip away from its hangar at Lakehurst. It came up the Hudson river and broadcast messages from President Coolidge congratulating Albany on its three-hundredth anniversary, which it was then celebrating.

After Albany the Shenandoah came straight west to Buffalo, circled around over Niagara Falls at an elevation of 2500 feet, followed the Niagara river to Buffalo, circled over the city's business district a few times and then bore off directly for the southeast to Lakehurst.

One of the stunts that thrilled the fans for thousands of miles was the placing of microphones from WGR on the roof of the Hotel Statler so that they could pick up the hum of the Shenandoah's motors as it flew low over the hotel. This had been arranged ahead of time. The Shenandoah came as low as safety would permit.

Listener Ballots Will Keep Lopez on WGR

Hotel Statler Settles Summer Dance Music Question

BUFFALO, N. Y.—Vincent Lopez Hotel Statler dance orchestra will continue to broadcast from WGR throughout the summer. Here is a grand and glorious case of majority rule. The "ayes" have it.

There was a time weeks back when the management of the Hotel Statler questioned the wisdom of continuing the music of the famous orchestra throughout the summer.

So the public was given the opportunity of voting on the proposition in the hotel dining and grill rooms and WGR announcers asked Radiophans what they thought about the matter. Figuratively there was a thunderous roar of "ayes" and the "ayes" have it their own way.

WLW Takes Home Coming Prize

CINCINNATI.—First prize in contest number 1, conducted by Kentucky's 1924 Home Coming broadcasting contest, was won by Fred Smith, studio director of Crosley Radio Corporation station WLW. This contest was started in order to secure a list of native Kentuckians who now reside outside of the Blue Grass State.

Seven publications are devoted exclusively to Radio manufacturers' and dealers' problems.

this summer. The trip will include stops at the important islands in the lakes, at the Soo canal and entertainment in Detroit.

Rev. Dr. E. W. Rice at WGY

SCHENECTADY, N. Y.—Rev. Dr. Edwin Rice, ninety-three years old, delivered a sermon on "Tyranny or Toleration in Religion" from WGY recently. Dr. Rice was in Schenectady to attend the seventieth reunion of his class, 1854, at Union College here.

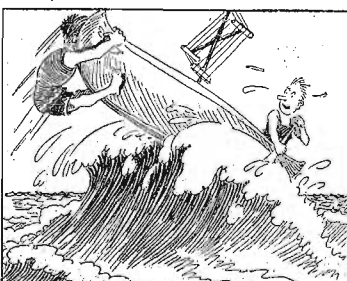
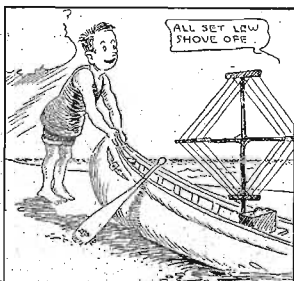
National Press Club Hears G. O. P. Wrangle by Phones

WASHINGTON.—While the majority of Washington newspaper correspondents attended the Cleveland Republican convention in their line of duty, there was of necessity many who were unable to attend. The latter did not lose a great deal of what was going on however, because a loud speaker was installed at the National Press club where every move of the convention was produced.

THE ANTENNA BROTHERS

Spir L. and Lew P.

He Does Get One Sometimes



NEW LARGE STATION FOR SALT LAKE CITY

LOCALLY FINANCED PLANT BOASTS 500 WATTS

Equipment Has Unique Features—Eliminates Carrier Wave Hum and Controls Tone Values.

SALT LAKE CITY, UTAH.—There was recently opened in this city what is declared to be the equal of any of the most powerful broadcast stations in the west. It is located on the roof of the Deseret News building. The station, financed locally, represents an outlay of \$25,000.

The new station embodies a number of original features. The transmitter has an output of 500 watts, and with a few exceptions, is as powerful as any station in the nation. Some of the distinctive features are the entire elimination of an audible carrier wave and an input amplifier of original and exclusive design which affords very close control of the tonal values.

The amplifier can be made entirely to eliminate or reject low frequencies such as the surface noise from a phonograph. Leading engineering authorities pronounce it a distinctive contribution to the field of Radio transmission. A costly studio has been installed in the News building where acoustic requirements have been taken care of admirably.

TO SELL GIANT PLANTS

(Continued from page 2)

power. The third Hoover Radio conference, to be held in July or August, will in all likelihood sanction the use of the high power, super Radiocasts, providing those stations are located at distances of ten miles from large centers of populations so as to prevent disagreeable interference.

Will Help Distance; Smaller Set

Radio engineers who have made a study of the science, believe the large stations will be an inestimable boon to the industry. They say that whereas the average broadcast listener desires to hear distant stations when these have some especially interesting features on their programs, the permissible power of the stations is not now sufficient to carry

THROW YOUR OWN PORTABLE AERIAL



Portable set aeriels are easy enough to erect—if one knows how. Here a Boy Scout has volunteered to demonstrate. Tie a weight to the end of a fifty-foot length of single lamp cord, and toss the end over a convenient bough.

Foto Topics Photo.

through great distances without "fading" or becoming so weak as to be unsuitable for reception.

Less powerful receiving sets will have their inning, too, at long distance programs, it is claimed. The design of receiving sets, however, will not be influenced by the erection of the giant Radiocasts, is the prediction.

To Cost Between \$40,000 and \$80,000. The large stations, which will send into their antennas five times as much power as the larger stations use now and ten times as much energy as the standard 500-watt equipment used by many class B stations today, will cost between \$40,000 and \$80,000. They are

to be manufactured by the Western Electric company, a subsidiary of the American Telephone and Telegraph company. While an official statement describing the apparatus has not been made, the equipment to make up the giant Radiocasts is said to be:

One 5A (Western Electric) input line amplifier; one 50-watt speech amplifier; one 1,000-watt speech amplifier (audio frequency).

The apparatus named above will modulate one five-kilovolt tube used as an oscillator in a Meissner circuit. Heissing modulation will be employed.

While the style of five-kilovolt tube has not been decided, it is likely that a water-cooled one will be used. The high voltage direct current, so necessary to feed the plates of the tubes, will be supplied by a bank of kenetron rectifiers.

Station KGO Gives Lessons in Spanish Every Evening

OAKLAND, CALIF.—Look at a picture in your newspaper. Then tune in on Station KGO and hear the Spanish name for the picture. In this way learn the language. Oscar Galano is the inventor.

Directs 30,000 Fans in Morning Exercises

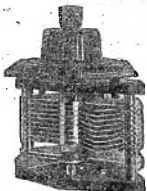
WWJ Athletic Director Gets 1,000 Letters in Week

DETROIT.—R. J. Horton, athletic director for WWJ has one of the largest class of health enthusiasts in the world. At the present time more than 30,000 are joining with him every morning at 8 o'clock for their regular setting-up exercises.

During the last week Mr. Horton and his pianist, Mrs. Lester Manning, have received more than a thousand letters from persons throughout the middle west expressing appreciation for the benefits derived by their participation in the morning exercises.

It is learned through these letters that mothers, with little children sitting in their high chairs, are taking their recreation each morning under Mr. Horton's direction. One woman has written: "Please tell the housewives to take time for these exercises as they can more than make up during the day in feeling fit for the day's work."

Plain type: 3-plate, \$1.25; 5-plate, \$1.50; 6-plate, \$1.75; 2.3-plate, \$2.50; 48-plate, \$3; at dealers.



Vernier type: 13-plate, \$4; 23-plate, \$4.50; 42-plate, \$5.50; at dealers.

OH SO PROPER!

—Never "Shimmies"

Its plates—instead of being spaced by wearable washers, solder, etc.—are accurately pressed, aligned and permanently locked in stout slotted studs securely set in 3/16" Bakelite end plates. There's no jazz orchestra on the air that can make 'em wiggle or cut loose.

WALNUT VARIABLE CONDENSERS

Record-holders for low losses, too. Look for trouble last in a Walnut Condenser. Standard on leading sets. Ask your dealer first, please. Radio folder free.

"Makers of good goods only" **WALNUT ELECTRIC MFG. CO.**

Dept. 441 CHICAGO

UV-200



"The detector tube supreme." Noted for stability, long life, and uniformity. A six-volt standard base tube for any receiving circuit.

Radiotron UV-200 with its long distance reception—clearness—and good volume—is the basis of many a receiver's splendid performance.

Radio Corporation of America

Sales Offices—Dept. 316
233 Broadway, New York

10 South LaSalle St.,
Chicago, Ill.

432 California St.
San Francisco, Cal.

This symbol of quality is your protection.



Radiotron

REG. U. S. PAT. OFF.

The GREBE TANGENT WHEEL VERNIER

Grebe Regenerative Receivers are licensed under Armstrong U.S. Pat. No. 1,113,149

—for "Hair's breadth" Dial adjustments

A Device found only on GREBE Receivers

THE man who has once operated a Grebe Receiver reaches instinctively for the Tangent Wheel Verniers on every other receiver he thereafter tunes.

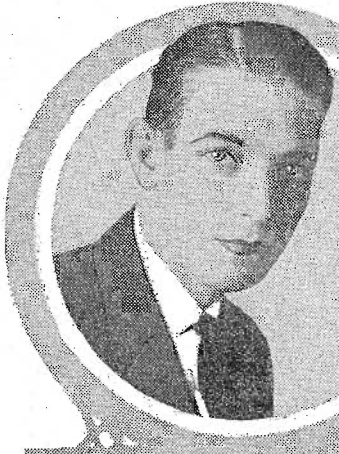
This and other details of Grebe craftsmanship are fully covered by patents granted and pending. Inspect these details at your dealer's today.

Doctor H.

A. H. GREBE & Co., INC.
Richmond Hill, N. Y.
Western Branch, 451 E. 3rd St.
Los Angeles, Calif.

BEFORE THEY THOUGHT OF "MIKES"

The lad in the kilties had this photo taken in 1891 when he was in Dumfries, Scotland. His station is most unique in its operation. Sure, we'll tell you who he is next week. Below is the boy who appeared last week in the right circle dressed in a sailor blouse, none but our beloved Jack Nelson of WDAP which recently became WGN.



Jack Nelson, WGN
GO. LANE, Go." Whenever you hear about a thousand kids singing that song ask any one of them who wrote it, and the answer will be, "Jack Nelson, announcer at Station WGN."

Born and raised in Chicago, he decided at the age of seven years to throw John Philip Sousa out of a job, and started in to study music and fulfill his one cherished ambition. His mother managed some way or another to keep him at the piano a few minutes each day, in spite of the "Yoo-hoo, Skina-a-ays" penetrating the quiet atmosphere of study, extolling the lure of the baseball diamond, or the bicycle.

His father died when he was ten years of age; the study of classical music was abandoned, and playing of dance music gradually began to be of assistance financially.

When a senior in the Lane Technical high school, he founded and was the first editor of the Lane Tech. Daily, which was at that time the only high school daily paper edited and printed entirely within the walls of a school building.

While in Williamsburg, Kentucky, the war fever got too high, so he hurried home and enlisted as a gub at the Great Lakes naval training station. While playing in the Y. M. C. A. one day, the officers took pity on him and put him in the officers' school where he received his commission as an ensign, being retained as an instructor in the school.

After the war he became acquainted with J. Elliott Jenkins, who at that time was one of the owners of Station WDAP, who invited him to play. This eventually led to his being appointed the program director. Since this station has changed hands and call letters, he still holds down the same old job with the same old enthusiasm.

Draw Too Large Crowds

WASHINGTON, D. C. — During the broadcasting of the Republican convention at Cleveland, the local police put a stop to street loud speakers used by some of the Radio shops here. Several of the shops were attracting the attention of large crowds. It is understood that other merchants complained that this was keeping away their customers.



John S. Daggett, KHJ

THE young hopeful whose soul-windowed, thoughtful expression was presented on this page last week, first saw the light of day in Kansas City, Missouri. As a youth, he engaged in the usual activities which interest the average boy.

It was in 1895 while in college that he received his first check from the Los Angeles Times for reporting tennis events. For three years, while in Stanford university, he contributed a weekly news letter to the Times.

Being a person who shuns publicity to the extent that eight months passed before he allowed his name to be given or his photograph to be published, "Uncle John," as he is more commonly known, was reluctant to be interviewed. However here goes:

Height: medium; weight: the average; complexion: neither light nor dark; eyes: gray-green; hair: iron gray; age: about

WGR and Its Manager in Twin Birthday Celebration

BUFFALO, N. Y.—The secret is out! Have you noticed the fresh pep that is evident in WGR programs and announcing recently?

The station has had its second birthday.

Not only did WGR have a birthday, but so did M. A. Rigg, Jr., general manager of the station. Both birthdays come on the same day, May 19. Mark it down in your Radio log and send the station a birthday cake next year.

Mr. Rigg is as reticent about his age as a third degree splinster. No one knows why. He looks to be—what shall we say—about twenty-four and unmarried. But he is probably a trifle older, maybe twenty-eight or thirty. (And he actually is married.)

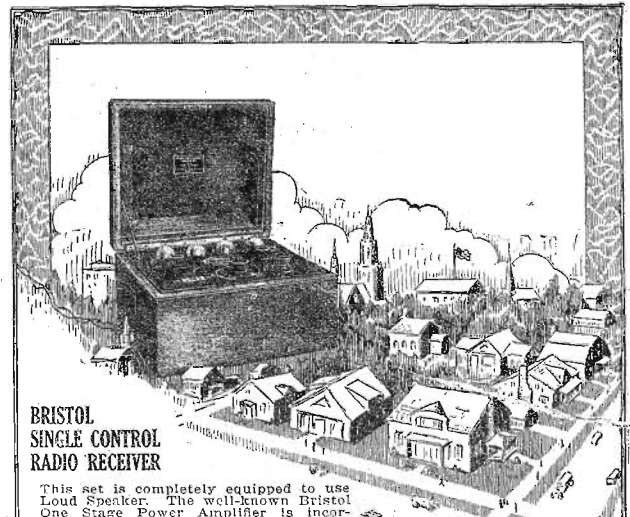
An amateur in Pyrenees district, France, claims with only two tubes to receive nightly the American stations WGY, on 105 meters, and KDKA, both on loud speaker.



No, the gentleman at your left is not a girl, although he has on dresses. His last name denotes a useful kitchen utensil and he announces in a city famed for its smoke (that includes too many locations, we're afraid). Guess who? And below is "J. D." of last issue, which stands for John Daggett, "Uncle John" of the famous KHJ.



he returned and took up journalism. Through experience, the realization that adversity is a hard taskmaster, but a teacher of the truth has revealed to "Uncle John" that constructive service should be a part of everyone's life and aside from the regular work attached to the management of a successful broadcasting station, he is devoting his time and effort that the "mike" may become an avenue of expression and service through which knowledge from world centers, humor of all nations and judgment may inspire humanity into higher unfoldment.



BRISTOL SINGLE CONTROL RADIO RECEIVER

This set is completely equipped to use Loud Speaker. The well-known Bristol One Stage Power Amplifier is incorporated as the last stage of amplification. The Bristol Single Control Radio Receiver is designed to get satisfactory results with Antenna or Loop, and in most cases short antenna. The case is solid mahogany walnut finish. A suitable piece of furniture for the finest home. The price of Bristol Single Control Radio Receiver is \$190.00. This does not include accessories such as tube, battery, and Loud Speaker.

AUDIOPHONE LOUD SPEAKER

A Real Reproducer of the Original Broadcasting It is easy to listen to the Audiophone reproductions because they are so perfect. The speech, songs and instrumental music are not blurred or disguised by mechanical distortion. No auxiliary batteries are required for magnetizing. Made in three models—Senior \$30.00, Junior \$22.50, and Baby \$12.50.



THE BRISTOL COMPANY
 WATERBURY, CONN.

NOMINATION CERTIFICATE

Announcers' Contest

Radio Digest First Annual GOLD CUP AWARD

GOLD CUP AWARD Editor, Radio Digest, 510 N. Dearborn St., Chicago, Ill.

Dear Sir:
 I nominate

Station Broadcasting Station

Signed

Address

Town State

AN EVENING AT HOME WITH THE LISTENER IN (SEE INSTRUCTIONS FOR USE BELOW)

Table with columns for Station and City, Met., Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. Lists various radio stations and their broadcast times.

Instructions for Use.—All the hours above are given in Central Standard Time. If your city uses Eastern Time, add one hour to each of the periods stated. If your city uses Mountain Time, subtract one hour; if your city uses Pacific Time, subtract two hours. If in addition, your city uses daylight saving time, add one hour to this result. This table includes only the evening broadcasts, and, on Sunday, the late afternoon program.

STATIONS IN ORDER OF WAVE LENGTHS USED

Table with columns: Meters, Call, Meters, Call, Meters, Call, Meters, Call, Meters, Call. Lists stations grouped by wavelength.

Four Radio Heroes in Sea

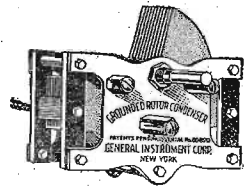
Disaster Praised by Chief WASHINGTON.—The four naval Radiomen, who stood by with the late Captain Sparrow of the unfortunate Cruiser Tacoma, when she was broken up by heavy seas in January, after grounding near Vera Cruz, Mexico, have all been commended by Secretary Wilbur of the Navy for conspicuous courage, devotion to duty

and disregard of personal danger. Of the four gallant operators who endeavored to maintain communication with shore stations, only one, Chief Radioman Joseph V. Cooper, U. S. N., of Buffalo, N. Y., remains alive, the other three having perished with their skipper in line of duty.

A good aerial and a fair receiver will do as good work as a poor aerial and a good receiver.

BUILT BY RADIO ENGINEERS FOR THOSE WHO DEMAND THE BEST. Great selectivity—no static—quality reception. Lincoln RADIO PRODUCTS. Many Advantages. Lincoln Collapsible Loops offer many advantages, appreciated by Radio Engineers and Radio enthusiasts. Wave length range with 23 plate condenser is 160 to 800 meters. H. F. Resistance at 400 meters—only 7 ohms. Wire is stranded, flexible and of great tensile strength and high conductivity. Inductance 3 millihenry. At your dealers. Tapped Loop \$8.00 Without taps \$6.50. If your dealer cannot supply you, order direct, giving us his name. Lincoln Radio Corporation, 224 N. Wells St. Chicago, Illinois

To Attain Results (From the instructions of a Professor of Radio Engineering to his pupils) such as no other variable condenser will produce You Must Use THE LOW LOSS GENERAL INSTRUMENT CORPORATION GROUNDED ROTOR CONDENSER



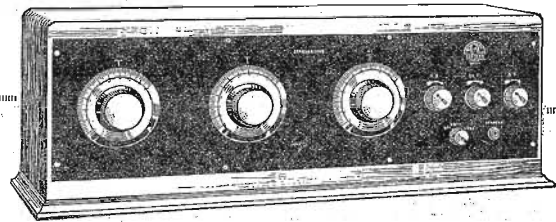
By reducing losses in your receiver you add selectivity, volume and unexpected distance Discard your old condenser and replace it with the new Low Loss General Instrument Grounded Rotor Condenser—then you will appreciate the value of a Radio Professor's recommendation.

Table with columns: Type, Plate, Minimum, Maximum, Price. Lists specifications for different condenser models.

AT YOUR DEALER Otherwise send purchase price direct to us and you will be supplied. GENERAL INSTRUMENT CORP. 423 Broome Street NEW YORK CITY

Forty Stations Have Patent Licenses Now A.T.&T. Gives Report on Negotiations with Infringers NEW YORK.—The American Telephone and Telegraph company has announced that more than forty broadcasting sta-

tions throughout the United States, formerly infringing, had taken licenses under the A. T. & T. patents. Inquiries in regard to licenses and applications for licenses to licensees and applicants in considerable numbers, it is said. Licenses under the patents of the American Telephone and Telegraph company are being granted to broadcasting stations now infringing their patents under conditions which have been generally accepted as fair and reasonable.

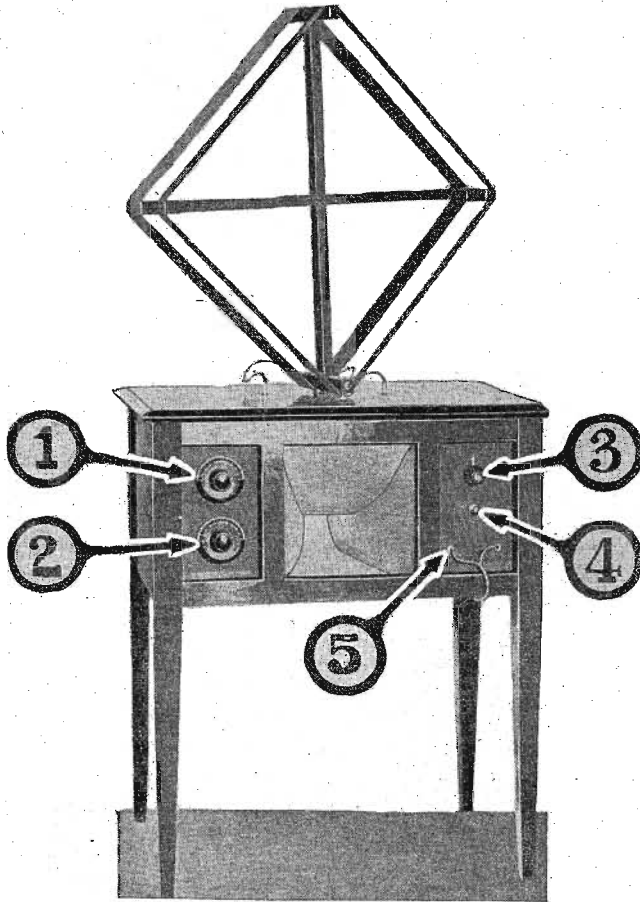


THE ANDREWS DERESNADYNE—Patents Pending DE-RES-NA-DYNE RECEIVER

The Latest Achievement in Radio Reproduces all tones with true fidelity, remarkable purity, and, if desired, with tremendous volume. Highly selective, with a super-sensitive reach for far distant signals. Write for further information and for DERESNADYNE article from the Chicago Daily News—the only unqualified endorsement ever given by this publication to any radio receiving set.

ANDREWS RADIO COMPANY 506-7 Webster Building Chicago, Ill. Exclusive territory in your locality open to foremost jobbers and dealers only.

OPERATING AND TROUBLE SHOOTING



For the Owner of a Trans-Continental Radiophone

THE Trans-Continental Radiophone is a three-tube set. Besides being a wonder when it comes to reception, it makes an excellent appearing piece of furniture for the parlor of the home. The circuit used, has been designed expressly for this set and works very satisfactorily. When this set is received from the manufacturers it is complete with tubes and batteries so that nothing extra has

to be bought to make it work. It's all there, including the loop aerial and loud speaker.

Loop Aerial

The loop is wound with a wide and a narrow band of wire. Place the loop on the top of the cabinet so that the wide band is on the left side. The connection from this band is placed in the jack on the left side, the center connection is placed in the center jack, and the connection from the narrow band is placed in the jack on the right side.

Two short wires hanging down from the bottom of the cabinet are forced into the jack marked 5, on the lower part of the right panel in connecting up the loud speaker. When tuning in it is best to use the phones. To do this, remove the loud speaker cord tips from

the tip jacks on the right panel and insert the phone tips in these same jacks.

Tuning Operation

In tuning the set, you will notice the battery switch 4 in the center of the right hand panel, as soon as you have your connections properly made, push this switch in and you will see the three tubes light up, indicating that the current is on.

Turn the rheostat 3 slowly to the right until you hear a roaring sound as the tubes spill over, that is, a noise like the frying of eggs. Then slowly turn the rheostat back to the left until the noise is inaudible. This is the proper point for getting the maximum efficiency from the set.

Immediately after having adjusted the rheostat, set the lower left dial 2, with the figure 10 directly in the center at the top. Then turn the top left dial 1 slowly backwards and forwards until a whistle is heard. This whistle indicates a "carrier wave" from some broadcasting station. Stop turning the upper dial when it rests directly at the highest sound of the whistle, or where the whistle is strongest. This necessitates moving the dial just a fraction of an inch at a time.

Now turn the lower left dial 2 backwards and forwards. You will notice the whistle will increase in sound volume, then decrease, then increase again. Stop exactly between the two sound pitches of the whistle. If you do not yet receive a clear reception from the broadcasting station, turn the rheostat 3, on the right panel, very slowly right or left till a perfectly clear tone is secured.

Arbitrary Tuning Directions

In tuning in long distance stations, patience is necessary in "adjusting" dials 1 and 2, and also in learning to hear, just the same as learning to hear over the telephone. In other words, you may hear varying sounds immediately after getting in directly on the station, but these sounds will "clear" shortly and you will hear music or the announcement of the station. If you hear a series of short low whistles, this is merely some other Radiophon "tuning in" across your wave length and will clear very quickly.

Once a station is tuned in clearly, remove the head phone tips and insert the loud speaker tips in the right panel jacks. Do not alter the inside connections, as everything is placed in its proper position. The only necessity for touching the inside

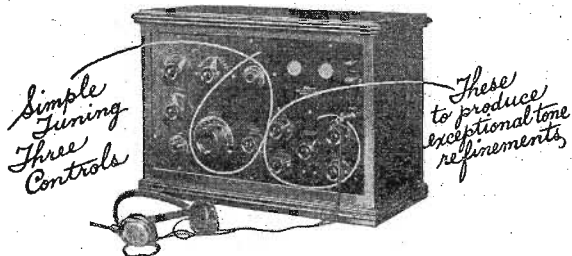
OPERATING and Trouble Shooting is a Radio Digest feature whose purpose is to study the late models of various standard receiving sets and to show the newly initiated broadcast listener, who has purchased such a set, how he can operate it to get the best there is in it and how he can overcome minor difficulties which may be causing some trouble. On pages 7 and 8 this week the Trans-Continental Receiver is described. Radiophans with other sets will also find these articles worth while reading, particularly the notes on trouble finding.

connections would be to change batteries or tighten any loose nuts. If this is necessary, be sure to take off the connection between the two dry cells and the two square B batteries on the left side. This will prevent danger of burning out the three tubes on the right side. The tubes being UV-139's, use only 3 volts for the filament or A battery. The B battery should be 90 volts. Therefore the tubes would be burned out in a fraction of a second if they were "shorted" by mistake.

If desired an outside aerial may be used with this set. A drawing showing the necessary changes comes with the set so that it is a simple matter to convert it over.

Outside Aerial

The aerial should not be over 100 feet long, with as short a lead-in wire as possible. The lead-in, instead of going direct to the set, should go to the movable plates of a 23-plate condenser, while the lead from the stationary plates should go to the jack on the left side of the loop. Ground wire, not less than number 14 gauge copper, should be run from the center jack to the ground. A good ground connection is necessary with practically (Continued on page 8)



IT HAS been the tradition of the Federal Company, over its 25 years in manufacturing Electrical Communication Equipment, that it must give its users the highest refinements of the art.

Federal tradition will not permit the manufacture of a radio set just for radio noises. Each and every manufacturing necessity to produce a harmonious set is known to Federal Engineers, and no Federal set is produced without them.

Federal radio sets are built with two thoughts in mind—first: simplicity of operation, but three controls being necessary—second: special controls for refinement if the user is interested in reproducing all the beauty of tones that fill the air.

"Lovers of good music" know why Federal is better, and know the real value of the refinement placed at their command to make it easy to obtain the clearest tone reception.

FEDERAL TELEPHONE & TELEGRAPH CO.
Buffalo, N. Y.



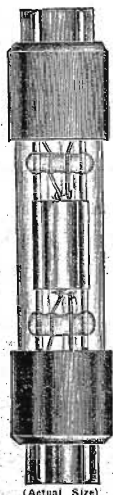
Federal

Standard RADIO Products

Boston
New York
Philadelphia
Chicago
Pittsburgh
San Francisco

Bridgeburg
Canada
London
England

Look for this sign



Montreal-California

(More than 2,500 miles)

ON ONE MYERS TUBE

Remarkable radio reception is an everyday result with MYERS TUBES. Mr. W. E. Gerrard, 73 Pine Avenue, St. Lambert, Montreal, Canada, with a set designed and constructed by himself, and using only one MYERS TUBE, heard KDZB, Bakersfield, California, without noise or interference.

Get distance with clarity. MYERS are the only tubes correctly designed for radio—without bunched leads. Two types—for dry or storage battery. Insist on MYERS at your dealer's—otherwise send purchase price and be supplied postpaid.

\$5 EACH Complete with mounting clips ready to mount on your set; no sockets or extra equipment necessary.

E. B. Myers Co. Ltd.
Radio Vacuum Tubes
240 CRAIG ST., W.
Montreal, Canada

WJZ CREATES NEW KIND OF AIR-PLAY

OMNI-ORAL PRODUCTIONS WIN FANS' FAVOR

Entire Play Broadcast in Series of Acts, Each a Complete Sketch in Itself

NEW YORK.—"Omni-Oral Productions," the latest innovation created by Station WJZ, Radio Corporation of America, has won to gain a niche in public favor. Three of the new type of performances, given during the past week, have shown Radiophans what can be done without the aid of vision, and have whetted the appetites of the members of the unseeing audience for more.

The basic principle of the omni-oral productions is to give a Radio play which is a unified whole, but each act of which, though an integral part of the entire play, is complete in itself. Thus listeners who happen to tune in to but one act do not miss the continuity.

Proceedings of Performances
The first production, broadcast at 8:30 p. m. Eastern daylight saving time last Tuesday, Thursday, Friday and Sunday, were "A Night with the Conquistadores," "A Night Out of the Past," "Sport" and "A Night at the Opera," respectively. Each lasted till 10:30.

An instrumental overture of five minutes length opens each performance, and allows Radiophans to tune in. Next comes a prologue, explaining the locale of the acts to follow. Then come the various episodes comprising the evening's performance, each of from fifteen minutes to a half hour duration, varying from its predecessor in type but dove-tailing in atmosphere and color with all the others. To the announcer remains the task of creating the mental-picture scenery to aid the listeners in "attending" the new type of performance.

Olympic Stars on Air

PARIS.—Present plans for broadcasting the Olympic games do not include the broadcasting of every contest step by step. It is proposed instead to pick out several of the better athletes and to give full descriptions, via the microphone, of their performances in the sports which they enter.

GOLDEN TROPHY FOR ANNOUNCER AWARD



Above photo shows the Radio Digest's First Annual Gold Cup which will be awarded to the world's most popular announcer. This will be decided by the Radio public at large by popular vote.

OPERATION, TROUBLES

(Continued from page 7)

any set to assure maximum reception. Many undesirable noises which cannot be traced are often due to poor ground connections.

Trouble Shooting

In shooting trouble in this set, which will not amount to very much, the first thing to look for is battery trouble. Nine times out of ten, the reason a set refuses to function is because of run down batteries. Purchase a pocket voltmeter. This will tell you just what condition your batteries are in. The two dry cells should register 2 volts total when new. As soon as they drop to 1½ volts throw them out and get two new batteries.

The B batteries should register 46 volts each when new. When they read 36 volts don't expect them to work very well. Renew them at once. Never connect an old battery and a new one together, the run down battery will pull the voltage of the new one down in a very short time.

If your batteries are in good condition and the tubes refuse to light, or else the signals are very weak and erratic, use your finger or a hairpin to lift the springs

In the bottom of the tube sockets, sand-paper very lightly the bottom of the tube prongs and then try out the set.

Logs 242 Broadcasters

LAKE LINDEN, MICH. — William Benedict of this city claims the local

reception record, having logged 242 broadcast stations, using a regenerative set and three steps of audio amplification.

Twenty-five thousand retail stores of various kinds in the country handle Radio receivers and accessories.

Thrills from Radio

No. 22 of a Series Featuring Experiences of "ALL-AMERICAN" Users

Dad Receives Los Angeles from Connecticut on Loud Speaker

By Alvin J. Morlan, Hackensack, N. J.

"I recently completed a 3 honey-comb coil set for my Dad, and a multirange loose coupler for myself. Both sets have two stages of audio, using All-American Transformers Ratio 5 to 1, with UV 199 tubes and 90 volts on the plate. "My Dad's set, in Meriden, Conn., has received Los Angeles on a loud speaker while my test has been Porto Rico. "No fixed condensers of any kind are across the primaries or secondaries of the transformers and none is needed. The reception is clear and without any howls or squeals."



All-American Audio Frequency Transformers. Come in these ratios: 2:1, 3:1, 4:1, 5:1, 10:1, 15:1. The best—no necessity to buy more.

"I build sets and you can bet All-American Transformers are all I use. I thank you sincerely for the joy and pleasure you have given me through your faultless transformers."

Thank you, Mr. Morlan, for your expressed appreciation. This company values very highly the good-will of men in radio who know good apparatus.

SPECIAL OFFER

Just out! New All-American booklet, "How-Ups and Hints"—32 pages of up-to-the-minute radio information. Tells you how to hear farther and better. Send 16c, coin or stamps. Worth a dollar.

All the better dealers sell the "ALL-AMERICAN"

RAULAND MFG. CO., 2640 Coyne St., CHICAGO
PIONEERS IN THE INDUSTRY

Audio and Radio Frequency; Power Amplifying (input and output)



Over three-quarter million in use. Standard on the better sets

ALL-AMERICAN AMPLIFYING TRANSFORMERS

Largest Selling Transformers in the World

"Please Be Patient"

THE THIRD EDITION of our great descriptive circular is now coming from the printer. If you are one of the more than 22,000 fans who have written in and have not yet received your copy, please expect it by early mail, and kindly accept our regrets and apologies that we did not sufficiently prepare for the demand.

The "brains" of this kind of sets is the coil—the most phenomenal coil in radio history. Special Litzendraht wire is used on the primary, the rotor and on the secondary. The contacts are self-cleaning and self-

adjusting through gold-plated phosphor bronze compensating springs—the most perfect contact known, eliminating all disadvantages of pigtails. Antennae and grid circuit are separated, giving maximum selectivity and no re-radiation, as in case of coils where antenna and grid circuits are wound together. The primary has no taps being untuned or aperiodic, and the coil replaces all variometers and variocouplers with increased efficiency. No unsightly panel. No dead-end loss. Regeneration is one-dial control. The all-Litzen-draht-wound coil gives the volume of a single circuit

plus the super-advantages of a three-circuit that is unmatched.

Here is your ideal portable which can also be used at home. The amazing performance—selectivity, and volume on loud speaker, dwarf all description. The insidious aggravations of resistance are due to the greatest possible degree absolutely overcome. "Dying signals" are almost unknown, and extraordinary distance reaches the detector faithfully and clear, repaying your investment over and over again.

- SET CONSISTS OF**
- 1 DRILLED 7 x 10 Radlon Mahogany Case, engraved in Gold.
 - 1 Genuine Ambassador Master 8-Circuit Litzendraht Tuning Coil.
 - 1 Genuine Comsco Bakelite-End Condenser.
 - 1 Triploid Mounting Socket.
 - 2 Premier Hegehog Audio Transformers.
 - 4 Brunswick Under-slung Foundation Brackets.
 - 2 Brunswick Jacks with Gold-Plated Fronts; 1 for phones; 1 for loud speaker.
 - 1 Freshman Mic & Grid Condenser.
 - 1 Standard Glass-Enclosed Grid Leak.
 - 2 50-Ohm Shackton Bakelite Rheostats.
 - 2 Moulded Mahogany Dials grained to match panel.
 - 5 Lengths Professional Round Bus-Bar.
 - 1 Set of 7 Moulded Engraved Binding Posts completely mounted.
 - 1 Special Blue Print for this circuit, not an ordinary hook-up, but in clear picture form child can understand and make. Assembled ready to wire, and packed in handsome box, complete. Only \$25.95 C. O. D.

Scoring Committee of Philadelphia, Pa., hears 49 stations from Cuba to Los Angeles sign off in 8½ hours.

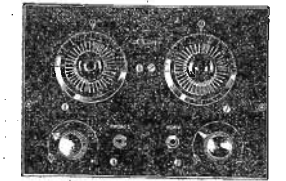
Wins Competitive Distant Test of "New York Evening World." The only PERFECT score.

- ACCESSORIES**
- Everything needed to operate after building is listed here—
- 3 Type 201-A Tested Tubes\$11.70
 - 1 60-Ampere Hour Storage Battery\$11.25
 - 2 45-Volt Extra Large Enco "B" Batteries\$6.50
 - 1 pr. 3000-ohm Head Phones and Cord\$3.75
 - 1 Phone Plug, Double\$.90
 - 1 Antenna Equipment\$1.50
- Complete outfit, \$35.60 (Parts Also Sold Separately)

SELENDID CABINET FREE
Order Building Kit and Accessory Outfit both together, and we will send Fine Mahogany Finish Cabinet FREE.

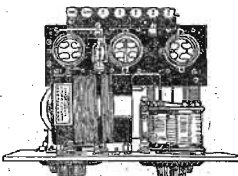
THE NEW DE LUXE AMBASSADOR MAKES NEW RECORD

SHIPPED TO YOU AS A COMPLETE 3-TUBE ASSEMBLY ALL READY TO WIRE All Mounted as Picture Shows Below



\$25.95

C.O.D. Send No Money



The RADIO-SHACK
LARGEST RADIO DEALERS IN AMERICA
Executive Office, Dept. RD-623,
55 VESEY ST., NEW YORK CITY
Every Article Sold on WRITTEN Money Back Guarantee

London, England. (2L) Ambassador checked by radio editors of "Philadelphia Inquirer" heard loud and clear.

50 stations called between points 10 and 89 on condenser dial; 9 between 14 and 20; 11 between 41 and 48. Then logged dial; on same points.

Have tuned-in and tuned-out without interference thru a (3) 860 wave length stations broadcasting simultaneously.

Fits snugly Behind a 7x10 PANEL
SPECIAL SUIT CASE CABINET

SEND NO MONEY

We ship C. O. D. Pay your postman. Then enjoy your set under our WRITTEN Money-Back Guarantee sent with shipment. We acknowledge all orders by return mail. Ship same on following day. We answer every letter we get on same day. The Radio Shack are the Largest Radio Dealers in America. No inferior goods. Only the best and most reliable. You buy in party. Send your C. O. D. order today. Use the coupon NOW.

Free Illustrated Circular of "The Luxe Ambassador" Here X

If I have marked a cross in UPPER square at left, send the De Luxe Ambassador, etc. C. O. D. If I have marked a cross in CENTER square send Complete outfit with Operating Accessories, \$35.60, C.O.D. If I have marked a cross in LOWER square send Suit Case Cabinet, \$12.00. Send nothing unless CASH INET FREE if I have ordered set and complete accessories together. Everything ordered subject to your WRITTEN Money-Back Guarantee.

Mark X here ONLY if you want D.L. Amb. Set \$25.95

Mark X here ONLY if you want A.L. additional accessories.

Mark X here ONLY if you want Suit Case Cabinet

Name (Print Plain) _____
Address _____

Wednesday, June 25

Silent night for: KFAE, KFSS, KGO, WAAW, WBAW, WEAQ, WFAA, WFI, WGY, WIP, WMC, WQAW, WSAI.

CHYO, Montreal, Can. (Eastern, Daylight, 341), 9 p. m., special Canadian National Railway.

GRCH, Ottawa, Can. (Eastern, Daylight, 433), 6:30 p. m., Chateau Laurier orchestra; M. Leduc, tenor; E. W. Nixon, tenor; Marjorie Henderson, soprano; "How Death Hurts in the Death," Frederick K. Romer; Charles Watt, baritone; Helen Lundeen, contralto; C. C. Halliway-Fuller, pianist; Chateau Laurier orchestra.

KQV, Winnipeg, Can. (Central, 450), 1 p. m., "City Bust," Dr. Biaby.

KDKA, Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Daughters' orchestra; 6:30, Pittsburgh Athletic association orchestra; 6:30, children's period; "Peter Piper will tell of a cherry tickle in some places"; 8, City Choral club of Ingram, "Hawaitha's Wedding Feast"; KDKA Little Symphony orchestra; Vincent Kron, tenor; neerer sprituous; Gertrude Hayes King, soprano; Mrs. White, accompanist.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Evening Herald concert; 9-10, Examiner concert; 10-11, Hollywoodland orchestra; 11-12, Ambassador Ocaeno; Grove orchestra.

KMNF, Sheboygan, Iowa (Central, 266), 7:30 p. m., musicals; Angelo, con. director, 393.

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., dance music, Frontier 5-piece orchestra, L. Nist, director.

KFSQ, Los Angeles, Calif. (Pacific, 278), 8:20-9:20 p. m., divine healing services; cheery songs for shut-ins; altar call and prayer for sick and afflicted; 6:30-7:30, "Krazy Hour," Francis Peto, by Mrs. Oswald; W. G. Axworthy, cellist; Annie Lacey, child soprano; A. J. W. Galbreath, basso.

Headliners of the Week

THIS week the Radio programs of KDKA, KGO, KSD, WGB, WCAP, WDAF, WDAF, WGR, WGY, WJAZ, WJZ, WLS, WMAQ, WRC, and WSD will be subject to cancellation for the broadcasting of the Democratic convention. Beginning Tuesday, June 24, it will continue probably for a week or perhaps longer. More stations than those named may handle it.

Wednesday, Secretary of the Navy Curtis D. Wilbur will talk from WLW. "School Days" have been sung by poets and comics for countless ages. Now as a one-act play they will make a Radio debut from WCAE.

KSD is two years old Thursday and will celebrate its birthday with special features. KGO promises that spooky voices will emerge from loud speakers and earphones when KGO

Players present "Three Live Ghosts." This same evening all former students of the Ohio State university are urged to tune in to WZAO and listen to the chimes which many of them helped to buy. Those will be played by Prof. A. F. McManis.

Punkinville Center proudly announces the broadcasting of the program of the most brilliant graduating class of its "high school." This program of rare, native talent has never before been equalled over the Radio. Tune in Friday for KQV. Another snappy play will be broadcast this week when the WGY Players put on "Cappy Ricks." WGY has done much to perfect the Radio drama and has succeeded in having one of its plays rebroadcast in New York city.

Have you ever heard an Arkansas lizard? WFAA will broadcast the "critter" on Monday.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2 p. m., Schreffel, Lorchon orchestra; 4-11, Eleanor Gunn's fashion talk; 4:25-4:30, counsel on household equipment; Ebel R. Peyster; 4:30-5:30, Hotel Commodore orchestra; 7-7:15, Scherer's Ciro Boulevard orchestra; 8:15-8:30, "Gold Innis Brown 8:30-8:45 Jack Trent, bass; Keith McLeod, accompanist; 8:45-9:15, Official Series talk, Hon. Francis Sant; 9:15-9:30, U. S. Navy night; 10:30-11:30, Duell Coleman's Treadles orchestra.

WKAQ, San Juan, P. R. (Central, 360), 6-8 p. m., municipal band.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15, a. m., household hints; "A Weekly Trip to Market," Mrs. C. A. Kirby; 11:35-12 m., surprise hour; 2:10-2:45 p. m., woman's club hour; 3:40-4 p. m., children's wartime program; 4:45-5:30, morning reading; 6-6:30, sport hour; Cautions; Deane Rundlett; 7:30-8:15, farm lectures; "What Minnesota's County Fairs are Doing," R. B. Hall; "How Much Does Borden's Profit Add to Meat Prices?" S. W. Saunders; 9:15, business meeting; 9:30-10:15, concert; Dorothy Holmes, pianist; Mrs. Jones C. Himmeyer, violin and voice; Mrs. Fred Schroeder, guitar; William Loree, cellist; 11-12:30, George Obert's New England Hotel orchestra; 12:45-1:15, W. L. W. Cincinnati, Ohio (Central, Daylight, 423), 12:45 p. m., Spanish lesson; 4, "Start In" program, Wurlitzer Concert company; 4:25, French lesson, Madame H. Temple; 8, quartet of the Church of New Jerusalem; Carol Mabee, soprano; Mrs. Ross Tipton Kibbee, contralto; George Mulhater, tenor; Will Atkinson, bass; Grace Chapman, accompanist; 8:30, program, Ohio State Christian Endeavor convention; 9:30-9:45, Rev. Raphael Miller; 9:45, special music; 9:50, address, Hon. Curtis D. Wilbur, secretary of the day's work; 9:55, vocal solo, Ontario Gulever.

WMAQ, Chicago, Ill. (Central, Daylight, 447.5), Democratic convention.

WOC, Davenport, Iowa (Central, 484), 12 m., Chinese; 8:30 m., sunday; 8:45, 8:50, Grand tour; 9:15, 9:30, Philadelpia, Pa. (Eastern, Daylight, 509), 11



Pate Montsema, popular member of the Red Apple Chorus, will sing every Tuesday night at WCK Detroit, is both a singer and an orchestra leader.

The Sunshine Girl (left) belongs almost entirely to the kiddies who tune in every day to WCAE, Pittsburgh. Her name is a deep dark secret. Owen Sweeten is the smiling comedian on the right. His orchestra, a recent addition to WCAE, is pleasing the Coast fans.

KGO, Oakland, Calif. (Pacific, 312), 3 p. m., "Creative Expression," Wilda Wilson Church; 4-5:30, concert orchestra, Hotel St. Francis.

KGW, Portland, Ore. (Pacific, 422), 8:30 p. m., talk, Jennie F. Crane; 9:30, dance music, Gene Louie Cummings, pianist; 10, dance music, George Otten's Metropolitan orchestra; Caspasia Alley, soprano.

KHJ, Los Angeles, Calif. (Pacific, 450), 12-1:15 p. m., concert; 2:30-3:30, concert, courtesy of Barker Brothers, Chafin Rubez, Grand; 9-9:50, Art Hickman's concert orchestra; 3-3:30, Pacific 278; 7:30-8:30, Walter Sydnor's orchestra; Dick Winslow, juvenile reporter; Leonard Turner, vocal; 8:30, "The Blue Bird," song; 8:30-9:30, Alvin Karpis, tenor; 9:30-10:30, Alvin Karpis, tenor; 10:30-11:30, Alvin Karpis, tenor; 11:30-12:30, Alvin Karpis, tenor; 12:30-1:30, Alvin Karpis, tenor; 1:30-2:30, Alvin Karpis, tenor; 2:30-3:30, Alvin Karpis, tenor; 3:30-4:30, Alvin Karpis, tenor; 4:30-5:30, Alvin Karpis, tenor; 5:30-6:30, Alvin Karpis, tenor; 6:30-7:30, Alvin Karpis, tenor; 7:30-8:30, Alvin Karpis, tenor; 8:30-9:30, Alvin Karpis, tenor; 9:30-10:30, Alvin Karpis, tenor; 10:30-11:30, Alvin Karpis, tenor; 11:30-12:30, Alvin Karpis, tenor; 12:30-1:30, Alvin Karpis, tenor; 1:30-2:30, Alvin Karpis, tenor; 2:30-3:30, Alvin Karpis, tenor; 3:30-4:30, Alvin Karpis, tenor; 4:30-5:30, Alvin Karpis, tenor; 5:30-6:30, Alvin Karpis, tenor; 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30 Minute A-B-C Lessons for Radio Beginners

Part XV—Working Through Interference

By P. E. Edelman

IN THIS series of articles the story of Radio is told in so simple a manner that the uninitiated can follow theory and practice whether or not he knows anything about electricity or its application to broadcasting and reception. The series consists of twenty-five chapters, of which the five next will be:

- Chapter XVI—The Power Voice of Radio.
- Chapter XVII—Reproducers, The Finishing Touch of Radio.
- Chapter XVIII—The Hero Circuits of Radio.
- Chapter XIX—What is Doing in Complicated Circuits.
- Chapter XX—How Far Can I Hear?

THERE are various kinds of interference and some of the bothersome varieties are: static; other broadcasting; spark transmitters; re-radiation from

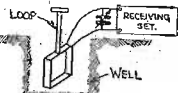


Figure 133

neighboring oscillating sets; disturbances from power and signal lines and other nearby transmitters.

This interference angle in Radio limits the all-time reliable range of a receiving set. In practice the use of a short aerial or a loop will enable the listener to avoid interference to a satisfactory extent when a good receiving set is used.

Static
Static or strays affect the detector in a receiving set by means of forced oscillations, despite tuning. An indoor aerial

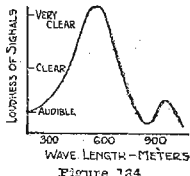


Figure 134

receives less initial energy and a loop, because of its directional effect, is also less affected by strays. Various circuits improve the signal to stray ratio in a receiver. The average listener cannot place a loop down in a well in the earth to get a better signal ratio against static, as shown in Figure 133. It is only in certain localities and for limited times during the year that static prevents full

enjoyment of broadcasting, as the majority of sets can operate on at least local stations regularly, and get programs clearly.

Nearby transmitting stations of the old

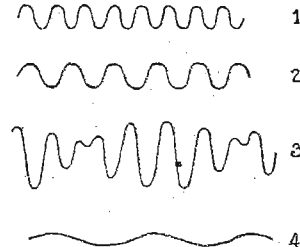


Figure 135

spark type (non-continuous wave), are difficult to tune out because they transmit over a band of wave lengths and can set up forced oscillations in the receiving outfit. Figure 134 diagrams such condition. By far the most aggravating interference to the listener with a long distance outfit is caused by neighbors using oscillating receiving sets. Such sets set up interference heard as whistling swishes.

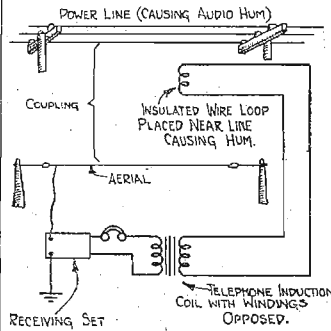


Figure 136

Re-Radiation Interference
When listening to a distant station announcer, one can hear a swarm of tuning whistles transmitted by oscillating sets of neighbors. If you use a regenerative receiver of the autodyne type you do this every time you couple the late circuit close enough to blur the incoming program, and as partial punishment, your own reception is susceptible to the same

thing. But if you are careful not to use too much feedback, your set, especially if

There is a way to prevent such interference at the receiving end but the

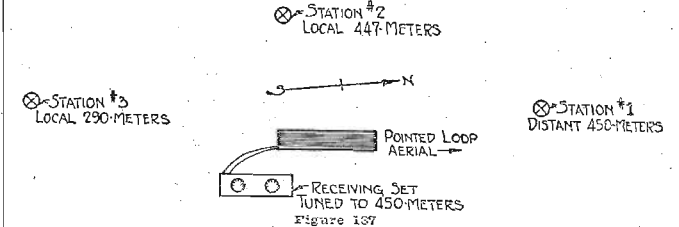


Figure 137

it is of the two or three-circuit variety, is still a respectable member in the Radio community. Figure 135 illustrates how

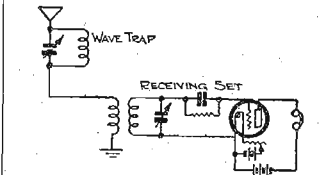


Figure 138

a broadcast frequency 1 can combine with a local frequency 2 of a neighbor's oscillating set, to set up beats 3. These beats

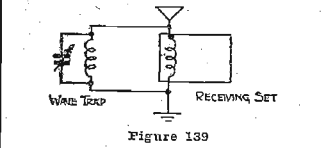


Figure 139

may be heard as an audio note 4, or if of certain frequency and correct phase can even oppose the incoming frequency 1.

majority of sets in use today are affected by it.

Power Line Hum
Simply grounding a receiving set will sometimes stop hum coming from nearby power lines. Sometimes a balancing wire can be used as shown in figure 136. It is only in certain localities that stopping and starting of elevator motors, etc., will be heard.

Directional Selection
In tuning out local stations other than

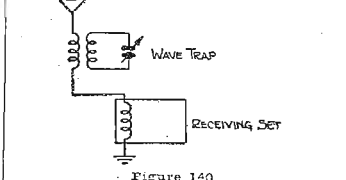


Figure 140

by tuning or frequency selection, the most useful means which can sometimes be employed is illustrated in Figure 137. A loop receiver is directional and as shown, station 1 can be heard while station 2 at similar wave length and station 3 at different wave length are simultaneously broadcasting.
(Continued on page 16)

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1 Precision Cockaday Coil	3 48-000 Ohm Lario Resistances
3 Ameco 20 Pl. Cond.	1 100K25 Dablior
5 Melon Tube Sockets	1 300K5 Dializer
1 Ameco 6 Ohm Rheostat	1 Pr. Conn. Dup. P. P. Transformers
3 Ameco 20 Ohm Rheostats	1 Panel, 1x12
2 Amplifier Grid Decouplers	1 Sub Panel, 3x3 1/4
1 Durham Var. Grid Leak	11 Switch Points
1 Ameco 400 Ohm Potentiometer	11 Switch Stops, Wire, etc.
1 Bradleyleak	
2 Patent Doub. Jacks	
1 Patent Single Jack	
3 American Transformers	

Wired complete in genuine mahogany cabinet, extra \$85.00
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STANDARD SUPERDYNE 4-TUBE
Knockdown Kit—Complete Parts
More powerful than a 6 tube naval receiver. Easy to build.

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- 2—23-Plate Variable Condensers
- 1—Variable Grid-Leak
- 1—00025 mid. Fixed Condenser
- 3—Rheostats
- 1—V. T. Sockets
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1.25 Ameco 20 ohm.....	1.00
1.50 Ameco 30 ohm.....	1.10
1.00 Klosser 5 or 30 ohm.....	.80
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Music Writers New and Old

Sentiment Lost, Money is the Only Object

THE bard of other days sang spontaneously in response to the promptings of his heart, giving voice to his emotions or expression to his genius. He wrote a song because the song was in him and had to be sung. The folksong has the ring of sincerity and the glow of divine fire because it thus springs up out of the people's life.

The lyricist of a somewhat later day was actuated by a patriotic or a devotional motive. The modern song writer attempts to produce a popular hit, that he may win a fortune thereby. That circumstance alone suffices to explain the dearth of great songs composed nowadays. The Muse, Euterpe, refuses to respond to mercenary motives. "Annie Laurie," "Auld Lang Syne," "Ben Bolt," "My Old Kentucky Home," "Dixie" probably never would have been written had their authors thought merely to get rich off the royalties.

Apparently, the "Jazz"—usually mislabeled—and the "Sweet Mama" songs so much in vogue today, devoid of both melody and sentiment, may be turned off after the style of the grind organ, without waiting for inspiration. In fairness to that beautiful, but austere damsel, let it be said that Euterpe is quite innocent of such efforts. A song writer must live; and in this day of high specialization that is a considerable profession.

Like other laborers, of course, the bard is worthy of his hire; and he has certain property rights in his product. He and his publisher plead that they are entitled to royalties and copyrighted music broadcast by Radio, even though the sending station get no direct return therefrom. Radio is a new industry and has not yet found its exact place in the economic scheme; but even so, doubtless it will be shown that, instead of damaging the song producer's interests, it serves them, as the phonograph and player piano have done, through introducing their works to a far larger audience.

The situation which Congress is asked to deal with, concerning royalty rights, probably will prove to be transitory.

Newspapers and Radio

New Field Has Been Added to the Daily's Usefulness

IT HAS been said that Radio will put the newspaper out of business. A convention of newspaper publishers agreed the other day that the Radio had added a new field to the newspaper's usefulness. There are people who thought the telegraph, the telephone, magazines, railroads, automobiles and other things would put the newspapers out of business. The newspapers absorbed all of these things as new tools of its trade and continued to grow.

Did the phonograph put the concert or opera stage out of business? The phonograph has but advertised good music, increased intelligent audiences and enlarged the field. Radio, in turn, strengthens the phonograph record demand.

It is not easy to put out of business anything which really serves the great public requirement. It touches at some time or other every phase of life. The Radio does not affect it.

Electric Power Industry Aided

Public Stays at Home and Burns Electricity

RADIO already has strongly affected the electric light and power industry. More people stay at home to enjoy Radio, which means more use of lights and greater current consumption. Static business fortune tellers predict that in five years 15 millions of American homes will be using electrical lights and at least half will be equipped with Radio. Regarding who should pay the cost of broadcasting Radio concerts: The electrical lighting industry would find it profitable to chip in, also the telegraph companies, which are getting an enormous amount of new business from Radio—messages from listeners to broadcasters.

RADIO INDI-GEST

Suggested Scenario to Improve Green Goddess

L. W. Hatry, 5XV

EVERYTHING was in readiness. The villain, polished, suave, urbane, was taking his leave with all courtesy. The three wrecked aeronauts looked nonplussed, worried, in torment. Someone said shoot; a monotonous clicking started.

The villain had gone and with him, courtesy. The aeronauts were wrangling. Suddenly the lights dimmed, went out, the clicking ceased and the airman known as major, exclaimed:

"Wireless! See, the lights have dimmed!"

"No, you d—n fool, the fuse blew," the camera man snorted.

The lights came on again to show a scene of utter peace: everyone excepting the director had fallen asleep and he blew his nose violently, disturbing everyone else. The monotonous clicking was resumed. With three sighs of impatience, the heroes and heroine resumed their argument, when suddenly the lights dimmed and a low humming sound, interrupted periodically, was heard. The major exclaimed:

"Hark! Wireless! See, and the lights have dimmed!"

"Turn off that arc, y'blnk'n' idiot," howled a voice from behind the background, "they need all the power on that goddess set!"

"Please awake the prince, his snoring disturbs me."

A feminine voice, pleadingly pleasant, came from the right. The low humming noise was interrupted finally and quiet resumed. The lights resumed their normal brilliancy. The major exclaimed:

"D—n!"

The monotonous clicking had not stopped.

The aeronauts again resumed their worried looks, but with less difficulty; then suddenly the lights flickered and went out. The major exclaimed:

"Wireless! See, the lights—oh, H—n!"

The lights flashed on again suddenly.

The villain strode in slowly and smirked politely.

"I hope you have passed the time pleasantly," he bowed. "The execution has been postponed. Your questioning glances. My news comes quickly, does it not? But, then, you must have known when the lights dimmed."

"Yes, you d—n fool, the fuse blew."

The monotonous clicking died into a wail of laughter.

Mrs. Partington Speaks Out



Dear Indi: Mrs. Partington says they ought to put Speed meters on Radio dashboards, for Gasoline Gus with 30 miles a hour and 35 to a gallon ain't a circumstance to Radio Rube and his one circuit degenerated set, who gets 'em from coast to coast and over both edges for Canada and Cuba. He often gets ZLO before sundown; has heard WNP several times before breakfast.

He can go through a lot of big ones working on 300 degrees and pick up the 10 horse power stations on same degree 2500 miles away just as easy as anything. If he don't git 'em on loud speaker he doesn't count 'em. She says Rube admits he was bothered some, this winter by code work of the Commercial and Steamship amateurs.

SIGNING OFF.

First Liar Ain't Got No Chance

My very dear Damliar
Your worst distortion is:
"One tube pulls the speaker
When hooked up just like this."

CACTUS JACK.

Hah! A Great Problem Solved at Last

Dear Indi: When they ask who is going to pay for broadcastin tell them the fellers that give away these Radio sets and loud speakers and overthin there is hardly a night, but some of the broadcasters are begging the listeners to send them a TELEGRAM so as to get in on the prizes, and then the Ameri-grahm co who get the rake off on these telegrams wants to collect money again, too. It may be too deep for some, but it looks thin to me.

INS U. LATTON.

And a Motor Truck to Carry the Set

Dear Indi: A few timely hints for the summer Radiolist. No matter what portable receiver you take along, don't forget to take along just a few tools for emergencies. Among these allow me to suggest:

- PARTS REQUIRED
- 1 100-lb. Sledge Hammer.
 - 1 Pot of Glue.
 - 1 Hat Pin.
 - 1 Doz. Assorted Hairpins
 - 1 Crowbar.
 - 1 50-lb. Roll Copper Wire.

P. S.—In warm or cold weather always include three cans of condensed milk; cross-cut saw, pipe wrench and pot of melted tar for stopping leaks in set.

SAFFRON.

Bet He Was a Married Man, Too!

Dear Indi: An ambitious or innocent lecturer, on London ZLO recently, had the brilliant idea during the course of his talk, of inviting his listeners to meet him at a certain time the next day in front of the Parliament Buildings, through which he would be glad to guide them.

He was slightly embarrassed, to say the least, when he found his offer of a trip of inspection had hit its mark well, for at the given place the next day, he found 5,000 people waiting.

LONDON BOBBY.

Is It Worth It, Really?



Condensed

By DIELECTRIC

At this time of year most folks who can plan a trip in their auto, some extensive and others not so much so. Where the journey is over frequented roads of course the condition of those roads is well known, but when the route takes in roads about which the driver knows little or nothing advice is very acceptable. With this in mind Station WBZ is giving valuable aid to tourists in New England by broadcasting bi-monthly the official report of road conditions there. Others copy.

News of changes in broadcast stations in Chicago has been the topic of conversation among Radiophans all over the land. This is so largely because of the wide circle of friends both stations WDAP and WJAZ enjoy among the listeners in. The call WGN will in time, no doubt, come to mind as readily as that of the Drake Hotel, which up to the present has always been WDAP, WJAZ, dissociated from the Edge-water Beach hotel, will avoid more confusion by having its own super plant in the McCormick building—then too, it is still the Zenith station.

A great variety of devices are suggested to meet the demand for static suppressors, now that the season for that interloper is upon us, yet none of them can guarantee to eliminate entirely the familiar crashing sounds from our receiving sets. Fortunately, broadcasting has so far improved as to greatly reduce the interference from this source. One way is open to travelers and that is to take a super-het with you to the Oregon caves where a party of Radio engineers and students tuned in a number of stations using such a set, with no interference from static whatever. We shall all listen this summer—static or not.

"It ain't agonna rain no mo'," said Wendall Hall to thousands of his Radio friends at the conclusion of the wedding ceremony performed before the "mike" at WEAF. This popular entertainer has been all around the circuit of broadcast studios singing his way into the affections of "the little girl in Chicago," as well as most of the rest of us. We could picture the whole tableau in spite of ocular difficulties; knew just what the bride wore and the bouquet she carried, beside hearing the kisses which usually follow the solemn declaration "husband and wife." In fact, the wedding cake was about all we missed!

In listening to a baseball game as broadcast play by play you sit back and await developments; also boxing bouts. There is one game which you may anticipate moves, or work out your own offensive and defensive game and that is chess. It don't progress quite so fast as the diamond variety of sport, but it takes a lot of head work. Chess fans had an opportunity to match their wits with the teams representing the University of Pittsburgh and University of Pennsylvania recently, as each move was described by Radio through stations WIP and KDKA.

There is no reason in the world why, when a speaker is addressing his audience from a broadcasting plant, the applause should not be audible to him, if he but utilizes a receiving set as Secretary Hoover did following his speech in Washington to an audience in Atlantic City. By this means he need not await the morning paper to see how his ideas were received. We must not lose sight of the fact that our approval or disapproval of a song, play or lecture cannot be known to those who entertain us from broadcasting stations unless we write to them to that effect. There is no other means of conveying applause or hissing.

Underground Antennas for Summer Receiving

Part I—Explaining a System to Reduce Static

By Edward Thomas Jones, A.I.R.E.

VERY little has been told about the underground antenna systems employed by the United States Government during the last world war. Very few broadcast listeners have ever heard of these systems. It is therefore believed of utmost importance and extremely timely at this period of the year to bring to the attention of the hundreds of thousands of listeners who are striving every night to pick up distant stations through what we all call "static."

The basic theory of the underground system makes it acceptable as the most favorable system for reception at this time of the year. The theory is based on the signal-static ratio and it has been proven to give the greatest ratio between signal and static in any known antenna system employed so far. This means that in comparison with an overhead antenna system—the underground system will re-

static to a great extent, but that it was also directive and that stations in certain directions could be eliminated at the will of the receiving operator, in much the same way that a loop antenna is operated on the surface.

The Rogers System

The Rogers system consists of a set of buried wires as shown in Figure 1. North, northeast, east, southeast, south, southwest, west and northwest. By the use of a selector switch, an ingenious device invented by Ensign Crossley; any set of wires possible to the combination could be thrown into the receiver circuit at will. This is very important. On some combinations as will be explained, a great degree of directivity obtains, however on others the system loses all traces of a directive system and stations from all points of the compass can be copied with very nearly equal strength.

It is quite clear then, that the underground system can be used both as a loop and an overhead antenna system and at the same time the operator can take advantage of the very effective signal-static ratio.

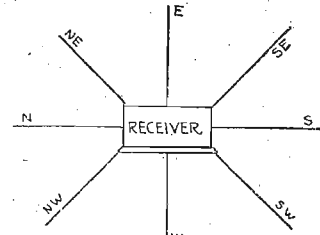


Figure 1

ceive very nearly the same signal strength but very little static. The ratio being approximately 10 to 1 in favor of the underground system. This of course depends on the kind of soil the wires are buried in, the size of the wire used as well as the insulating qualities of the wire. The length of the wire also plays an important part.

Early Attempts Made in 1909

Many attempts were made by early investigators to make use of buried antenna wires. Unfortunately (for them), there were no audions or vacuum tubes available at that time and the system did not respond very favorably with the crude crystal detectors then in vogue.

One of the earliest investigators was a Mr. George H. Clark of Washington, who was successful in receiving and sending waves several hundred feet through the earth with the "underground system." This was during the year 1909.

His experiments were given up after numerous attempts had been made to increase the distance possible with the installation. His failure to accomplish this was, of course, due to the fact that vacuum tubes were not available at that time.

In the year 1916 (when vacuum tubes were available in fair quantities) the government's attention was called to an underground antenna system than installed in the Rogers estate at Hyattsville, Md. Dr. J. E. Rogers had installed the system and demonstrated the possibilities of the system to naval experts who were sent by the government to investigate the system for their use in the war—which they felt was inevitable. They made no mistake—we all know that only too well.

Dr. Rogers demonstrated that his system was not only a means of eliminating

north or south would be eliminated. In fact, when properly installed, a system of this kind will only respond to signals coming from stations north and south of the listener.

It is quite evident that a system of this kind is not one suited for the average broadcast listener. The average broadcast listener is lucky that he has room for his overhead antenna much less room for such an elaborate system of underground antennas.

Even the operator at the receiving set using the installation shown in Figure 1 would arrange to receive from all directions by using a quadrant, formed by connecting a north and an east or west wire in the circuit as shown in Figure 3—still such a system would be out of the reach of very nearly all broadcast listeners in the United States.

For those who can make use of such

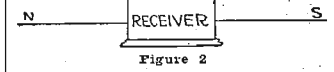
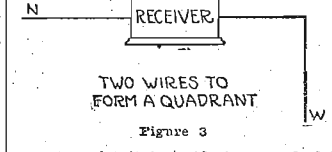


Figure 2

Directivity

Take two wires each seventy-five feet in length (say, the ordinary number 14 rubber covered house wiring variety) and place their ends in ordinary clay tubes—cementing them by pouring molten wax into the tubes after the ends have been inserted. When this is done, lay the wires in ditches from one to four feet deep and cover them up. The wires must be laid as shown in Figure 2. We will assume that the wires are running north-south with the receiver connected in the center. A set of wires of this type, make up a very directive underground antenna system and signals coming from the east and west will be entirely eliminated. Likewise, if these wires were running east-west, all signals coming from the



TWO WIRES TO FORM A QUADRANT

Figure 3

a system, let it be said that wonderful results will be obtained from its use. A selector switch should be used so that the receiving set can be thrown into circuit with any combination of wires available.

Burying the Wire

Where the soil is very moist, the wires need not be buried so deep. Of course

they should, for best results, be buried at least three feet deep. The best information available on this subject instructs us to bury the wires where permanent moist earth is assured the year round. In some localities, of course, no moist earth will be available. In that case, it is recommended that the wires be buried merely to cover them—say one or two feet. Whenever a body of water is available, run the wires out into the water. Fresh water or moist soil is best.

The writer has had considerable experience here in New Orleans with the underground system installed in the Navy yard—having been placed in charge of the underground system at that station after the armistice was signed. The Naval

(Continued on page 16)

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connected to your instrument will positively eliminate all local interference and enable you to bring in distant stations at any time. They are in successful use within 400 feet of large broadcasting stations. They also enable you to receive on longer wave length than you can get without it.

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THIRTY-MINUTE A-B-C

(Continued from page 13)

Wave Traps

Wave traps are in the nature of a makeshift to improve the frequency selection (tuning) of a receiver. A simple form consists of a coil and condenser coupled to, in series with or connected in parallel to the receiving set. Figure 138 shows the series connection. The wave trap is tuned to cut out undesired frequency after which the set is returned to the desired station, provided that it is at a different frequency. Figures 139 and 140 show other connections of this character. Often a distant station can be heard

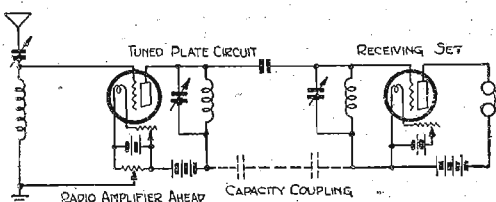


Figure 141

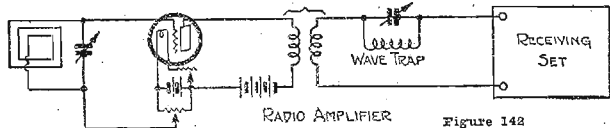


Figure 142

clearly through local stations operating at different wave lengths whereas, without the trap the set is set into forced oscillations so that the local program drowns the others out.

Tuned Amplifier

A better way is to use a tuned amplifier ahead of the receiver as for example in



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\$2.00 R. C. 11 plate.....	\$1.05
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Figure 141. This also boosts the energy available for the receiver.

If you already have a set with Radio frequency amplification using fixed or untuned transformers a wave trap can be inserted in series in one circuit as shown by Figure 142.

Probably the best way to work through local stations is to use one or more stages of tuned Radio frequency amplification. Or if you still want to hear a distant station very close in wave length to the local station without too many tuning control dials, the loop is the thing when you are

located suitably for the necessary selective pointing of the coil. (The "Power Voice of Radio" is Mr. Baelman's next. He'll tell all about amplifying arrangements.—Editor's Note.)

UNDERGROUND AERIAL

(Continued from page 15)

Radio school of which I was in charge was closed on that date. It was found that the soil at this point is very moist, in fact water was easily reached at a depth of four or five feet. This was very necessary because the system had to be very effective in order to eliminate any of the static which is so pronounced in this part of the country. (Next week Mr. Jones will give practical directions for laying an underground antenna.—Editor's Note.)

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Messages Sent as Well as Received on Outfit

The writer for the past twelve years has possibly built more various kinds of Radio apparatus than Smith brothers have cough drops. And it can be truthfully said that all of them worked, possibly not according to the Radio principle,

WORKSHOP KINKS EARN A DOLLAR—

THERE are many little kinks worked out at home that would aid your fellow Radio worker if only he knew about them. There are new hook-ups, new ways of making parts and various unique ways of operating sets that are discovered every day. Radio Digest is very much interested in obtaining such material. Send them in with full details, including stamped envelope, so rejected copy may be returned. The work must be entirely original, not copied.

RADIO KINKS DEPARTMENT,
Radio Digest,
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but nevertheless, a sound was got out of the contraptions even if it was a "cat-call." Among my last experimental members is a circuit, although not new, has some new wrinkles that is, not only a puzzle but a deep mystery.

This receiver and transmitter combined, although being a single circuit and a radiating outfit from the word "go," the output is not the squealing kind. The wave is an excellent carrier of speech from the telephone transmitter, but is silent when it comes to the much talked of "squawker delight."

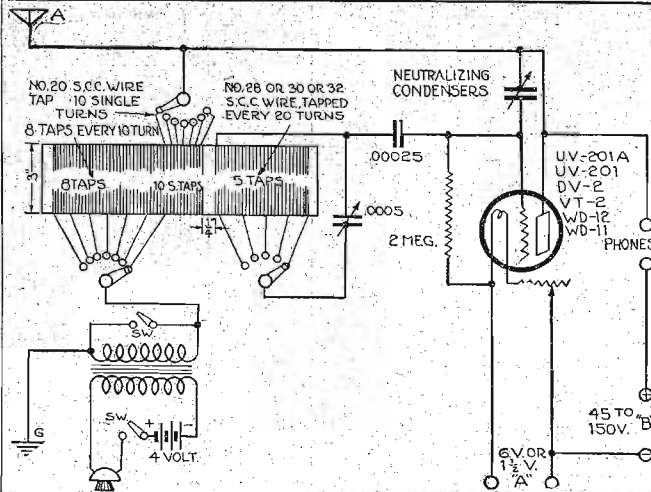
During the experiments I tried talking into the receiver of my headset, and lo! it was heard at a distance of four miles. Well! I put the loud speaker plug in the jack and talked into the loud speaker, and that was heard, too. A telephone transmitter which came over with Noah in the Arc was hooked in series with the ground and that worked 50 per cent better. The latest addition was a magnetic modulator in the ground circuit and this put the finishing touches to the outfit.

A neutralizing condenser made of three safety razor blades was shunted across the plate and grid. This made the circuit a steady oscillator both for receiving and transmitting. The apparatus in general is composed of cheap material including cardboard tube, wood panel and lots of other junk contrary to Radio engineering. A dear friend of mine (who has more money) constructed a duplicate using the best material money could buy (his money), and from reports he is getting just as good results as I am, so I figure that if there are any "losses" they are going via the antenna where they belong.

The circuit is self explanatory and do not worry if you get more wire on the tube than I do, or less number of taps. It works any way you put it. There is where some of the mystery lays, it is not on account of location for this apparatus has done more traveling than a side-door pullman.

In tuning the set as a transmitter rotate the dial in conjunction with the switch levers until a slight "hollow" sound is heard in the receiver. This sound cannot be explained very well in writing but can be best described as "hollow." Switch on the "Mike" and say

HOOK-UP FOR COMBINATION SET



what you wish, providing you have a piece of paper from Uncle Sam saying you can.

Note the exact points on the dial and switches where this takes place, and always turn to this when about to transmit. The receiving end will take care of itself. The signals received will be strong and sharp tuned, and in all, it is an excellent receiver, which will not bother

your neighbors, yet it re-radiates energy but not squeals or whistles. Queer isn't it? But it is worth trying, for it works just as well in one city as another, just as well with cheap parts as those that cost a fortune. Of course critics are going to put up a holler at this statement, but my advice is try it both ways, and today I can cover as much distance with a "bell-ringing" 110-volt to 12-volt trans-

Efficient Circuit Tests for Proper Connections

In a recent issue of Radio Digest under "operation troubles" is this caution: "Be sure tubes are removed from the set until all wires are connected. Place one tube in set and turn on rheostat to make sure you have not misplaced the B battery wires. This will save the rest of the tubes."

By this method the cost of one tube is sacrificed to save the remaining tubes and this may be applied to home built sets as well as commercial sets. My own practice in home-wired sets is to check the B battery circuit by placing the tube in the socket and connecting the A battery to the B posts. If the tube lights connections are wrong or wires are crossed.—F. W. LePore, Akron, Ohio.

former as a magnetic modulator as they can with some other outfit. Oh, yes, I have tried that, too, and even used an audio frequency transformer as a modulator and that worked just as far, but it, or rather I, "stuttered." In other words, the modulation was of the make and break kind.

It can be made up in a short space of time, but should be made well, not slapped together. One will be well pleased with the performance of this outfit.

However, if one wishes to cover a great distance the plate voltage may be stepped up and by use of a switch, the required amount of current to operate the bulb as a receiver may be applied and high voltage cut in for the transmitting end. —Clarence H. West, Stapleton, N. Y.

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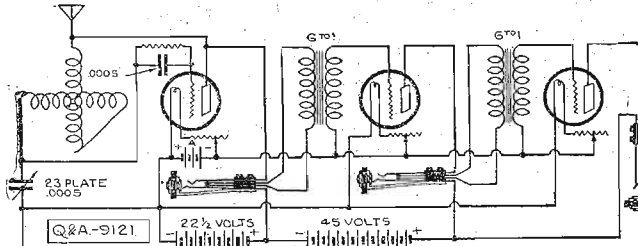
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Ultra Audion and A. F.
(9121) LIT, Toronto, Ont., Canada.
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parts. I should very much like to see a wiring diagram of this set using either one or two tubes, as I believe this to be a real good hook-up.

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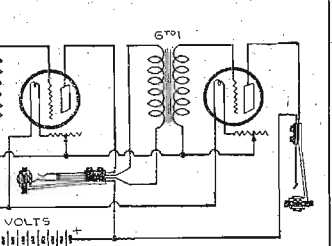
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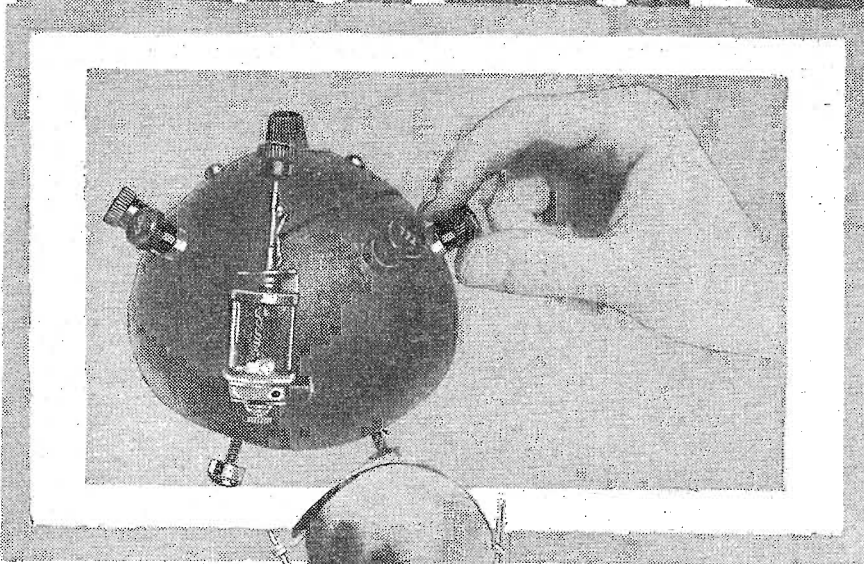
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