

# Radio Digest

EVERY WEEK **Illustrated** PROGRAMS **TEN CENTS**

REG. U. S. PAT. OFF. & DOM. OF CANADA

Vol. IX

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SATURDAY, JULY 5, 1924

No. 13

## TRUST QUIZ TO CONTINUE



Constance Binney (above), one of the few actresses who has achieved fame as a singer, dancer, actress in legitimate drama, and star in the movies, is now a full fledged Radio star, having appeared in the musical comedy, "Sweet Little Devil," when the second act was recently broadcast through Station WJZ, New York city. Florence Wasson (right), soprano, who is heard quite frequently from WTAM, Cleveland. Queeque Smith (extreme right), featured player in the musical comedy "Gittin' Frisky," recently spoke on "Girls' Ideals," from WOE Newark.

### FANS CHUCKLE OVER CLEVELAND 'ASIDES'

"MIKE" HEARD ALL AND TRANSMITTED IT

Impromptus at G. O. P. Convention Prove Amusing; One Delegate Asked to Stop Fighting

CLEVELAND—Did you hear the funny impromptus which came via Radio from the Republican convention here? Evidently there was no skilled announcer or operator standing by, as is always the case in broadcasting studios, to pull the switches or cut out the microphone when something unforeseen occurs and side remarks and sotto voce phrases are uttered in the neighborhood of the transmitter.

On one occasion a voluntary spokesman suggested to Chairman Mondell that he better put on the quartette or start something, as many of the delegates were "walking out" on him.

Another excited voice cried out in anguish to the chairman that there was a fight going on in one corner, and asked

(Continued on page 6)

### GOVERNMENT COMMISSION PUSHES CASE

Federal Trade Body Feels Involved Firms are Trying to Delay Hearings

Each Side Blames Other

WASHINGTON, D. C.—Edward L. Smith, attorney for the Federal Trade Commission who is in charge of the commission's case against the Radio Corporation of America and others charged with being an illegal monopoly, is visiting a number of the larger cities, it is understood, in connection with the case.

Just when the actual hearings and taking of testimony of this case will be begun has not yet been decided, but it is probable that the hearings will be started early in September. There has been considerable comment in connection with the delay in the taking of testimony in this case and both sides are trying to place the blame on the other.

Attorneys for the Radio Corporation and the other respondents are claiming that the commission hasn't its case in very good shape yet, while the commission feels that the involved corporations are trying to delay the taking of testimony. As the matter now stands it is not probable that this will be done before autumn.



### NEW DEATH-RAYS TROUBLE LONDON

Two More Inventors Claim Laurels —British Air Service Discards Idea

LONDON.—England is suffering a plague of "death-ray" inventors, who may end up by turning their diabolical rays on each other and all perishing without their terrible secrets having been divulged.

H. Grindell Matthews has been followed by Prof. T. S. Wall of Sheffield, who claims (without quite so much uproar) that he has patented such a ray. Further

than this he refuses to talk. A third London man comes forward with the statement that he has possessed a killing ray for nearly a year. The British air service officials say that they have been able to do such tricks for two years; but they claim also to have a protection against these rays.

### Canada Conducts Two-Way Phone Talk with England

LOUISBURG, N. S.—Officials of the Marconi company here and at Montreal report recent successful working of two-way trans-Atlantic Radio telephone conversation with Faldhu, England. Senators Marconi, in England, talked with J. H. Thompson, in Toronto.



# No. 7 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:

The voting officially opened with the publication of Ballot No. 1 in the May 24 issue. The contest closes with ballot No. 16 published in September 6 issue of Radio Digest, and the official closing date of this contest is midnight, September 8, 1924.

For sending in four consecutive ballots, there will be a ten vote bonus; eight consecutive ballots, twenty-five vote bonus; twelve consecutive ballots, fifty vote bonus; and sixteen consecutive ballots, seventy-five vote bonus.

Voting will consist of filling in the ballots with the name, initials or nickname of the announcer and the station and mailing to the Gold Cup Award Editor.

#### Highest Vote Wins Gold Cup

The broadcasting station announcer polling the largest number of votes in the contest will be awarded the Radio Digest gold cup. In the event of a tie each tying contestant will receive the same award.

Anyone may vote for their favorite announcer with ballots clipped from Radio Digest.

All votes to be credited must be mailed on or before midnight, September 8, 1924.

The Radio Digest First Annual Gold Cup Award will be made by a committee appointed by the publication.

Any question that may arise during the contest will be decided by the Gold Cup Award Editor. This decision will be final.

### Paris Music Firm Sees Value of Broadcasting

PARIS.—A firm of music publishers here, interested in counteracting any possible loss of enthusiasm for music on the part of those who play various instruments, has watched Radio with great keenness. They have concluded that when someone hears a composition broadcast he is likely to turn to his piano or violin and try it. The next day he will come hurrying to the shop for a copy. The publishers have based an intensive propaganda campaign on this idea.

### Ireland Wants State Control

WASHINGTON, D. C.—Unanimous recommendation that Radiocasts in Ireland be strictly a state service under the control of the postal ministry has been made by a committee of the Dail Eireann. There is considerable opposition to state control.

announcer's name has appeared, do not bother to renominate him. One nomination is enough.

Just save your votes! Remember that consecutive votes, saved in groups, and turned in together, count for more.

If your favorite announcer's name has not yet appeared, just turn to page five, fill in the nomination certificate and send it to Radio Digest, care of the Gold Cup Award Editor.

Remember to save your ballots appearing on page two each week. It is by means of the ballots that the award will be made. The man or woman polling the highest number of votes wins.

**Rules and Regulations of Award**  
All broadcast station announcers are eligible to enter. Nominations can be made either by the announcer or any Radiophan. Nominations should be made by using the "Nomination Certificate" appearing on page five.

Beginning with the May 24 issue a ballot is printed on page two of each issue of this publication. These ballots are numbered consecutively from one to sixteen.

## AROUND-THE-WORLD GOLD CUP RACE HOT

### ANNOUNCERS TELL WHAT "SIGN-OFFS" THEY USE

#### Nominee List Shows 106 Names—"Spark Plug" Even Entered—Give Rules of Award

The century mark has been passed! Over one hundred announcers have been nominated in Radio Digest's First Annual Gold Cup Award for the world's most popular announcer. Thirteen more nominations, received during the week, bring the total number in the race now to 106. And votes are pouring in!

But the wise Radiophans are holding their ballots to vote them in consecutive series, thus obtaining valuable bonus votes for their favorites.

The around-the-world race is on—even "Spark Plug" has entered. For "Spark Plug," though he is not supported by the most powerful of stations, is nevertheless a game sport and is going to do his bit toward making the contest a success. "Spark Plug" in private life is F. A. Buhlert of Radiocast KFC, Seattle.

"Hired Hand" tells his standing. Many interesting sidelights have developed as a result of the Gold Cup award. By his own admission, for example, it turns out that the "Hired Hand" of WDAF admits he is "at the head of the list, that is if you look at it upside down." He also wonders if any of the southern stations are percolating up north at this time of the year.

Richard V. Haller of KGW, Portland, expressed his doubt at his chances of pulling enough votes from "out here in this sparsely settled section of the country. But despite his modesty, the Hoot Owl Degree Team took matters into its own hands with an impromptu rally and have stirred up the other ambitious for Chief Haller. A whole armful of letters were received as a result, promising Haller support in the balloting.

Willie's Charles is "Hal Ha." Man Charles Erbein of WTAS, Elgin, when asked to sign on and off with his initials or nom de plume of some sort, wished us to inform the world that he is the "Hal Ha" man at Villa Olivia. He agrees partly with us in saying that announcers don't get all the credit they deserve, but, says he, "I imagine they have a fairly good time at that. I know I do."

From New York comes the news that Radio Corporation station, WJZ, has five announcers, ACN, AJN, ALN, AON and Major J. Andrew White. Well, at least their middle sign-off initials are different. Just like R. C. A. tubes are the initials—they're almost all alike.

**Names of Latest Nominees**  
It was remarked that thirteen more "nuke" tenders had been nominated this last week. These are:

- Bailey, S. T., KLX, Oakland.
- Bohannon, J. K., WTAR, Norfolk.
- Buhlert, F. A. (Spark Plug), KFC, Seattle.
- Douherty, C. L., WSB, Atlanta.
- Edes, A. F., WBEZ, Springfield.
- Jester, Carl, WGY, Schenectady.
- Kerly, E. J., KFOV, Sioux City.
- MacPhee, Don, WAAW, Omaha.
- Mullen, J. E., KDKA, E. Pittsburgh.
- Patt, John, WDAF, Kansas City.
- Stafford, H. E., WSAE, Providence.
- Tatom, WCAR, San Antonio.
- Tison, W. W., WSB, Atlanta.

**Nominate Now; Vote Later**  
The list of nominees, given this issue and last, show what announcers have been nominated and have nothing to do with their standing so far as the actual balloting is concerned. If your favorite an-

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## Looking Ahead

England's Wonder Circuit, the "Unidyne" and the new, four-electrode tube used in it, will be described by Harry J. Marx beginning with the next issue. The peculiar feature of the Unidyne is that no B or plate batteries are necessary. Only a filament lighting battery is used.

E. T. Jones' Underground, Static-Free Antenna Series will be concluded by the author next week with a discussion of the latest system used by him personally. He also tells of some experiments which should interest readers of this series. Radio Digest would like to hear from readers who try out Mr. Jones' instructions for building the Rogers underground antenna.

Neutralizing Radio Frequency Circuits is the topic of William H. Kleinberger next issue. This most troublesome feature of building neutrodyne receivers, will be greatly simplified by Mr. Kleinberger.

"Reproducers, the Finishing Touch of Radio," is Paul Edelman's next chapter of his "Thirty-Minute" Radio lesson series. Mr. Edelman gives some enlightening information on headsets, loud speakers, preventing distortion, and novelty reproducers.

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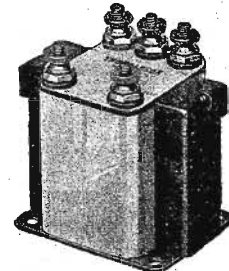
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Crosley Owns and Operates Broadcasting Station WLVW

## 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

## WEEKS PICKS MAN FOR SENATE RADIO

### REPRESENTATIVE TO AID IN GENERAL SURVEY

Acts on Senator Howell's Resolution Calling for Broadcasts of Proceedings

WASHINGTON, D. C.—Secretary of War Weeks has designated Major Joseph O. Mauborgne to co-operate with a representative of the Navy to investigate and report the estimated cost of the installation maintenance and operation of the broadcasting system proposed for the Senate.

This appointment was made by the secretary in connection with the resolution introduced by Senator Howell of Nebraska, requesting the secretaries of war and navy to co-operate in the appointment of a joint committee of Radio experts to investigate and report to the Senate on the problem of installing and maintaining Radio equipment for broadcasting the proceedings of the Senate to the country at large.

#### What Senator Howell Says

Regarding the scheme, Senator Howell says:

"I believe that many meritorious measures would be acted upon and other proposals, which do not deserve approval, or consideration, would not be passed if the people knew at the exact time at which they were being considered that these measures were up. Broadcasting Senate proceedings would bring the people into closer touch with what their representatives are doing and would thus stimulate interest in the issues before the country.

"Undoubtedly much of the irrelevant and extraneous talk and debate would be escaped if my plan were put into effect. The reaction from constituents resulting from the waste of time by unnecessary debate would more than offset the desire to make speeches for political effect.

"I believe that broadcasting of the proceedings of Congress is coming and that it will be very beneficial to the country."

It is expected that the report of the experts will be ready for the Senate at the beginning of the next session in December.

## COOLIDGE'S HAVE "BEST RECEIVER"

Executive Mansion Set Surpasses That in Buckingham Palace, Experts Declare

WASHINGTON.—President and Mrs. Coolidge have a new and unique Radio receiving set, which some government experts insist is the best broadcast receiver in the country, if not in the world. It surpasses in beauty, if not in efficiency, even the set of King George, recently installed in Buckingham Palace.

Technically, the executive mansion set, which is of special construction and mounting, is built on the super-heterodyne principle, with a total of nine miniature tubes. The main receiver, which has six tubes, was manufactured for the Navy. This is supplemented by a push-pull amplifier of three tubes. No ground is used, and the antenna is a folding affair which also disappears in back of a portable mahogany table-cabinet. The loud speaking horn, concealed by an attractive circular basket woven screen, sits on the top of the table. The whole set, with the batteries is completely hidden within the table-cabinet, resembling a good sized tea cart. The panels with the dials and controls are behind doors, and the batteries are stored on an invisible shelf.

A new set has also been completed and installed by the Navy aboard the president's yacht "Mayflower," so that when on cruises on the Potomac or Chesapeake Bay, the president and his guests may

## \$50,000 VALUATION ON WOR'S PROGRAM

NEWARK, N. J.—An insurance policy for \$50,000, protecting Ernie Young's Revue, now playing at Dreamland park here, against static or possible SOS calls silencing its broadcast, was taken out by the producer last week when the production was put on the air from WOR, L. Bamberger station here. Lloyds of London handled the policy, said to be the first of its kind.

## RACING BALLOONISTS GET SPECIAL MUSIC

SPRINGFIELD, MASS.—Recent attempts made by Station WBZ to communicate with the Gordon Bennett balloon racers overseas, were successful, it was announced here. The Westinghouse Radiocast sent a special program. Pilot Van Orman in the American Goodyear which, aided by Radio, won the elimination race on this side, was not so successful in the international race, however.

## LURING AQUATIC VERTEBRATES



Miss Elsie King, fishing at Lake George, N. Y., has her own theories regarding the technique to be used. This fair Izaak Walton claims that soft music entices them to swallow the hook. But, can fish hear? (Photo-Topics Photo)

keep in touch with the popular broadcasters if they desire.

### Sunday Church Services Added to KGO Features

OAKLAND, CALIF.—Sunday church services from KGO, both morning and evening are now to be a part of the broadcasting service delivered by the Pacific coast station, it has been an-

nounced by the General Electric company.

Connecting the studio building of KGO with several churches in San Francisco and Oakland, is an extensive system of ground wires. Two pairs of wires into each church are necessary. Music and voices are carried on one pair, while the other pair is used for quick communication between operators stationed at the church and the control room in the studio building of KGO.

## KFI SPENDS \$75,000 TO INCREASE POWER

### NEW OUTFIT TEN TIMES STRONGER THAN OLD

Station Will Be Duplicate of WEAF; Seeks to Improve Reception of Programs

By Strachan McMullan

LOS ANGELES.—Announcement of the expenditure of approximately \$75,000 for new high power equipment for use at Station KFI, Earle C. Anthony Inc., of this city and which is expected to be installed by November, has just been given by Earle C. Anthony upon his return from an eastern trip, during which time he investigated a number of the large Radiocasts throughout the United States.

The new equipment, of the new, standard five-kilowatt type, will have ten times the power of the present station, and while its range will be longer, the primary purpose of its installation will be to improve the quality of the reception of its programs.

#### Station Space Demands Increased

At the present time, the sending capacity of Radiocasts is limited by federal law, but Mr. Anthony says the high power of the new equipment will be held in reserve for emergency and perhaps for eventual use should the law ever be expanded.

The new station will require approximately twenty times the area now in use for the present studio. The new KFI will be a duplicate of the American Telephone and Telegraph company's station, WEAF, located in New York city.

It is estimated by Mr. Anthony that the operating cost of the enlarged station will amount to \$10.00 each month. He stated that while this may seem to be an unusual amount, his company feels in broadcasting its programs that it is simply reciprocating the patronage given the Anthony organization in the west.

## NAMES AND LOCATIONS OF SUPERVISORS GIVEN

Washington Answers Thousands of Queries from Fans

WASHINGTON.—Inquiries from thousands of Radiophans asking for the name and location of the Radio supervisor for their district has prompted the release of the following information:

At the Washington headquarters of the Radio section of the department of commerce, William D. Torrell is chief supervisor, assisted by Supervisor W. E. Downey. The nine field divisions are distributed and headed as follows:

1. Boston, Mass., Supervisor C. C. Kolster.
2. New York, N. Y., Supervisor A. Batchelor.
3. Baltimore, Md., Supervisor R. Y. Cadmus.
4. Atlanta, Ga., Supervisor W. Van Nostrand.
5. New Orleans, La., Supervisor T. G. Deiler.
6. San Francisco, Cal., Supervisor J. E. Dillon.
7. Seattle, Wash., Supervisor O. R. Bedfern.
8. Detroit, Mich., Supervisor S. W. Edwards.
9. Chicago, Ill., Supervisor E. A. Beane.

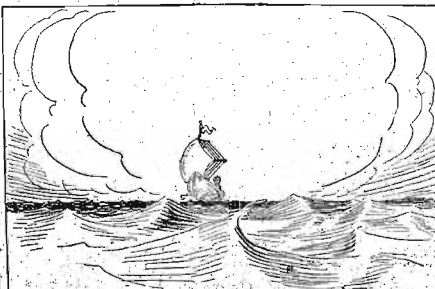
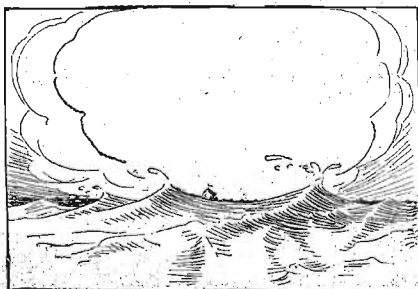
## Lay Radio Trap for Man Sought as Wife Killer

MILWAUKEE, WIS.—George Cummings, alleged murderer, is being hunted down by Radiocasts. Stealing northward to his native Canada in the automobile belonging to his wife, for whose murder he is wanted, broadcast stations at Minneapolis and Stevens Point, Wis., have sent out minute descriptions of Cummings and the motor car.

## THE ANTENNA BROTHERS

Spir L. and Lew P.

Sailing the S(ai)loop



## HORNLESS SPEAKER FOR TOURIST CAMP

THROWS SOUND EQUALLY FROM ALL SIDES

Schenectady Haven for Automobile Travellers Installs New Loud Talking Device

SCHENECTADY, N. Y.—Automobile tourists who visit the camping ground at Schenectady this summer will be furnished Radio entertainment by a giant, hornless loud speaker that emits signals equally from both sides.

Listeners within 500 feet of the apparatus may enjoy music and speech of great volume, free from distortion, from this new "induction" loud speaker, recently developed in the research laboratory of the General Electric company here.

The induction loud speaker is quite different in every respect from the household variety of loud speaker using a horn. Dr. C. W. Hewlett, physicist and inventor, conceived the device which until its installation in the Schenectady park, has had only limited use in public.

### How Hornless Speaker Works

The type used to entertain tourists and residents of Schenectady measures forty-two inches in diameter. The working diameter of the diaphragm is thirty-six inches.

The device consists essentially of two large flat coils of wire mounted close to one another in a frame which holds a thin aluminum diaphragm between the coils. These coils carry direct current which produces a radial field in the space occupied by the diaphragm, and these same coils carry the amplified voice currents and induce in the diaphragm corresponding currents which, by their interaction with the radial magnetic field, cause the diaphragm to vibrate and give off sound waves.

### Features Claimed for Device

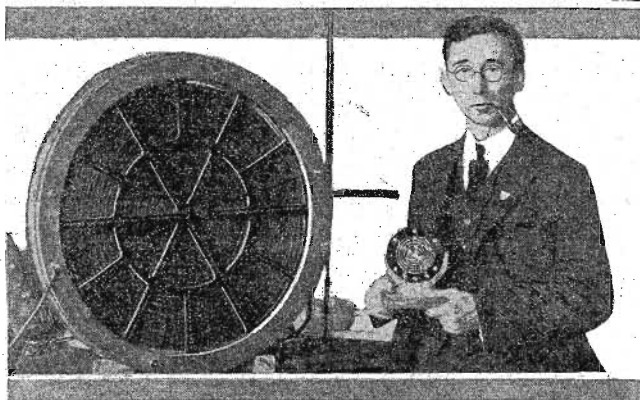
Briefly, the features of the new amplifier are:

It has no iron in it and does not depend on permanent magnets, and no horn is necessary as is the case with the ordinary loud speaker.

Sound is thrown out equally from both sides, and the diaphragm is acted on at all points of its surface so that it vibrates as a whole rather than being allowed to break up in partial vibrations.

The large size of the diaphragm enables

## NO HORN ON THIS LOUD SPEAKER



Dr. C. W. Hewlett, inventor and physicist, holds small model of his new induction type, hornless loud speaker. At the left is large working model, now installed at automobile camping ground near Schenectady. The concentric circles noticed on the large speaker are really a spiral of conductor. Behind this is an aluminum diaphragm, and then another spiral of conductor.

It to emit efficiently the low components of the tones in speech and music. This results in much more natural reproduction than can be obtained from ordinary types of loud speakers. This is particularly noticeable in the reproduction of piano music and other instruments having extremely low or high tonal values.

## WHK Off Air While Its Home Is Moved

Cleveland Pioneer, Set Up by Warren Cox, to Increase Power

CLEVELAND.—Station WHK, Cleveland pioneer Radiocast, owned and operated by the Radiovox company, has removed from its old location to the tenth floor of the Hotel Winton. The offices of the company owning WHK have been moved to the ground floor of the hotel.

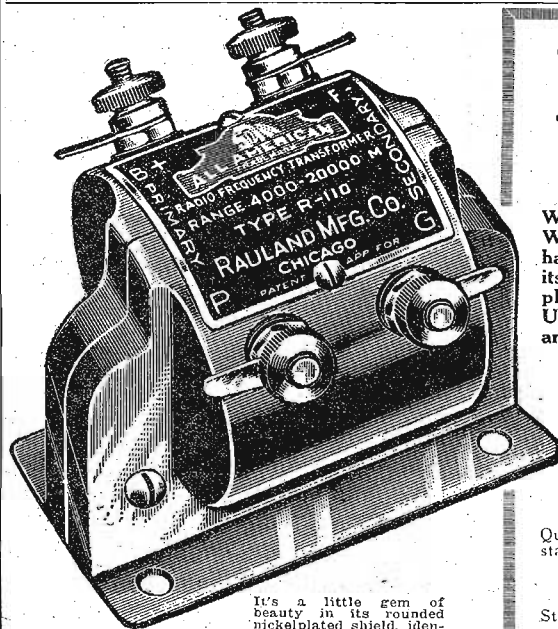
Radiophans who have been wondering about the recent absence of WHK from the air, are promised an immediate opening with improved apparatus. Warren Cox, president of the Radiovox company, was one of the first amateurs in Ohio to own and operate a Radiophone station.

## New Zealand Dial Turners Hear Phonographs Mostly

BUFFALO, N. Y. — Sometimes broadcast listeners wonder if they have anything to be thankful for. Well, here is one thing.

Broadcast listeners in New Zealand have to listen to programs made up chiefly of phonograph music. This is stated on no less authority than that of A. T. Markham, secretary of the postal and telegraph department of New Zealand, under whose direction broadcasting and the control of Radio comes.

All letters of the British Broadcasting company's station at Hendon have been changed from 2QC to 5BBC.



It's a little gem of beauty in its rounded nickel-plated shield, identical in size and shape with the famous All-American Audio Frequency Transformers to insure ease of mounting and neatness.

**\$6**

AT ALL STORES

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you should know!

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Quiet in operation; shielded to prevent inter-stage coupling or reaction.

(3)

Stable; free from any tendency to oscillate.

(4)

Windings specially designed to eliminate capacity; properly treated to exclude humidity.

(5)

Every transformer "circuit-tested" for accuracy and precision to insure uniformity and highest efficiency.

(6)

The best long wave transformer that you can buy—irrespective of price! Fully guaranteed by Rauland Mfg. Co., pioneers in the radio industry and the largest exclusive makers of transformers.

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Here is the "NIGHTINGALE PORTABLE" in a fine case ready to walk away with. Take it with you on your Vacation, Auto Trip or to your Summer Camp or Home. When you come back with it, take it out of the case and use it as a Home Radio Receiving Set. It is complete in all details including aerial, batteries and collapsible loud speaker. It is only 10 1/2 x 9 1/2 x 5 1/2 inches in size and weighs 2 1/2 pounds. It is ready to operate when you see it and use it.

NIGHTINGALE—4-Tube Radio Receiver with— 32.50

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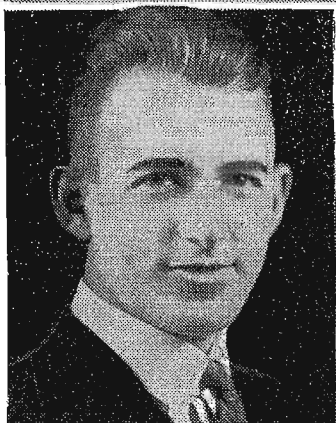


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# BEFORE THEY THOUGHT OF "MIKES"



The gentleman at the left is the youngster who was shown last week in dress, Florence C. Potts of KQV.



The young gentleman above was introduced to the Radio world by singing at different stations until now he is announcer and musical director of a station ending in S. If



Right, is a young man from a station with two announcers having voices so alike that even their wives are unable to tell which is announcing. The station's call is WW— Guess who it is?

W. G. Hay, KFKX, is the young man who was shown last week dressed in the kilites. Read below for the life history of this very modest young man.

### Florence C. Potts, KQV

AT TWENTY-FIVE years, F. C. Potts looks more like a boy of eighteen—no worldly blight having yet effaced the ingenuous outlook he still preserves on life. He is five feet seven inches tall, blue eyes, fair hair and skin, and has the rosiest of cheeks, such as every girl today would like to give her weight in gold to possess.

Among the hobbies young Potts rode, is that of "magic" and many is the time his name and picture have been headlined outside the "nickleodeoms." The picture shows him in "sleight-of-hand," which he likes almost as well as Radio.

His position as chief operator and announcer of Station KQV, as well as head of Radio sales department for the Double-day-Hill Electric company, keeps him pretty often on the air. He is one of the pitchers this season of the D-H E baseball team.

Among other things, his infatuation is dancing, unless it might be whispered, the frankest possible admiration for a pretty girl, providing she also has brains. Faults—he has some, errors of youth and inexperience probably and the misfortune of having to grind in daily mercantile business since he was fourteen years old.

Through thick and thin, poor and inefficient equipment, discouragement and long hours, he still retains what is probably the most vital interest of any one person in the organization at Station KQV, and all that pertains to it.

### Hold Primary Democratic Convention by Etherwave

BOSTON.—Radiophans were the delegates and voters in attendance at the primary Democratic convention held recently from the Herald-Traveler studio here of Westinghouse Station WBZ.

The Radio convention was called to order by Judge Thomas P. Riley of Boston, who held the chair and entertained nominations. Representatives of the several candidates who had been mentioned as possibilities for the democratic nomination rose to be recognized and in turn presented qualifications of their men.

It has been found that Radio played a far more important part in the recent German elections than in the French ones.

### W. G. Hay, KFKX

THIS young man is so modest that he sometimes refuses to sign his name to a letter. But, after all is said and done, he's a good scout and means well.

Being a Scotchman by birth, he smokes a pipe, which is only natural. The following is a resume of his qualifications, etc., hair, brown, (that is what's left of it, after worrying over Radio programs, etc.); eyes, sometimes hazel and some-

times black; hobby, work of all kinds, and plenty of it.

W. G. Hay is a musician of no mean ability, having a large class of vocal students; directs the largest choir in Hastings, also a male chorus. Taken all in all, this with his regular work as announcer keeps him quite busy.

It would take a long time and plenty of paper for William to enumerate the various gifts received from Radiophans. Suf-

fice to say, they come from all parts of the United States and Canada, and include flowers, books, candy, boxes of apples, nuts, neckties, and other gifts too numerous to mention.

Girls please note, he is very much married to a charming lady who is a former Chicago girl, having lived there for ten years before coming to Nebraska.

His historic past is a record of hard work, and his activities have been mostly confined to sports, music and business. Plays quite a lot of tennis, and also plays at golf. Why he claims that he only plays at golf, when he is a Scotchman, is beyond our comprehension.

### Land Wire Workers Perform for "Mike"

#### Western Union in Frisco Conducts Experimental Concert

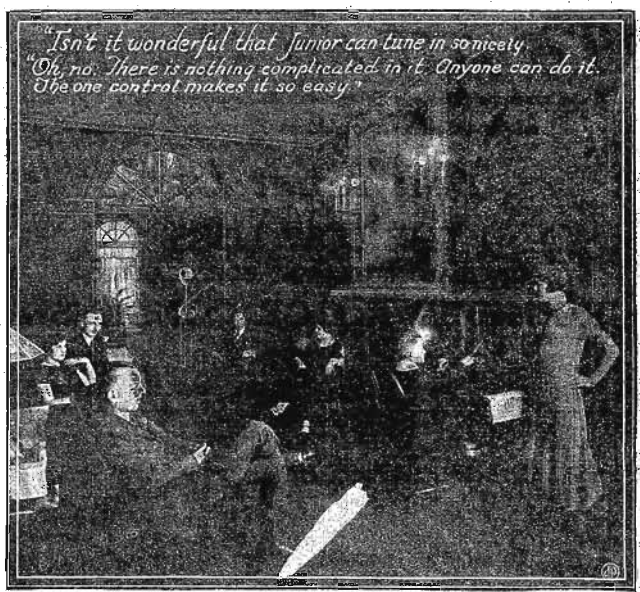
SAN FRANCISCO.—On July 28, 1924, 9:00 p. m., Pacific time, the Western Union Telegraph Employees Radio club of this city will broadcast a special program through Station KPO, Hale Brothers, Inc.

The concert, in addition to offering an hour of exceptional entertainment, is being conducted along experimental and development lines.

Radio enthusiasts far and near have been invited to report to C. F. Newsom, Pacific division commercial manager, care general manager of the Western Union Telegraph company, or direct to Station KPO, Hale Bros., Inc., San Francisco, either by wire or by mail, during or following the program. An excellent long-distance record is expected as a result of the experiment.

### Parisian Short Waves for Aerial Lighthouse

PARIS.—The one-and-a-half and two-meter Radio waves recently produced and studied by Commandant Rene Mesny, are beginning to show their possibilities. The short waves are now to be the basis of an all-year-round aeroplane lighthouse, according to an idea which has been suggested by the recent flight of Captain Pelletier d'Oisy from Paris to China.



### Bristol Single Control Radio Receiver

Complicated combinations are eliminated when tuning in with Bristol Single Control Radio Receiver—every station is on the one dial. It gives the joys of radio with technicalities left out. The well-known Grimes Inverse Duplex System (non reradiating) is utilized in this Receiving Set. Because of the reflex, only four tubes are required to give power equivalent to six. The price, without accessories, \$190.00.

### Audiophone Loud Speaker

You forget the radio equipment when listening thru the Audiophone Loud Speaker. The tone is full, clear and pleasing. It gives a true reproduction of the original. Made in three models—Senior \$30.00, Junior \$22.50, and Baby \$12.50.

Ask for Bulletins Nos. 3014 and Ay-3015  
Made and Sold by  
**THE BRISTOL COMPANY**  
Waterbury, Connecticut

## 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 and Call .....

Signed .....

Address .....

Town .....

State .....

# PLANS AIR CHAIN TO FIGHT STORM PERIL

## WOULD SERVE WHEN WIRE SERVICE IS WRECKED

### Suggests Every Class B Station Continually Communicate with Another Plant

DETROIT.—S. W. Edwards, Radio Supervisor for the eighth district, headquarters here, has worked out and submitted to the department of commerce a plan that requires every big broadcasting station always to maintain communication with one certain other station, as an emergency measure in case of storms or other conditions that may cause wire service in any part of the country to become paralyzed.

With all the broadcasting stations throughout the country, the United States has been nevertheless without a workable emergency scheme for transmission of press news and other valuable information when wires are thrown out of commission.

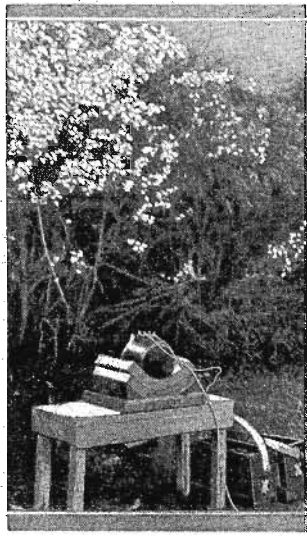
The plan is to link all of the larger broadcasting stations. In the case of Detroit stations, these could use their assigned waves, that is, WWJ on 750 meters, this being the limited commercial wave length assigned to the station, and WCX on 517 meters. Even though these stations are but a few blocks apart, no interference would result from simultaneous operation.

#### Plan Can Be Made National

"The scheme of emergency communication, embracing the first, second, third, eighth and ninth Radio districts," says Mr. Edwards, "does not necessarily need to be confined to these areas. Stations in cities in districts other than those enumerated can be connected up with this system. In order for it to be of greatest protection and service, it should be national—thus enabling messages to be handled readily between New York city and San Francisco and Seattle. If the plan submitted has merit and meets with the approval of the bureau and if we can secure the co-operation of the owners of stations, it will be possible for the Radio Supervisors in charge of various districts to make arrangements to link stations in their respective districts.

"In the plan only class B stations have

# ENGLAND TUNES IN NIGHTINGALE SONG



British listeners recently had the pleasure of hearing the song of the nightingale when a microphone was placed in a thicket frequented by the noble birds in the garden of Colonel and Mrs. Harrison. Cello music coaxed them into song. Int. Photo.

been considered. These are located in practically all large cities. It is proposed that these stations, with antenna power input ranging from 500 watts to ten kilowatts, serve as trunk lines between the larger cities. The traffic handled can then be turned over to the lower power class A stations or to amateurs for final delivery."

Arrangements are being carried out in Chile for a Radiocast system to embrace every town and city in the country, as well as those in contingent territory.

# WDBY, CHURCH PLANT IN CHICAGO, IS LATEST

## 500-Watt of North Shore Congregational Church Opens

CHICAGO.—The North Shore Congregational Church here recently opened its newly installed 500-watt Radiocast. It has been assigned call letters WDBY.

The station will be used for religious services only. The plan is to have daily Bible lessons taught by some of the leading preachers of Chicago, and to organize Radio Bible classes.

The music is in charge of Prof. George S. Schuler, organist, and Maurice M. Johnson, music director. Rev. J. C. O'Hair is pastor of the church. J. A. Cullanan is operator and announcer.

# CONVENTION "ASIDES"

(Continued from page 1)

him if there was no authority to stop it. This was followed by the pertinent suggestion that the band be requested to play "The Star Spangled Banner" so as to quell the approaching riot.

#### Demands a Ten-Minute Speech

Just before he took the platform, one noted delegate was heard arguing with the chairman as to whether he could have five or ten minutes in which to speak his piece.

On the whole it sounded a bit like being behind the scenes during a none-too-good dress rehearsal, for not only asides were carried out to Radioland via broadcast, in many cities, but coaching and prompting from the wings were noticeable. When the party platform was read, the reader was obviously handicapped because some one was holding copy on him and correcting his utterances.

It was the first political convention ever broadcast, to be sure. Perhaps the later conventions will profit, and stick to set speeches and regular texts, cutting out the microphone when irrelevant matter comes up, or asides and promptings are made.

#### Hiker Carries Phones

SCANTON, PA.—Harold E. Stear, of this city, recently hitch-hiked across the country to Denver carrying with him a portable set with which he reported he regularly received KDKA and numerous other large stations.



## Build Your Radio Set With Kellogg Guaranteed Parts



**KELLOGG** Head Sets assure clarity and volume, a requirement for long distance reception. The magnet is of special cased steel and hardened by our own method and process, which controls the heat and time, electrically and mechanically eliminating any possible variation. The magnet windings are of great accuracy. The mountings, end plates, wire and insulation are of the best materials suited for the purpose.

Kellogg head sets are the lightest—the most popular on the market, and used by both experts and amateurs for their all around superiority. Handling these sets while listening does not effect reception.

No radio receiver is complete without a Kellogg head set.

Be sure you get Kellogg so that you know you have the best.

If your dealer does not handle Kellogg communicate direct with us.



**Kellogg Switchboard & Supply Company**  
1066 W. Adams - CHICAGO



# To Attain Results

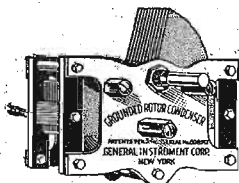
(From the instructions of a Professor of Radio Engineering to his pupils)  
such as no other variable condenser will produce

## You Must Use

### THE LOW LOSS

GENERAL INSTRUMENT CORPORATION

## GROUNDING 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 Grounding Rotor Condenser—then you will appreciate the value of a Radio Professor's recommendation.

| Type              | Minimum  | Maximum     | Price  |
|-------------------|----------|-------------|--------|
| Type 46X 11 Plate | 5 MMFD.  | .00025 MFD. | \$4.50 |
| Type 46A 13 Plate | 6 MMFD.  | .0003 MFD.  | 4.50   |
| Type 46D 21 Plate | 9 MMFD.  | .0005 MFD.  | 5.00   |
| Type 46F 43 Plate | 15 MMFD. | .001 MFD.   | 5.50   |

AT YOUR DEALER

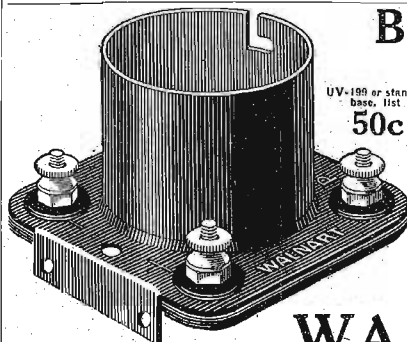
Otherwise send purchase price direct to us and you will be supplied.

## GENERAL INSTRUMENT CORP.

423 Broome Street  
NEW YORK CITY



# BAKELITE INSULATION



UV-199 or standard base, list 50c

Unlimited guarantee: A New Walnut Socket free for every one that breaks or fails you in any way. Used on leading sets. Lower loss than any all-bakelite, fibre or composition socket. Over half a million giving satisfaction.

## WALNART SENSIBLE SOCKETS

Approved by Radio News Laboratories. Nickel or dull black on a metal finish. Ask your dealer first, please.

"Makers of good goods only"  
**WALNART ELECTRIC MFG. CO.**  
Dept. 442 CHICAGO

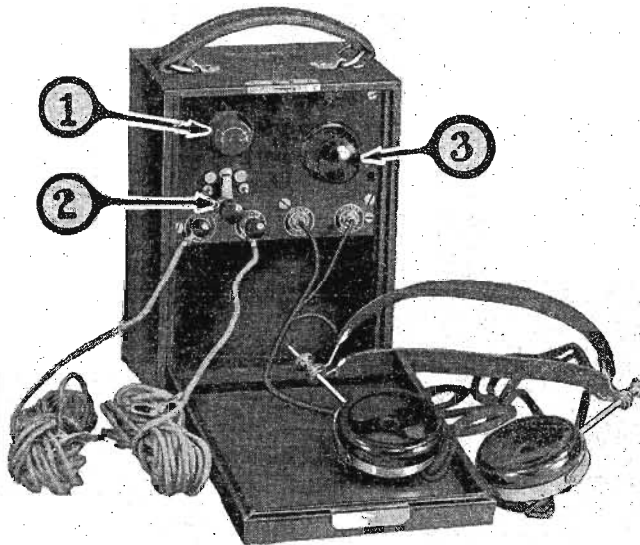
*De Forest Parts and audions are as good as De Forest Radiophones*

DE FOREST RADIO TEL. & TEL. CO., Dept. R. D. 11, JERSEY CITY, N. J.

# OPERATING AND TROUBLE SHOOTING

For the Owner of a  
Kodel Portable  
Receiving Set

**O**PERATING 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 Kodel Portable receiver is described. Radiophans with other sets will also find these articles worth while reading, particularly the notes on trouble finding.



**T**HE KODEL is a complete, single-circuit, non-regenerative Radio receiver with 15 feet of aerial ground wire and space for mounting accessories in a handsome Dupont leather covered carrying case.

Standard types of dry cells are employed for lighting the filament of the detector tube and supplying the necessary energy to detector circuit.

**Additional Equipment**

The following equipment is necessary in order to complete the Kodel for operation:

One 22½-volt B dry cell battery. This must not measure more than 3¼ by 2 by 2½ inches. Under no circumstances should a battery with more than two terminals be used, as these extra connectors are liable to touch some live parts of the

Kodel and cause trouble. One Radiotron UV-199 tube. One 2 megohm grid leak if desired. The use of a grid leak in the Kodel is not essential to the successful operation of the set. We recommend, however, that you try using the Kodel both with and without grid leak installed. One 3½ or 4½-volt dry cell A battery. Not over 4 by 1½ by 3 inches in size. One pair of sensitive head phones. Any standard head phone of from 2,000 to 3,000 ohms resistance may be used.

**Installation of Accessories**

Open rear cover of Kodel and remove receiving unit. This pulls out, from the rear, like a drawer. Two pairs of loose wires will be noticed. The yellow wire on top connects to the positive terminal of B battery (marked +). The black wire is

connected to the negative terminal of the B battery (marked -). In making these connections insert yellow wire from the top of the battery clip, and the black wire from the bottom, so that when battery is mounted in detector unit the loose black wire will fold back in the space between socket and tuning coil. Be careful that the ends of these connectors do not extend beyond the battery terminals and that the insulation covers the entire wire not fitted under binding posts, as otherwise a short-circuit might occur when battery is installed in the case.

The B battery is now mounted in detector unit, the clip holding same in place,

the rear of battery pressing against the lug and lower bracket.

When inserting the battery, the yellow wire is placed in back of prong between condenser and battery. Care must be used to make sure that battery terminals or any uninsulated part of wires do not touch any bare metal parts of the detector unit. Gently press the B battery in place so that its side is parallel with the edges of detector panels.

**Vacuum Tube**

Now insert vacuum tube in socket. This tube is fitted with a small pin on one side of its metal base and may be inserted in the socket only when the position of this pin coincides with the slot in socket.

When tube pin has been brought in line with slot in socket, press tube down firmly into the socket and gently twist tube in clockwise direction as far as it will go (about ¼ inch). In this position the tube will be securely locked in place and its four small contact pins make connection with socket springs.

It is quite necessary that these springs make good electrical connection with the tube contact pins. Therefore, make sure that the extreme end of tips of the tube contact pins are clean before inserting tube in place. A little time spent in carefully scraping or sand papering the bottom of these tube contact pins will often mean the difference between good and bad results.

**Grid Leak**

If it is desired to use grid leak, this should be inserted under clips, making sure that the metal ends of grid leak make contact with these clips.

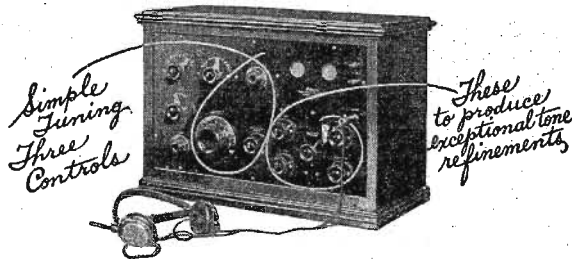
**A Battery**

With Kodel case standing up, set A battery just outside with positive terminal to the right. This facilitates connection. Connect yellow wire coming from base board to positive A battery terminal and black wire to negative terminal of A battery. A battery may now be put into its compartment and rear-door of Kodel closed and latched.

Caution—Be sure rear cover is properly closed and securely locked.

**Directions for Using Kodel**

After the necessary accessories have been properly installed in the Kodel as (Continued on page 8)



**I**T 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  
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San Francisco

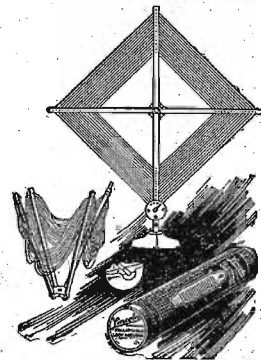
Bridgeburg  
Canada  
London  
England

Look for this sign



## BUILT BY RADIO ENGINEERS

FOR THOSE WHO DEMAND THE BEST  
Great selectivity—no static—quality reception



**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 600 meters.

H. F. Resistance at 400 meters—only 7 ohms.

Wire is stranded, flexible and of great tensile strength and high conductivity. Inductance 2 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

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## UV-200



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

Price \$5.00

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

Be sure that every vacuum tube you buy is marked **RADIOTRON**

**Radio Corporation of America**

Sales Offices—Dept. 316  
233 Broadway, New York

10 South LaSalle St., Chicago, Ill.

433 California St. San Francisco, Cal.



This symbol of quality is your protection.

# Radiotron

REG. U. S. PAT. OFF.

### OPERATION, TROUBLES

(Continued from page 7)

previously explained, the set is ready for operation. In order to receive Radio programs with the Kodol four steps are necessary. Open front cover and remove head phones and ground wire. Fit receivers in head band and insert cord tips in phone receptacles. Attach ground wire (the cord fitted with clip) to binding post "G." Attach aerial wire to binding post AN1. Establish proper ground and aerial connection as explained below. Put on head phones; turn on filament rheostat, set inductance switch, and tune condenser for station desired.

#### How to Tune in Radiocast Programs with the Kodol

Before attempting to operate the Kodol thoroughly familiarize yourself with its construction and operation. Use Kodol at first on local Radiocast stations only, making sure that such a station is operating at the time. Use outside aerial and permanent ground if available.

Tuning in Radiocast stations with the Kodol is very simple, only three adjustments being required. These are as follows:

1. Filament control rheostat Number 1 regulates the current flowing through detector tube filament and must be very carefully adjusted in order to insure sharp tuning and long distance reception.

2. Inductance Switch Number 2 governs the amount of inductance in receiving circuit and, consequently, the band of wave lengths which the Kodol will detect with maximum volume and efficiency.

3. Tuning condenser Number 3 completes "tuning" the receiving circuit, permitting the selection of any Radiocast station that may be operating within receiving range.

Set inductance switch Number 2 for station you wish to receive. If no station in particular is desired, set switch on contact 1 and carefully tune over entire range with condenser until station is heard.

Turn rheostat knob Number 1 approximately half or three-fourths way on. Do not turn it too high, as excessive filament current produces distortion and decreases the life of the detector tube. The rheostat should never be turned on more than is absolutely necessary to receive incoming signals with the desired volume and clearness.

Now turn condenser knob Number 3, slowly first one way and then the other, as far as it will go, until a station is heard. When voice or music is discerned, turn condenser knob very slowly until a

position is reached where volume of sound is greatest. If reception is "blurred" or imperfect, turn rheostat Number 1 back toward off position very slowly until reception is clearest.

A station when first detected may not always be recognized as such on account of filament current being too high. When you hear a noise like a "whistle," "sizzling" or unrecognizable music or speech, these noises are loudest, then turn rheostat very slowly toward off position, until signals come in clear and distinct.

If no station is picked up, set switch Number 2 on position 2 and try again. If still no station is heard, try position 3. Also try changing rheostat setting.

Approximate setting of inductance switch is as follows:

| For wave length        | Setting with Ground only | Ground Setting with Aerial |
|------------------------|--------------------------|----------------------------|
| 250 to 325 meters..... | 1                        | 2 or 3                     |
| 325 to 425 meters..... | 2                        | 2 or 3                     |
| 424 to 600 meters..... | 3                        | 2 or 3                     |

If reception is not of sufficient volume, retune by moving condenser knob very slowly until maximum intensity of signal is again obtained. It may then be necessary to adjust rheostat again.

If stations are not heard with sufficient volume or at all, turn rheostat a little higher and retune. After a little practice, this operation will seem very simple and with the proper setting of rheostat Number 1, inductance switch Number 2 and condenser Number 3, you should be able to tune in any Radiocast station within receiving range with maximum volume and clearness.

If the volume or clearness of signals is decreased when hand is removed from condenser knob, give condenser knob a very slight turn in counter-clockwise direction. This will compensate for body capacity and while signals will be decreased in strength with this adjustment and hand in place they will, with the proper adjustment, retain maximum volume and clearness when hand is removed.

When through using Kodol, turn rheostat to off position, coil up ground wire, disassemble head phones and carefully pack in Kodol compartment. Close door, making sure that it is securely latched.

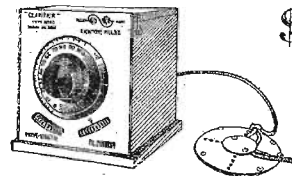
Radiocasts in Germany are encountering the inevitable problem of how to pay for broadcasting. Berlin proposes to resort to paid advertising.



## The GREBE CLARIFIER



THE first practical, workable solution of the problem of radiation from regenerative receivers. Unlike the "wave-trap" it increases signal intensity.



\$30

- Increases Selectivity
  - Increases Signal Intensity
  - Improves Quality
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- And—  
Is Easily Connected

Ask your dealer or write for literature

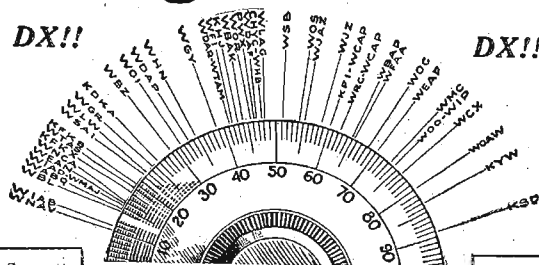
A. H. GREBE & CO.  
Richmond Hill, N. Y.

Western Branch—451 East 3rd St., Los Angeles, Cal.

# Sharp Tuning Without Equal

Sharpness of tuning with natural tone is what the real "fan" is looking for. Tests prove that you can separate without interference, stations broadcasting only 3 meters apart.

Mr. Herbert N. French, 21 Central Ave., Flushing, N. Y., tuned 3 360-meter stations (WGI, WHN, WMAX) separately without interference, although broadcasting at the same time. SEND US YOUR REPORTS.



The Radio Shack is the first to discover the ideal synchronized use in this country of Litzendraht wire. With its aid the new "De Luxe Ambassador" achieves the modern ultimate of what both rankst amateur and ardent expert have sought. The amazing performance, selectivity, DX, volume on loud speaker, dwarf all description. The "dying signals" are almost unknown. Extraordinary distance reaches the detector faithfully and clear. The marvelous tuning coil even has no taps to make unsightly panel and dead-end loss. The contacts are self-cleaning, self-adjusting and compensating. The whole design goes snugly behind a 7x10 panel. There are no imitations.

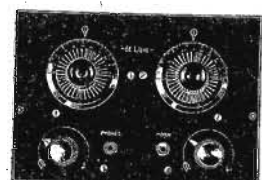
- SET CONSISTS OF**
- 1 DRILLER x 10 Radion Mahogany Panel, engraved in Gold.
  - 1 Genuine Ambassador Master 3-Circuit Litzendraht Tuning Coil.
  - 1 Genuine Comsco Bakelite-End Condenser.
  - 1 Tripliod Mounting Socket.
  - 2 Premier Hegehog Audio Transformers
  - 4 Brunswick Under-Slung Foundation Brackets
  - 2 Brunswick Jacks with Gold-Plated Fronts; 1 for phones; 1 for loud speaker.
  - 1 Freshman Mic a Grid Condenser.
  - 1 Standard Glass-Enclosed Grid Leak.
  - 20-Ohm Shaackton Bakelite Rheostats.
  - 2 Moulded Mahogany Dials grained to match panel.
  - 5 Lengths Professional Round Engraved Binding Posts completely mounted.
  - 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 \$27.95 C. O. D. Send no money.

- Scoring Committee of Philadelphia, Pa., hears 49 stations from Cuba to Los Angeles sign off in 8 1/2 hours.
- 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)
- SPELBNID FREE CABINET**
- Order Building Kit and Accessory Outfit both together, and we will send Fine Mahogany Finish Cabinet FREE.

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

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

## THE NEW DE LUXE AMBASSADOR



**\$27.95**

C. O. D. Send No Money

**The RADIO-SHACK**  
LARGEST RADIO DEALERS IN AMERICA  
Executive Offices, Dept. RD75,  
55 VESEY ST., NEW YORK CITY  
Every Article Sold on WRITTEN Money Back Guarantee

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

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

**PLEASE REPORT YOUR RESULTS**

### 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 orders on following day. We answer every letter we get—same on same day. The Radio Shack are the Largest Radio Dealers in America. No inferior goods. Only the best and most available. You buy in safety. Send your C. O. D. order today. Use the coupon NOW.

The Radio Shack, Dept. RD75, 55 Vesey St., New York, N. Y.

Mark X here ONLY if you want D.L. Amb. Set \$27.95.

Free Illustrated Circular of "De Luxe Ambassador" Mark X Here X

If I have marked a cross in UPPER square at left, send the De Luxe Ambassador, \$37.95, C. O. D. If I have marked a cross in CENTER square send Complete outfit of Operating Accessories, \$35.60, C. O. D. If I have marked a cross in LOWER square send Suit Case Cabinet, \$12.00. Send mahogany finish CABINET FREE If I have ordered set and complete accessories together, my entire order is subject to your WRITTEN Money-Back Guarantee.

Mark X here if you want SUIT CASE Cabinet \$12.00.

Name (Print Plain) .....

Address .....



# WSB HOLDS PEACH FEST SATURDAY

Wednesday, July 2

Silent night for: CKAK, KFAF, KFNF, KFSG, KGO, WBAV, WBAD, WFAA, WFI, WGY, WIF, WMC, WOAW, WSAI.  
 CKAC, Montreal, Can. (Eastern Daylight, 423), 4:45 p. m., Rex Little and his Mount Royal hotel orchestra; 4:45, musical tea.  
 CKOH, Ottawa, Can. (Eastern, Daylight, 435), 8 p. m., Chateau Laurier Hotel orchestra; Madame Fouquet Corbelle, soprano; Jack McDonald, French, conductor; Allan Carr, tenor; Bert Summers, tenor; Rita Brennan, pianist; "With Rod and Line at Algouquin Park," A. F. McLean.  
 KQVA, Ft. Pittsburg, Pa. (Eastern, 326), 5:30 p. m., Dinner concert, Pittsburg Athletic association orchestra; 6:30, Uncle Ed, will take the Radio children for a ride on the Hubbrook wagon; A. Black Oak orchestra.  
 KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Detective stories, Detective Nick Harris; concert; 9:5, Evening Herald concert; 9:10, Examiner concert; 10:11, concert, Hollywoodland orchestra; 11:12, Ambassador Coconut Grove orchestra concert.  
 KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., Irish musical program.  
 KFOA, Seattle, Wash. (Pacific, 455), 8:20 p. m., Mrs.

"Billy Sunday of the Air" will be on WOA-W Sunday and you will understand why it is so popular. Brown has been given this title.



Agnes MacPeake's sympathetic rendition of old-time songs has made her popular with fans listening in to W H N which station she appears regularly.

WHA, Madison, Wis. (Central, 360), 7:30 p. m., "What Makes the Modern Home Efficient," Evelyn Jensen.  
 WAAA, Iowa City, Iowa (Central, 484), 12:20-1 p. m., "An Immediate Aspect of the Child Labor Problem," Prof. C. W. Hart.  
 WHAS, Louisville, Ky. (Central, 400), 4:5 p. m., Altonzo Fincher orchestra; Walnut Theater orchestra; 7:30-8, agricultural labiod milk; concert, Mrs. Jane Webster Barrett, director.  
 WHB, Kansas City, Mo. (Central, 411), 7-8 p. m., educational talks; music.  
 WJM, New York, N. Y. (Eastern, Daylight, 366), 2:15-2:30 p. m., Ben Jacobs, tenor; 2:30-2:45, Harry Jentes, pianist; 3:45-4:15, Al King's Original Louisiana Four; 4:25-5, Henry Carter and Sam Hirsch, song writers; 6:7, around the Altonzo's board; 7:10-7:30, Ted Barron's star surprise night; 7:30-8, Roseland Dance orchestra; 8:2-15, Union of Orthodox Jewish congregation; 8:20-8:45, Agnes MacPeake, soprano; 9:0-15, Mme. Marie Lefort Kohova, violinist; 9:15-9:15.

Ralph Lyford (right), director of the summer opera which WLVW Cincinnati broadcasts every Monday night.

Ralph Ostrom, soprano; Mildred Johnson, soprano; Kenneth Lyman, pianist.  
 KGO, Oakland, Cal. (Pacific, 312), 3 p. m., "The Possibilities of Collaborative Writing," Louis L. Long; 4-6:30, concert orchestra, Hotel St. Francis.  
 KGW, Portland, Ore. (Pacific, 492), 2:30 p. m., talk, Jeanette P. Cramer; 8, Mrs. Henry W. Lester, soprano; 10, dinner music, George Olson's Metropolitan orchestra; Olson, soloist; Armstrong and Clarence Hartman, pianists.  
 KHJ, Los Angeles, Calif. (Pacific, 395), 12:20-1:15 p. m., concert, Eleanor J. Warner, soprano; Helen Sherwood Fealy, accompanist; 2:30-2:30, matinee musicale; 6:30-9, Art Hickman's concert orchestra; 6:10-7:30, children's program, Prof. Walter Scheerer, Harlow; Dick Winslow, juvenile reporter; John Knox, violinist; Mrs. Harry C. Knox, accompanist; Edith Knox, pianist; 8-10, concert, courtesy Parkers Brothers, Olive Forbes, Crème The Gaylord Trio, Miss Wade, manager; Dr. M. E. Baumgartel, lecturer; 10:11, Art Dickmann's dance orchestra.  
 KIX, Oakland, Calif. (Pacific, 509), 8:10 p. m., special studio program, KIX artist; 8:10 p. m., studio program, KIX artist.  
 KFO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Seliger's Fairmount hotel orchestra; 2:30-3:30, Jack Fall's, Emilie Marx orchestra; 4:30-5:30, Rudy Seliger's Fairmount hotel orchestra; 5:30-6:30, children's hour, Big Brother; 7-7:30, Mrs. Seliger's Fairmount hotel orchestra; 8-10, E. Max Broadbent's, Yosemite band.  
 KQV, Pittsburg, Pa. (Eastern, Daylight, 270), 5:5-30 p. m., "Sunset Stories" and "Diary of Stooly Old Dog"; 8:15-9, fifteen minute song revue of popular hits, Fred Hughes; 9-10, Pittsburg Post, Volunteers of America.  
 KSD, St. Louis, Mo. (Central, 546), 8 p. m., music and specialties, Delmore theater.  
 KTV, Chicago, Ill. (Central, Daylight, 536), 11:35 a. m., "Talk, Mrs. Anna J. Peterson; 6:45 p. m., children's bedtime story; 7-7:30, dinner concert, Congress hall; 8-8:35, program, Sherwood musical school, Ruth H. Worth, director; 9:45-12:30, midnight relay.  
 WEAP, Fort Worth, Tex. (Central, 476), 9:30-10:45 p. m., concert, old-time fiddle band of Kram.  
 WBAV, Columbus, Ohio, (Eastern, 423), 12 p. m., Dr. Lebach Owen, pianist.  
 WBBR, New York, N. Y. (Eastern, Daylight, 273), 8 p. m., Blando Hall, pianist; 8:15, Bibba lecture; 8:45, Mirrie Schuler, violinist.  
 WEZ, Springfield, Mass. (Eastern, 337), 6 p. m., dinner concert, WJZ trio; 7:30, bedtime story for the kiddies; 7:45, WEZ trio; Mrs. Ruby Tilton Klingensmith, pianist; William S. Tilton baritone; 9, Leonard Deussen, baritone; Florence Deussen, accompanist; 9:30, harmonica selections, Lenora; 11:30, Leo Teisman and his Hotel Brunswick orchestra; 12 songs, Bill Cole and Jack Armstrong.  
 WEA, Pittsburg, Pa. (Eastern, Daylight, 422), 3 p. m., Fred Rosenfeld, pianist; 6:30, Willam Kent; 7:30, Sunning Mich, 9:30 California Ave. M. E. church mixed quartet.  
 WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., Oriole Terrence orchestra; 6: dinner concert; 7, musical program, Helena Denton; soprano; pianette Brunck, mezzo soprano; S. T. Ritter, baritone.  
 WDAF, Kansas City, Mo. (Central, 411), 8:30-4:30 p. m., the Sixty Eight school of the air; piano tuning in number on the Dup-Art; address, weekly health talks, auspices of the Health Conservation Association, the 221 Mrs. Story; Lady music, the Plantation players; 8:45-10 p. m., program arranged and presented, the 221 Mrs. Story; Lady music, the Nighthawk Frolic, a Plantation players.  
 WDR, Philadelphia, Pa. (Eastern, Daylight, 395), 1:30 a. m., daily concert; 12:30 p. m., organ recital, Stanley theater; 12:30, Acadia cafe concert orchestra; 2, Acadia cafe concert orchestra; 2:30, Evelyn Schwartz, pianist; Marie McGuigan, soprano; 7:30,

## Headliners of the Week

HOW Harry Houdini, that remarkable magician of the movie world, will broadcast his wonderful feats of strength and cleverness in the great question Wednesday. Tune in for WOR and perhaps you may get a few tips. WTAM presents Raul S. Bonanno, a Victor Record artist and a star of L'Opera of Paris. All young brides should dial for WHA and listen attentively to the lecture by Evelyn Jensen on "What Makes the Modern Home Efficient."

Thursday WLVW will give "The Great Divide." This play, which thrilled many theater goers, adapts itself readily to the Radio. A. Russell Rensing, a 19 year old boy who has traveled almost around the world will give an interesting talk this same evening from WJAX.

Independence Day will be honored throughout Radioland by many attractive surprise programs arranged in keeping with the spirit of the day. KHJ will make the ether resound to the stirring music and war songs of '61, '98 and '17-'18 as played by the band of the 160th Infantry, California National Guard.

WSB promises a peach of a program Saturday. It is the Georgia Peach night and many crates of Alberta peaches will be given away. When your appetite is satisfied don't be lazy but listen in to Louis L. De Jean, an aviator-poet, veteran flyer of the World War who will give you in verse form KGO the thrilling sensations of flying. The love-making of perhaps the world's most famous lovers may be sung in your ears if you tune in for WHAS and the Balcony Scene from Romeo and Juliet.

Herbert Schroeder, "The Boy Caruso," 9 year old artist who will sing Sunday night at WJQ, has been an artist of note since the tender age of 4 and has sung in several of the large Chicago theaters.

The Punkinville Central High School being composed of ardent Democrats, the graduation exercises have been postponed to this Monday. KQV has advertised this class of graduates as the most brilliant in history. If you really want something cool and refreshing Tuesday, get WGY, and hear all about the icebergs, glaciers, seals and whales around the Poles.

Charles Strickland's Palladium orchestra; 10-10:15, Frank Lafrette, baritone; 10:12-10:30, Victor Widour, baritone.  
 WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., seafarers assize; 5 p. m., "What the Wild Waves Are Saying"; 8:30, Comfort's Philadelphia orchestra; 9:05, Pennsylvania Senators dance orchestra; 7, Uncle Wip's bedtime stories.  
 WJZ, New York, N. Y. (Eastern, Daylight, 455), 11-11:15 National Democratic convention; 4-4:15, Elmore Gunn's fashion talk; 4:15-4:30, daily menu; 7-7:30, Irving Selzer's Cafe Boulevard orchestra; 7:30-8, Cafe Boulevard orchestra; 8-8:15, "Golf," Louis Brown; 8:15-8:30, Phillip Steele, baritone; 10:30-11, Emil Golanov's Trovador orchestra.  
 WJAA, San Juan, P. R. (Central, 360), 6-8 p. m., municipal band.  
 WJAC, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., household hints, "A Weekly Trip to Market," Mrs. C. A. Kirby; 11:30-12 m., surprise hour; 2:12-2:40 p. m., woman's club hour, "Dresses," Maudo Earl; 4-4:30, magazine reading; 7:30-8:15, farm lectures, "Protecting the Rural Value of Your Car," W. E. Merritt; 8:15-9:30, concert, Francis Rosenthal, bass; 11:12, dance program, Gov. Osborn's Nicholas Hotel orchestra.  
 WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., Elster school of music; "Review of Agricultural College Work," Book Examiner; 2:45-3:15, "Square Deal for You and Son," Dr. Sommerfeld; "Fourth of July Festivities," Mrs. Grace Vial Gray; Harrison Emmanuel, violinist; Ethel M. Tilton, contralto; Miriam J. Benson, pianist; 4:30-12, Frank Weisbach orchestra; 7:45-8, Ford Rush and Glenn Lowell, baby time; 8-9, boys and girls hour; 9, music lesson, Burton Thatcher; 8:45, answers to Radio questions, Mat Friedman; 9-10, farm program: "What the Farmer Wants to Know," E. B. Heston; "Golf Evening," Fred L. Chausson; 10-11, Adelle Munsal; 11-12, program, Pennsylvania State University.  
 WLS, Cincinnati, Ohio (Central, Daylight, 423), 10 p. m., "Shut In" program, Waretter concert company; 4-5, French lesson, Mrs. Ida Feldman; American Legion Orchestra and Aurora, hostess; Arthur Sinker, age 10 years; Prof. Frank Hubbard, violinist; Bousier Quartet; J. Szymanski, baritone; Glen Rubin, tenor; Arthur Voit, bass; solo, Charles Klinghofter; "Beas, Dr. W. C. Herman; Virginia entertainers; Mrs. Dorothy M. Wittwer; Marie Seimer; Mrs. Nettie Shafer, accompanist.  
 WMAA, Chicago, Ill. (Central, Daylight, 447), 4:10-4:15, "Beauty Talk" by Grace East; 8 p. m., public Cosmopolitan School of music; 9, Chicago theater organ; 6:30, Geoprene Fournier, story lady; 8, The Place of Music in Community Life; Prof. Osborne M. Conant; 8:30, "Russia of Today," Jacob H. Rubin; 8:50, group of songs, Dr. C. B. Hoar; 9, talk, Chicago charities; 9:15, program, Alexander Nakhidov.  
 WOC, Davenport, Iowa (Central, 484), 12 m., dinner; 6:30 p. m., sacrament's visit; 8, Edwin Sindell, organist; Charles H. Hall, soloist.  
 WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital, Mary E. Vogt; 12:30 p. m., Wagonwheel crystal ball room orchestra, Robert E. Golden, director; 4:45, Mary E. Vogt, organist; 7:30, Hotel Adelphia concert orchestra; 9, WOOD orchestra, Robert E. Golden, director; 8:45, G. E. Ridge, pianist; 10, Hotel Adelphia concert orchestra.  
 WOD, Kansas City, Mo. (Central, 366), 8-8:30 p. m., musical program, WOD-8 p. m., concert.  
 WPA, Columbus, Ohio (Eastern, 286), 7-8 p. m., Grand Theater organ; lecture, member Ohio League of Women Voters; 7:30 p. m., concert.  
 WQJ, Chicago, Ill. (Central, Daylight, 448), 3-4 p. m., "Doughs-Dissets and Variations of Mosaic Dough," Helen Harrington Downing; 7-8, Leo Garity, Irish tenor; Harry Geary, pianist; 10-2, Ralph Williams and Glezer, directing.  
 (Continued on page 10)

Dress Daddy's bedtime stories; 8, Reading, railway traveling; 4:10, special travel talk, William Tausky; 8:30, "Oleat," Mrs. Louis Love; 10, Arcadia cafe dance orchestra.  
 WFAF, New York, N. Y. (Eastern, Daylight, 492), 11-11:30 a. m., young mothers' program; 4:45-5 p. m., Eugene Farley, violinist; 11:30-11:45, Dorothy Palmer, soprano; 4:30-5, children's program; 5-9, Broadway Symphonie symphonies; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:30, symposium services; 7:30-7:45, Marguerite Warnech, contralto; 7:45-8, talk, American Agricultural; 8-8:30, "Introduction to Psychology," Dr. Gertrud Murray, Columbia university; 8:15-9, talk, American Bond & Mortgage company; 9-9:15, Gold Dust Trains; 9:30-10, everybody ministers; 10-10:15, Edna MacNary, pianist.  
 WFAO, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty; 4 p. m., health talk, member state board of health; music, university talent.  
 WEAY, Houston, Tex. (Central, 360), 12-1 p. m., Finlay Rice hotel orchestra; 2:30-3:30, live, talking machine records; 10-12, Lloyd C. Finlay orchestra.  
 WEBH, Chicago, Ill. (Central, Daylight, 370), 7-10:

3:30 p. m., Jacob Radunsky, pianist; David Radunsky, violinist; Oriole orchestra; 9:30-10:30, Kenneth Steeling, baritone; Oriole orchestra; 11:30-12:30, Fred W. Agard, tenor; Rosemary Hughes, soprano; Oriole orchestra.  
 WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., banquet program, Amstour day.  
 WFL, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, Loretta Keck, pianist; 6, Sunny Jim, the kiddie's pal; 6:30, Meyer Davis, Bellevue Stratford concert orchestra.  
 W61, Medford Hillside, Mass. (Eastern, Daylight, 560), 8:30 p. m., message to Chap Fire Girls, Charles W. Casson; 7, meeting of the Amrad Big Brother club; 7:30, Bernice and her bunch; popular song hits, Donie MacNary, pianist.  
 WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bouchard, organist; 8:30-7:30, dinner music; 9-10, concert, Ladies' quartet, Memorial Evangelical church; 10-11, concert, Niagara Radio Store of Niagara Falls, N. Y.; 11:30, supper-dance music, Vincent Lopez Hotel Statler orchestra, Harold Glezer, directing.





**Tuesday, July 8**

(Continued from page 11)

Silent night for: KFOA, KFSG, KLY, WAAW, WBAW, WFI, WHAS, WIP, WWS, WRAQ, WVC, WRC, WSAI.

**CACAC**, Montreal, Can. (Eastern Daylight, 425), 7 p. m., children's stories in French and English; 7:30, classic concert, Rex Battle's orchestra; Herbert Spencer, organist; 8:30, La Presse studio concert; 10:30, Joseph C. Smith's orchestra.

**CKY**, Winnipeg, Can. (Central, 455), 8:15 p. m., concert, Mission & Elsie, music company.

**KGO**, Oakland, Calif. (Pacific, 312), 4:55-5:30 p. m., concert orchestra, Edward St. Francis, 4; Respaldosa Four; Isabella Engle, soprano; Edward Leslie, viola soloist; Georgia Schiller, coloratura soprano; Luther E. Sloan, baritone; one-act comedy, "The Flairish Shop"; KGO players; Eladio Musical club; Harry Pierson, tenor; duet for soprano and contralto, Sadie Phillips; Garcia Taylor; Queen A. Troy; Mellist; chorus for women's voices; Ladina Guardate; Louisa Johnston; contralto; vocal trio, Luile Saundess, Marquerite Johnson, Louisa Johnston.

**KFI**, Los Angeles, Calif. (Pacific, 463), 6:45-7:30 p. m., vocal concert; 8:30, Hawaiian Concert Grove orchestra; 8:10, Examiner concert; 10-11, concert.

**KGW**, Portland, Ore. (Pacific, 497), 8:30 p. m., children's program; 9, concert; Selwyn-Lucas Music company.

**KHJ**, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert; 3:30-3:50, matinee concert; 8-8:30, Art Hickman's concert orchestra; 9:15-7:30, children's program, Prof. Walter Strickland; 10:30, "Uncle John"; 8-10, concert; 10-11, Art Hickman's children's orchestra.

**KYW**, Chicago, Ill. (Central Daylight, 530), 6:45 p. m., children's bedtime story; 7-7:30, dinner concert; 8:20-8:50, "Hot Weather Specialties," Grace V. Gray; "Enriching Country Life through Recreation"; Eugene R. Lee; 9:00-9:30, Chicago Musical college; 10-11:30, late "At Home" program.

**WBAV**, Columbus, Ga. (Eastern, 423), 12 m., Ita Leach Owens, pianist; 3 p. m., WBAV orchestra, Frances Handman, director.

**WCK**, Detroit, Mich. (Central, 411), 3:30-4:30 p. m., the Star's Radio trio; 5:30 p. m., week-day child talent program by the pupils of Lenora Anthony of Detroit and collaborating; 6:45 p. m., school of the air program plus testing-in number on the Duo-Art; address, speaker from the Meet Council of Greater Kansas City; 8:30, "Gladys," Gladys Gray; the Tell-Me-a-Story Lady; music, Carl Norberg's Plantation places, Hotel Alhambra; 11:45 p. m., Nigdamistic tonic; Carl Norberg's Plantation players, Hotel Alhambra.

**WDR**, Philadelphia, Pa. (Eastern Daylight, 395), 11:45 a. m., all-album; 12:02 p. m., organ recital; Stanley theater; 12:50, Arcadia Cate concert orchestra; 3, Arnold's Concert; 7:30, Broadway Duddy's bedtime stories; 1:30 p. m., WEAO, Columbus, Ohio (Eastern, 368), 1:30 p. m., educational lectures; Ohio State university faculty.

**WEAV**, Houston, Tex. (Central, 369), 12-1 p. m., Zing-Rice hotel orchestra; 2:30-3:30, latest talking machine records; 10-11, Lloyd C. Winick orchestra.

**WFI**, Philadelphia, Pa. (Eastern Daylight, 395), 1 p. m., Davis Bellevue Stratford concert orchestra; 3, Caroline Hoffman, pianist; 8, Sunny Jim, the kiddie; 8:30, Meyer Davis Bellevue Stratford concert orchestra; 9, Loreta Kerk, pianist; 11:05, Charlie Kerr and his Symphony Orchestra; 12:30-1 p. m., George Albert Baueclair, organist; 6:30-7:30, dinner music.

**WGY**, Schenectady, N. Y. (Eastern, 380), 1 p. m., "Selecting Gifts for the Summer Bride," Rita H. Mason; 2:30, dinner music, Joseph A. Chiodone and his Clover Club orchestra; 7:45, "A Polar Cruise," Dr. Sigal Roub; WGY orchestra; 10:15, Stephen Z. Binkoff, organist.

**WHAA**, Iowa City, Ia. (Central, 484), 12:30-1 p. m., features, music; 8, concert, faculty of school of music.

**WHAS**, Louisville, Ky. (Central, 466), 4-5 p. m., Dick Quintan's Golden Duo orchestra; Alamo Theater orchestra; 7:30-8, Manning Hawaiian and Jug orchestra.

**WHB**, Kansas City, Mo. (Central, 41), 8-9:30 p. m., varied musical program; 10:30-11:30 p. m., dance music, Sweeney Radio orchestra.

**WHN**, New York, N. Y. (Eastern Daylight, 366), 3:15 p. m., Broadcasting State theater orchestra and vocalists; 3:35-4:15, Bob Schneider and his dancers; 4:15-5:30, Wm. and his 3 children; 5-7, at the festive board.

**WIP**, Philadelphia, Pa. (Eastern Daylight, 509), 10 p. m., Scudora gossip; 3 p. m., "What the wild waves are saying"; 3:30, Comfort's Philharmonic orchestra; 6:35, WIP Little Symphony orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's Philharmonic orchestra; 8:35, Murphy's minstrels; 10, Karl Bonavent, organist; 10:30, Lorraine dance orchestra.

**WJAX**, Cleveland, Ohio (Eastern, 390), program arranged by Cleveland News-Leader; 7:30 p. m., E. G. Johnson, bedtime story; Radio Colston, talk; Don Palmer; Joe Smith-Martha Lee Club orchestra; specialities, favorite entertainers.

**WLAG**, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:45 a. m., household hints; 11:35-12 m., surprise hour; 2:15-2:30, woman's club solo talk; arranged by League of Women Voters; 4-4:30, WLAG players; 6-7, dinner music concert; Geo. Onora's National Hotel orchestra; 8:30-8:15, farm lectures.

**WLW**, Cincinnati, Ohio (Central Daylight, 423), 10 p. m., musical, Mothers' club, John Assemblies director; songs, Marion Manship; Martin's orchestra; Richard Pavey, tenor; 12 midnight, Club-Steinberg orchestra.

**WMAQ**, Chicago, Ill. (Central Daylight, 447.5), 6 p. m.,

**TABLE FOR MAKING TIME TRANSITIONS**

|   |    |    |    |    |   |   |   |   |   |    |    |    |
|---|----|----|----|----|---|---|---|---|---|----|----|----|
| Eastern Daylight Saving Time              | 1  | 2  | 3  | 4  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Eastern, or Central Daylight Saving Time  | 12 | 1  | 2  | 3  | 4 | 5 | 6 | 7 | 8 | 9  | 10 | 11 |
| Central, or Mountain Daylight Saving Time | 11 | 12 | 1  | 2  | 3 | 4 | 5 | 6 | 7 | 8  | 9  | 10 |
| Mountain, or Pacific Daylight Saving Time | 10 | 11 | 12 | 1  | 2 | 3 | 4 | 5 | 6 | 7  | 8  | 9  |
| Pacific Time                              | 9  | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6  | 7  | 8  |

**HOW TO USE.** If a station is giving a program at 8 o'clock Mountain daylight saving time and you wish to find what this is equivalent to in Eastern time, find 8 o'clock in the third or Mountain daylight saving row. Then immediately above it in the same vertical column will be found the figure 9 in the Eastern time row. This indicates that the program would be heard at 9 o'clock Eastern time.

Chicago theater organ; 6:30, Hotel LaSalle orchestra; 8, vocal recital; Mary E. Viper; 12:02 p. m., Civic service; 6:15, quartet, First Presbyterian Church of Chicago, Highgate.

**WCHS**, Memphis, Tenn. (Central, 500), 8:30 p. m., Jules Garago and company of local artists; 11, midnight tonic, Hines' Tennesseeans.

**WOAW**, Omaha, Neb. (Central, 520), 6-7:30 p. m., dinner program, Mrs. Craig Johnson's studio orchestra of Council Bluffs; 9-11, concert program, Carl Silbert, tenor, director.

**WOO**, Philadelphia, Pa. (Eastern Daylight, 509), 11 p. m., organ recital; Mary E. Viper; 12:02 p. m., Wanamaker Crystal Tea Room orchestra; Robert E. Golden, director; 4:45, Mary E. Vogt, organist.

**WOO**, Kansas City, Mo. (Central, 500), 8:30 p. m., musical program; 8-9:30 p. m., popular dance orchestra.

**WPAL**, Columbus, Ohio (Eastern, 286), 6 p. m., Athletic Club orchestra.

**WUJ**, Chicago, Ill. (Central Daylight, 448), 3-4 p. m., book review, Rev. Fred Harrison; "Various Classes of Lighting," "Camouflaging Your Age with Colors," "Anne Prang Kitchen"; 7-8, "High Electrical Practices Replacing Old Methods," Cook County Real Estate board; Tony Coover, baritone; Margaret Gerrity, pianist; 10-2, Ralph Williams and his Rainbow Gardens orchestra; "How to Get Better Radio Reception," Harry J. Marx.

**WWS**, Atlanta, Ga. (Central, 429), 8-9 p. m., Visk Jiviera Melody orchestra; 10:45, Rolles Famous orchestra.

**WWJ**, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Hiram; 9:45, Fred Shaw, pianist and organist; 12, Detroit News orchestra; 3 p. m., Schumann's band; 7, Schumann's band; 9:30, Detroit News orchestra.

**SHORE FRIENDS LISTEN TO CAPTAIN ON OCEAN**

**Pacific Oil Tanker Carries Its Own Radiophone**

**LOS ANGELES HARBOR.**—Demonstrations proving the success of the Radiophone on the Union oil tanker Montebello, some distance from this port is considered by the officials of a large communication company as the opening of a new avenue for the handling of ship orders, positions, etc.

Recently while the tanker was laying in this port for several days, Captain Fritz Stahl, master of the giant ship, had installed in his cabin the only Radiophone on any freighter navigating on the Pacific coast.

At 3 o'clock in the afternoon on the day she sailed from here, the Montebello was 100 miles north. During this period Captain Stahl talked with the Radio station on shore here. A number of his friends were called and connected by telephone on the regular city system, and had the pleasure of listening to his conversation for an hour.

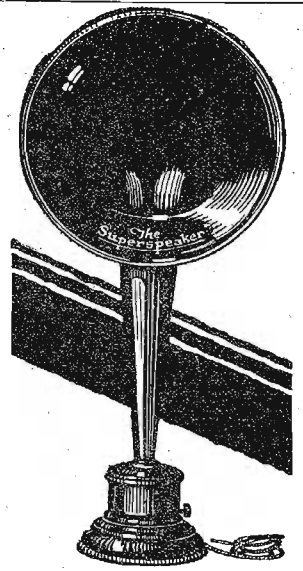
**KFIQ, Fan Owned, Is Forced to Give Up**

**Demands of A.T.&T. Make It Necessary to Quit Plant**

**YAKIMA, WASH.**—Station KFIQ, known nationally for its unique system of Radiophon ownership and operation, has surrendered its federal license owing to its inability to meet the insistent and immediate demands of the American Telephone and Telegraph company for a patent license to operate the set.

In closing down, officials in charge of KFIQ said, "We believe that the Yakima plan could, under normal conditions and without unnecessary handicap, have solved the problem of who is to pay for Radio broadcasting." But the experiment is a thing of the past through no fault of the fans, and the failure should not be attributed to inherent defects in the plan itself."

Your aerial should have one or more insulators in each end.



**Superspeaker**

**EVEN WITH LOW VOLTAGE**

**from your B-Battery, The Superspeaker will continue to operate because of its remarkable electrical efficiency, and its highly receptive micrometer air-gap adjustment. Where other reproducers fail The Superspeaker brings in distant stations, sweet and clear.**

**Swiss Radio Growth too Slow; Magazine Gives up**

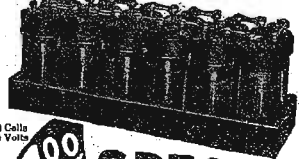
**WASHINGTON, D. C.**—The Radiosuisse, a small monthly periodical devoted to the interests of Radio amateurs and to a popularization of the Radio industry, issued at St. Imier, Canton Neuchatel, as the official organ of the Swiss Radio Club of Switzerland, suspended publication with its number of March 15.

A storm has been raised in French Radio papers by the suggestion, made by a French amateur, that all boys under eighteen or twenty years be barred from the right to have Radio licenses.

**Wanamakers Celebrates**

**NEW YORK.**—Wanamakers recently celebrated their first anniversary of broadcasting from WJZ. A special program lasted two hours.

Don't place B batteries on top of a radiator to get them out of the way. The heat dries them out very rapidly.



**400 COOD SPECIAL INTRODUCTORY PRICE**

For a limited time only, and to introduce this new and superior Storage "B" Radio Battery to the Public, we are selling it for \$4.00. Regular Retail Price is \$5.00. You save \$2.00 by ordering NOW. A finer battery cannot be built than the

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# 30 Minute A-B-C Lessons for Radio Beginners

## Chapter XVI—The Power Voice of Radio

By P. E. Edelman

**I**N 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 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? Chapter XXI—Choosing a Radio outfit.

**A**MPLIFICATION may be employed in a broadcast receiver to amplify at either Radio or audio frequency or both, but it is necessary to avoid distortion in the result. When amplification

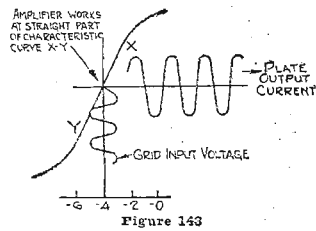


Figure 143

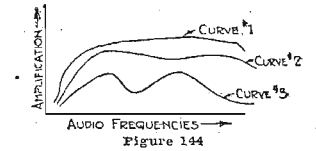


Figure 144

is employed the original energy received need only be sufficient to operate a grid circuit, as any desired amount of increase can be built up therefrom.

While mechanical amplification is possible, the main reliance in Radio outfits is on electrical amplification, and more particularly on the use of vacuum tubes.

**Vacuum Tube as Amplifier**

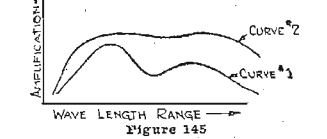


Figure 145

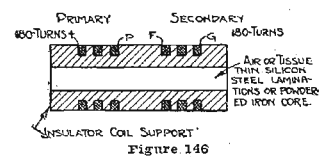


Figure 146

As illustrated in Figure 143, the initial grid voltage on the input is adjusted to take advantage of a straight line portion of the characteristic operating curve of the tube. This requires that the grid be maintained negative in certain amplifier circuits, though it is also possible to operate on the positive side of the curve. Any part of the curve can be used if the plate current will repeat without partial rectification.

**Audio Frequency Range**

The coupling means between the stages

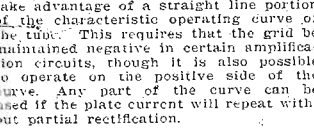


Figure 147

of an amplifier act to a certain extent as frequency traps, so that careful design is required to avoid amplifying one range of audio frequencies much better than an adjacent range. A few curves are shown in Figure 144 by way of example. Curve 1 is for an amplifier which is nearly uniform in amplification over the usual audio range of frequencies, whereas curve 2 is for an amplifier which amplifies better for

certain frequencies than for others. With a poor design the amplification change with frequency may be marked as indicated by curve number 3, so that for example, high notes in the orchestra would reproduce very faintly and out of proportion to others.

**Radio Frequency Range**

Similarly when fixed or untuned Radio transformers are used to couple amplifier tubes, there are certain ranges in which more amplification occurs than at other

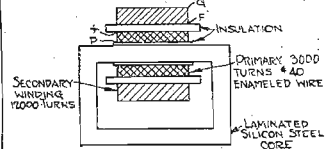


Figure 148

Radio frequencies. Figure 145, number 2, indicates a good curve for a fixed Radio amplifier, whereas curve number 3 shows the curve usually obtained with one stage of fixed transformer coupling.

**Construction of Radio Transformers**

Any two coupled coils with very little self capacity or condenser effect can be used as a Radio transformer. Usually such fixed transformers are built as indicated schematically in Figure 146. Number 40 enameled wire may be wound in a series of sections, as shown, on an insulated bobbin which is grooved. With an air core, there is a tendency

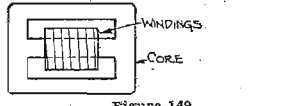


Figure 149

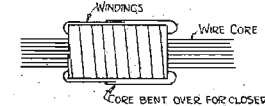


Figure 150

for such a transformer to become resonant in connection with the self capacity of a vacuum tube, within a certain frequency range. Sometimes a variable condenser is shunted across one of the windings for tuning purposes. The more generally used type of Radio transformer of the fixed variety will have a tissue-thin laminated iron core or one made up of powdered iron. Such a core has two effects, (1) directing the lines of force, and (2) capacity action, such that the transformer so constructed will respond over a wider range of frequencies. The resistance in the windings also assists in keeping the value of oscillating currents minimized in the windings. The dimensions of such transformers are kept small, so that the magnetic field will be limited.

**Adjustable Radio Transformers**

As indicated in Figure 147 two variometers can be continuously coupled so that a transformer built in such manner

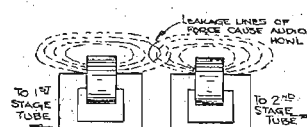


Figure 151

may have its frequency range adjusted. Another type in much use requires a variable condenser to adjust the frequency range as in tuning circuits.

**Construction of Audio Transformers**

An ordinary type of audio amplifying transformer is shown in Figure 148. The variety shown in Figure 149 is surrounded by the iron core so that the magnetic field is limited to the core. Air core audio frequency transformers are possible but would be bulky in size for the same result. A small dimensioned transformer using bent-over silicon steel wires for a core is indicated in Figure 150. Transformers of this type may be mounted close together. Figure 151 indicates the leakage flux or lines of force from one transformer cutting the winding of an adjacent transformer. This causes hum or howl in certain amplifying circuits. Low ratio windings, as 1 to 3, are less likely to cause distortion than high ratios, as 1 to 6 or 10.

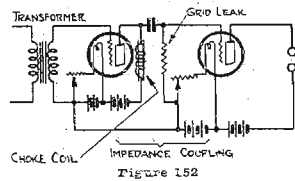


Figure 152

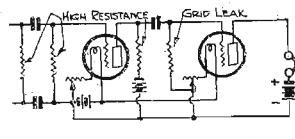


Figure 153

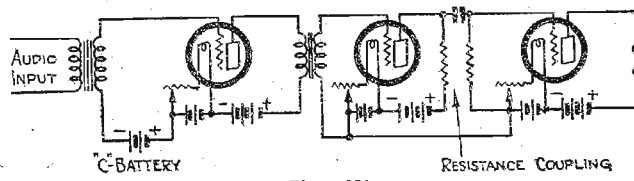


Figure 154

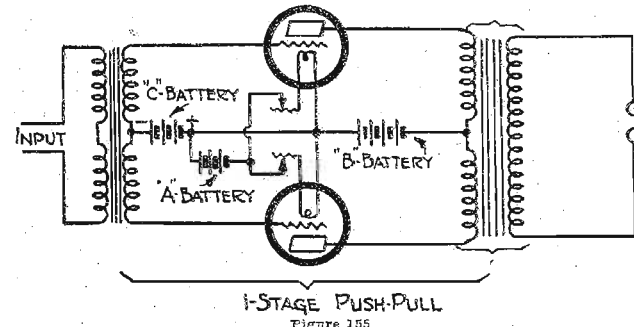


Figure 155

**Kind of Coupling**

Vacuum tube amplifiers are spoken of in terms of stages or steps of amplification. Either a transformer, or an impedance circuit, or a resistance circuit may be used to couple one or more stages. The object of coupling is to convert the plate energy from one tube into an effective grid operating input for the next tube so that amplification will multiply through the stages used. Figure 152 shows transformer input to the first tube and impedance coupling to the second

tube. The impedance coil is not in as much favor as the transformer for (Continued on page 16)

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| 8 Amisco Ohm Rheo-        | Transformers               |
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| 1 Durham Var. Grid Leak   | 1 Sub Panel, 3x2 1/2       |
| 1 Amisco 400 Ohm Poten-   | 13 Switch Wafers           |
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| 3—Rheostats                    | Bus Wires, Spaghetti and Diagram, etc. |
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| 1 Cockaday coil, BAKELITE.....     | \$4.50  |
| 1 Jefferson audio Transformer..... | 4.25    |
| 2 17-pl. condensers, AMSCO.....    | 2.50    |
| 2 Switch arms.....                 | .50     |
| 1 National socket, BAKELITE.....   | .50     |
| 2 Double circuit jacks.....        | .50     |
| 1 Single circuit jack.....         | .50     |
| 1 Variable Grid-Leak.....          | .50     |
| 3 Rheostats, AMSCO.....            | 1.00    |
| 4 Switch stops.....                | .20     |
| 2 7x24 in. Baseboard.....          | .20     |
| 1 2 meg. grid leak.....            | .20     |
| 16 ft. of busbar.....              | .95     |
| 3 Binding posts.....               | .15     |
| 1 .001 mica condenser.....         | .40     |
| 2 3 in. Bakelite dials.....        | .50     |
| 1 7x18 Baseboard.....              | .50     |
| Bulk prints, instructions, etc.    | \$21.50 |

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## American Boy Important Factor

### Summer Bows Allegiance to the Nation's Youth

THE American boy, with his wonderful adaptation to electrical and mechanical development, continues to be a factor both in the progress of the Radio art and in the summertime demand for Radio apparatus. He is supplementing his winter book studies with practical work at home, in camp or at the seashore. There is no other scientific achievement in recent history that has so captured the imagination of millions of American boys as Radio has done.

Radio has created a new type of electrical experimenter with the result that many of the noteworthy developments in the art have been brought about by comparatively young men.

Boys of today are astonishing their elders with glib references to such profound subjects as electrons, ether waves and Radio frequency amplification. These boys understand well the fundamentals of electrical theory and practice and the complex changes undergone by electrical impulses in a Radio circuit.

Radio this summer has taken the American boy off the street corner and placed him in his homemade laboratory. Instead of lurid novels, he now reads the Radio sections of the daily papers and magazines. Incidentally, in scanning the news columns for Radio news he is absorbing a large amount of cultural information on other subjects. Previously he devoured only the comic sections and left the rest of the newspaper practically untouched.

Radio is teaching the boy a greater appreciation of music than he could possibly have attained from painful music lessons or lectures on the subject. It has given him a more graphic knowledge of current events. Radio Sunday sermons bring the teachings of religion home to him.

From an educational standpoint it is clear that nothing could have served so to quicken the boy's interest in physical and mechanical studies as Radio. His absorbing interest in the subject has taught him the faculty of concentration in his other studies.

The gain is not all one sided. The youth of the nation perhaps have done as much for Radio as the art has done for them. For the fact remains that it was the boy who first sold the idea of Radio to the entire family. It is the boy who keeps the older folks informed of developments in the Radio art; it is the boy who determines very largely the type and character of the Radio equipment which the family shall buy; and it is the boy who this summer is making Radio a year-around necessity rather than a seasonal luxury.

## Danger in the Air

### Another Abuse is Broadcasting of Propaganda

IT SEEMS as if there has been much trouble dug up against Radio in the broadcasting of vicious attacks on a power company of the west coast by a certain attorney. The power company was municipal, or owned by the public. Why the broadcasting stations permitted this talk to go on the air is not known. It created such a stir among fans that the district federal inspector gave out this warning:

"This department desires to exercise no censorship over the matter that is sent into the air. But we do always endeavor to discourage the broadcasting of propaganda. It is obviously unfair to give one side of the question to the thousands of listeners-in. And while I refrain from using the power of censorship, I wish it known that I would be glad if all controversial matters, such as the propaganda which was sent out from the stations, be kept from the air."

Unless Radiophans themselves insist on keeping the air free from Radio pollution, no one will know where the controversy will end. No controversial propaganda should flood Radioland, unless both sides are fairly represented. To violate this policy, laid down by the government, is to jeopardize the whole future of Radio broadcasting, which should ever be free from attack.

Radio broadcasting must not be jeopardized. The air must be kept free from exploiters—it means too much to countless thousands to be wrecked by propagandists seeking to bilk the people.

## RADIO INDI-EST

### Ready, Jake? O. K. Turn on the Mike

Dear Radio Indi-Jest: From my signature you will note that I am a trombone player—the same one Mr. Schlagenhauer complained of. I offer the following for your column:

#### Programs We Would Like to Hear

Peggy Joyce in an All Jazz Revue—from Station WGBD.  
Address—How Alum Is Used in Baking Powder—from WQJ.  
Humorous Recitation—How Murphy Beated the Life Insurance Agent—from WQAW.  
Overture—The Jolly Robbers—from Station WEA.  
Lecture—How Can We Tax the Farmer More?—From WLS. THE THIRD TROMBONE PLAYER.

### Many Are Cold But Few Are Frozen

Dear Indi: Here's one clipped from the Chitrib's "Lino-O-Type or Two":  
"We had a great time at Wendell Hall's wedding. After the benediction we stood on the other side of the room and threw rice and old shoes at the loud speaker." I didn't. I just hung back on the receiving set. SPIDER WEBB.

### Out of Gasoline, Did You Say?

Dear Indi: Two northern tarpon bugs were out this week fishing off Sarasota, Fla., with a Radio set for company. You know it's a long time between tides—and if you don't land a tarpon on one tide, you stay for the second. They ran out of gasoline and drifted far into the Gulf. They had rigged up an aerial on two twenty-foot fishing poles. Well, to make a long story short, when they saw they were in distress, one of the fellows took off his "unders" and tied them to a pole. To kill time waiting for a passing boat they tuned in.  
They got everything from pole to pole, but mostly BVD. W. B. P.

### Mrs. Partington Speaks Out

Dear Indi: Miss Partington says she listened in to the big G. O. P. concerts at Cleveland and the music numbers was good but the parade wasn't; they was all out of step but "Bob."  
She says the chairman pronouncer forgot "Mike" sometimes and said some words not allowed on tele-phon. She heard an expert from Michigan read his blueprint baseboard or platform layout of the 11-tube Coolidge Super-Het, and his log of "Coast to Coast—Lakes to Gulf" reception, with only one or two small "dead spots." Then a Ham from Wisconsin broke right into the "Questions and Answers" about his one-tube Super-Phable Soviet Reflex layout with a ("Dry-Wet") crystal detector and World's record Loud and Long Speaker set. This set performs good on hot air, but requires loose coupled variable Constitution. (Amendment switch on panel), Honeycomb Hokus for the Farmers, Soothing Syrup Solder for all Joints, Unions and Klans. He also hooks up the Senate's patent Wave Trap to eliminate or control all interference of President, Supreme Court and Lower House. He provides three-circuit Jack to plug in "Diabolic Ray" treatment of Railroads, Coal mines and Hydroelectrics. She says she heard that they use some ideas they got from Russian blueprints, in these Wisconsin plans.

The Coolidge sets was voted the most popular—1,065 votes for it and only 34 Dakota and Wisconsin foreigners voting for the little set with the big noise. She says she also heard "Hell Maria" Dawes get elected to be the "Bird" and "Sun-announcer" at the G. O. P. station when it goes on the air at Washington. SIGNING OFF.  
\* Scratch out the one you vote against.

### Earlier in the Day It Was

Dear Indi: For the first time she heard WWJ's afternoon program, including music, weather report, vegetable and live stock prices, and the seed and grain market. She was quite old; a grandmother in fact. When asked how she liked her first "listen in" she came back with, "Well I think the music's fine but I don't care much for the aviation after the weather report." T. R. OF MARUMB.

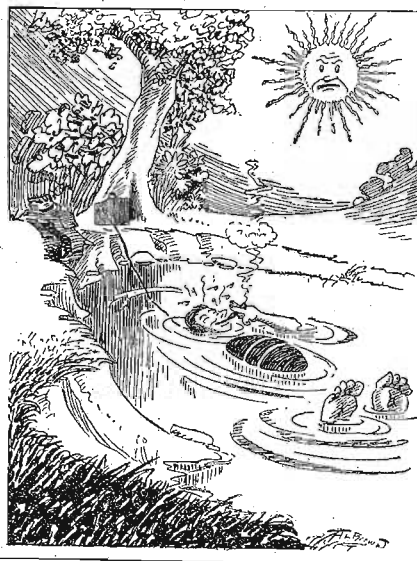
### Show This to Her and Get a Raise

Dear Indi: I am enclosing my ballot for the SECOND most popular announcer, because I am like the Mystery Man. I am an announcer of my own that draws first choice, and she is also a good cook. INS U. LATION.

### Billy Sunday Will Tell You

Dear Indi: I have a compound wound, pure rectifying and self exciting two-and-one-half stage of audio frequency set, with one pure galena, carbundum crystal of Radio frequency with detachable tubes and non-filament sockets. The rheostats are connected to a one-man non-wave trap in series with a self-charging battery from nature's static. The transformers are made of pure spider webs which were spun exclusively for this set, by lame spiders on a back action shuttle cock and properly lacquered and varnished so that they will gather all ead interference that is passing thru the ether. The feed back is conductively coupled to my hot water faucet in the kitchen with a piece of spaghetti to the still in the basement. The seventeen-and-one-half plate mica variable condenser is shunted to ground on warm with a self-acting rectifier type of varicoupler and in series with a highly insulated variometer. All I can get from this set is a strong aroma of Limburger cheese and a station called NIX. Will you please advise me what to do to get Station PDH in the center of the earth. Respectfully yours, SAMUEL SNOW ATWOOD.

## The New Swimmin' Hole



## Condensed

By DIELECTRIC

The idea of devoting a regular period to the broadcasting of physical culture exercises seemed to take hold of the fancy of studio directors quite generally—then it died out. Whether the announcers themselves grew weary of bending and kicking about their palatial quarters or the Radio audiences requested some other feature, I am not informed. However, the thing is back in vogue again with a number of the stations, so that if you have lost or gained weight since the subject was dropped you may now take up the exercises where you left off.

Commemoration of any nationally significant event certainly should be more widespread than at any time previous to the inception of broadcasting, for addresses pertinent to the occasion are sent through the air from the majority of stations and reached the bulk of American citizens. Flag day has a meaning which many understand better as a result of listening to the addresses delivered on the fourteenth of June in the city of Washington. Music supplied by the United States army band and presentation of prizes by the First lady of the land featured a program of patriotic interest.

Marvel upon marvel! That is what it really amounted to when the listening audience tuned in WOR one afternoon recently. Radio is not past the stage of popular regard as one of the marvels of the age, nor has a talking deaf and blind person reached the position of the commonplace. Helen Keller, known the world over for her remarkable intellectual attainment, despite deafness and blindness, gave a Radio address on the subject of "happiness" and so clearly enunciated as to be almost entirely intelligible to her unseen hearers. Her plea for the blind was prefaced by a talk by her lifelong teacher, Mrs. Macey.

There is yet room for something new in the ether, and Station WIP hit upon one novel feature. During the summer months this Quaker City broadcast station will attempt to take away some of the discomfort from hot, stuffy city surroundings by giving to listeners in the sound of ocean waves pounding on the shores at Atlantic City. Also it will broadcast concerts as given at that great Atlantic coast resort by a symphony orchestra and a band. Any celebrities visiting the city will be invited to speak from their "mike" on the Steel Pier.

That organ in the convention hall at Cleveland is something to be proud of and most of the Radio folks in the United States are well aware of the fact. Its music filled many a home during the time that the Republican convention was in session and would have been more welcome than routine procedure to which we were supposed to listen. Now you all have had a chance to attend a Republican convention, though not a typical one, and have an idea of what it is like to hear the voting switch from one candidate to another until the final stampede decides the nomination. Of course, everyone knew it would be Coolidge.

In very few quarters do you find any genuine regret over the absence from the nation's capitol of those men whose duty it is to pass laws and whose recreation consists in evading that obligation as long as possible. The few regretful ones are mainly Radiophans. The White bill and that sponsored by Dill are still reposing in the rules committee's lap to slumber there until next December. In the interim it might be a good plan (if you can swallow your pride) to get in touch with the local Congressmen to press the necessity of passing these two measures at the next session. Don't allow static to lull your interest.

# Underground Antennas for Summer Receiving

## Part II—Directions for Laying Aerial

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

IN THE first article of this series we got a general idea of the theory involved, early investigations, introduction of the Rogers system to the Navy department, directivity of the system, and something of value regarding the laying of the wires in the earth.

This introduction was necessary, even though much of it had to be eliminated because of the technicalities involved. Much more could be said about the Rogers system as installed at several of the Naval stations but that information would not interest you—as a broadcast listener. Those, who are interested beyond that

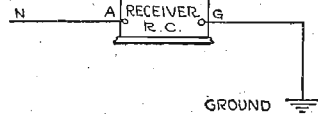


Figure 4

point will kindly communicate with the author in care of Radio Digest Illustrated. From the very beginning you realized that the system first described was not practical enough for the average broadcast listener. That is true. It is not possible for many of us to lay wires in such a fashion as to create a quadrant (quarter circle) and for that reason we are going to abandon that altogether.

### One Practical System

It has been found (by the author) that one buried wire can be used for reception of all the powerful broadcast stations in this country as well as Cuba, Mexico and Canada. One wire connected as shown in Figure 4. Here an ordinary receiving set, a single-circuit three-tube, is shown with the underground wire connected to the antenna post and the usual water-works ground connection to the ground post. A system of this kind is non-directive. This was proven by the author because his home is so situated that it was only possible to run the wire in an east-west direction and northern stations came in with the same volume as the eastern or western stations did.

The wire used in this installation was nothing more than the ordinary number 14 rubber covered wire which is used for wiring residences. The end of the wire

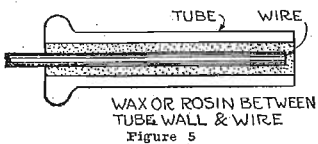


Figure 5

was prepared as outlined in the first article and best described in Figure 5 where a cross section of the tube is shown. It was buried but one foot under the soil in the lawn and one end was run into the Radio room. A very IMPORTANT point to remember is that whenever the wire leading from the buried wire to the Radio room is exposed—lead covered wire should be used for the lead-in and the lead casing of the wire should be grounded to the water works or to a pipe driven into the ground.

Shielding the Lead-in  
If the lead-in is not properly shielded in the manner described above—it is possible (whenever the lead-in is long) for the lead-in to pick up considerable static. This

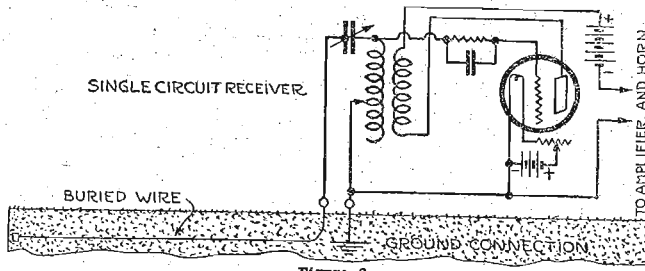


Figure 6

is especially true when a very sensitive receiver is employed. Absolute shielding of the system is essential. In fact, the author, during his experiments while in the Naval service, made use of a screened booth to house the receiving apparatus and himself while conducting the experiments.

Of course, it is not necessary for the broadcast listener to go to these extremes but it is necessary to shield the lead-in with lead covered wire and this lead-in should be made as short as possible. In other words a greater portion of the antenna should be buried, even though it is not buried at the same depth as the remainder of the wire—the lead-in can

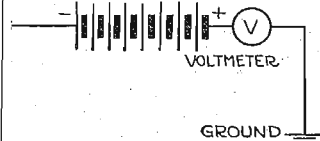


Figure 7

be covered by an average of six inches of dirt under the Radio shack to the point where it enters the room, thereby permitting of a very short lead to the receiving installation.

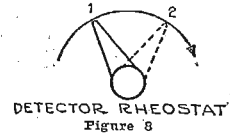
Results may be obtained on shorter wires than the one prescribed and used by the author—however, exhaustive tests conducted proved beyond a doubt that, for moist soil, a wire seventy-five feet in length is best for broadcast reception.

The average broadcast listener associates an underground system with a grounded system and often asks how to obtain a ground connection. Bear in mind that the underground antenna wire is insulated its entire length and that it must be maintained in that condition. If the wires develop a leak and become grounded, a considerable amount of static will be let into the system. Signals will continue to come in with very nearly the same volume—in fact in some cases louder, however the static will be very noticeable.

### Tracing Trouble in System

Also remember that bare copper wires buried in moist earth give louder signals than insulated ones—however, the bare wires bring in very nearly as much static as an overhead antenna system does. Tests should be conducted at least twice a month to ascertain whether the wire has developed a ground. This can be done by making use of a voltmeter (the type used for testing B batteries) and a set of B batteries as shown in Figure 7. Use

ected to the receiving set it will be found that considerably more filament current is required in the detector circuit in order to cause the set to regenerate near the oscillation point—and furthermore that



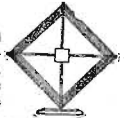
the filament control is extremely critical at that point. This is especially true of the single-circuit receiver. The author thinks this (Continued on page 16)

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- Made of the best materials money can buy. Powerful magnets, genuine steel cores, aluminum cases.
- Manufactured under ideal working conditions.

### UNDERGROUND AERIAL

(Continued from page 15)

is due to the fact that the resistance of this antenna circuit is greater than the overhead system and considerably more energy is required to stabilize or maintain the detector tube in a regenerative state.

In Figure 8, the average difference on the detector filament rheostat settings is shown. At point 1 the receiver is being operated on an overhead antenna system, while at point 2 the same receiver is being operated on the underground system. A soft detector tube has been found to be more sensitive—but harder to stabilize. With an exceptionally well designed filament vernier rheostat the UV-200 tube can be properly operated on the underground system.

(Mr. Jones will describe some experiments with underground antennas next issue and give in detail the system he is now using.—Editor's note.)

### THIRTY-MINUTE A-B-C

(Continued from page 13)

coupling purposes. Figure 153 shows resistance coupling. The plate current passing through a high resistance causes potential at the terminals of the resistance and this potential is used on the grid of the next stage. Resistance coupling affords exact reproduction of the pulsations in plate current from one stage to the next stage, but the amplification obtained is less than with transformer coupling methods.

#### Use of C Battery

A so called "C" battery keeps the grid at negative potential to secure a favorable initial operating input condition on the

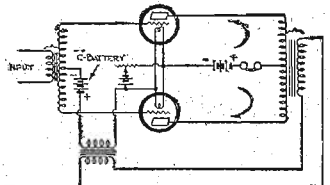


Figure 156

grid. It also insures operation on a favorable part of the curve with minimum consumption of plate current. A C battery will sometimes reduce the volume

obtained but clear it up. Figure 154 shows a C battery used in the first stage, though the same C battery might also be connected in the second stage. For a third stage, resistance coupling may be used. Sometimes the third stage of an audio amplifier will be operated on the so called "push-pull" plan shown in Figure 155. The vacuum tubes are used as one stage and the potentials are balanced so that clear amplification is obtained. A C battery is used to keep the grids at initially favorable potential. The amount of amplification of a stage of push-pull amplification is not much more than from one tube alone, as such an amplifier will operate with one tube removed, but the reproduction is clearer. When using two stages of amplification the same C battery can be employed and this is true for three stages if the same battery is not used for supplying the detector tube, but there is an advantage in using a separate B battery on the last stage of an amplifier, particularly if this is the third stage. The last stage of an amplifier can be worked with much higher B battery on the plate than the first or second stages, if a suitable C battery is

employed, and such an amplifier is termed a power amplifier. B battery voltages suitable for usual operation are, 1st stage 40 to 60 volts, 2nd stage 60 to 90 volts. If a third stage is used, 90 to 150 volts may be employed but a C battery is needed for voltages exceeding 100 volts. High voltages are not necessary for ordinary loud speaker reproduction, as 60 to 90 volts suffices.

#### Plate Current for Loud Speaker Operation

A plate current of about ten milliamperes can be had from the output of a two stage amplifier using 90 volts B battery, and is sufficient to operate the usual type of loud speaker. For so-called power amplification, as much as 5 watts of energy may be sent through a loud speaker if it is built to stand this much, but ordinary headset units will sometimes break down when too much input current is used. Figure 156 shows a push-pull stage combined with an ordinary stage of amplification which requires careful balance for operation.

The purpose of amplification is to get

enough energy to operate the desired reproducer, such as a loud speaker.

(Next in the series will be a discussion on reproducers by Mr. Edelman. He tells what happens after the waves have been built up by amplification and how to reproduce sound of the best quality in the phones or loud speaker.—Editor's note.)

#### When Testing Coils

To test the coils with phones and battery, it will be necessary to remove the coils from the circuit as otherwise a click will be heard even though there were no short circuit. Never use the B battery with phones in testing apparatus, as it is apt to burn out the phone windings.

#### What About It?

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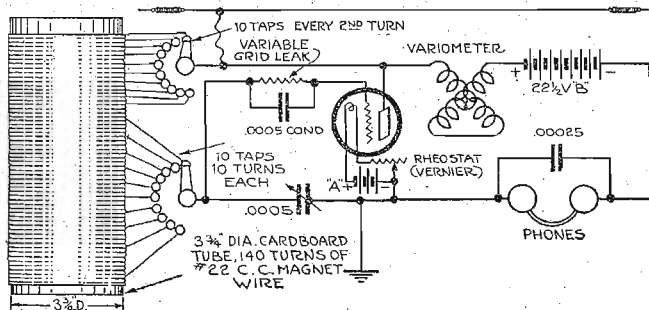
RADIO KINKS DEPARTMENT,  
Radio Digest,  
510 North Dearborn St., Chicago

magnet wire, and beginning at the bottom I took off taps every 10 turns for 10 taps, then beginning at the top I took off taps at every second turn for ten taps. This gives me fine adjustment. The coil is the principal part and the directions should be followed to a letter.

The variable condenser should be the very best and have a vernier. The rheostat should also have a vernier. The fixed condenser that gives one the best results is .0005 with variable grid leak. This is where you will have most of your trouble. If you fail to get the correct condenser and grid leak you will not get the unusual results that you are expecting. The variometer I use is of the basketball type. It gives good results.

There is no static in this set when you have it properly connected and balanced, and you will enjoy good programs every night regardless of weather conditions. Of course you are using no amplification,

## CIRCUIT EMPLOYING SPECIAL COIL



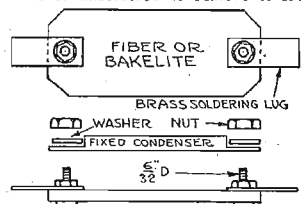
therefore you cannot use a loud speaker. I am using only one set of phones.

If you shield the panel with separate shields for the condenser and variometer, and ground each, and ground the movable plates of the condenser you will do away with body capacity. For distance I got Havana, Springfield, Mass., Hastings and Omaha, and all points in Texas and most all intermediate points. I have not been able to get the Pacific coast stations since the weather turned warm. The fundamental points of this set was published in the Radio Digest about four weeks back by Mr. U. G. Tuttle of Denver, Colo., and this set represents some modifications of it.

Try this set. I think you will enjoy the clear reception, and the volume will be all you want for head phones. If you want it louder you can add one of two stages audio frequency amplification. I think I shall try one or two stages of tuned Radio frequency. I use the UV 200 as a detector tube.—Dr. J. G. Gray, Franklin, Ky.

## Fixed Condenser Base Made of Insulation

If it is desired to change a fixed condenser in a circuit, connections must be broken or unsoldered to remove it from

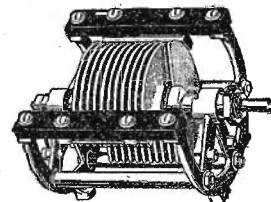


the line. The illustration shows a way in which a condenser can be removed and another replaced by taking off two nuts. It is self explanatory.—J. B. Morton, Chicago, Ill.

Provide approved protective devices in lead-in wires.

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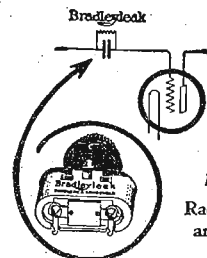
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|------------------------------------|
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| C-200 . . . . . 2 Megohms          |
| C-299 . . . . . 2 to 5 Megohms     |
| C-301-A . . . . . 2 Megohms        |
| UV-199 . . . . . 2 to 5 Megohms    |
| UV-200 . . . . . 2 Megohms         |
| UV-201-A . . . . . 2 Megohms       |
| WD-11 . . . . . 3 Megohms, or more |
| WD-12 . . . . . 3 Megohms, or more |

The noiseless, stepless control of the Bradleyleak enables you to operate your tubes at precisely the best point. Remember, too, the Bradleyleak is not affected by moisture or atmospheric changes. Try one, now!

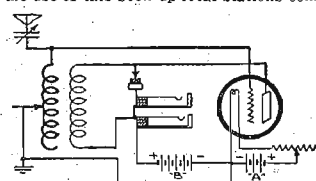
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The accompanying illustration shows how to hook-up a regenerative and crystal receiver by the change of switches. With the use of this hook-up local stations come



in fine on the crystal and stations as far as 2000 miles have been picked up on the regenerative receiver.—Henry Bank, Philadelphia, Pa.

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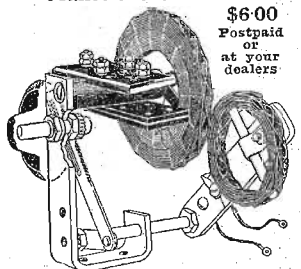
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# Questions and Answers

**Hum in Reflex**  
(8704) LE, Leland, Mich.

I have made a single-tube Eria set and I am having difficulty with a loud hum (like 60 cycles). I am using a 139 tube and 90 volts of B battery. A slight hum is heard when antenna and ground are connected only; (No A or B batteries being connected) increases when B—post is touched. No hum when antenna and ground are disconnected, although more hum with only ground on than with antenna only on. Hum greatly increases (batteries connected) as rheostat is turned on. No difference in hum when either the rotor of the coupler or the rotary plates of the condenser are rotated.

When rheostat is turned up, the hum is slightly decreased when finger is applied to antenna or ground, but increases when A+, A-, B+, B-, are touched. An electric power plant is located here. A 6,600-volt line is about 200 feet back of my lead-in. My antenna is constructed at right angles to this line and it is 100 feet long without lead-in and is 40 feet high. I have a friend next door who has a single-circuit regenerative set and he does not get this hum. His aerial has nearly the same characteristics as mine. When my set was tied on his aerial the hum was as loud as ever. It would seem from this that the hum is in the set.

A.—Undoubtedly the source of your trouble may be traced to inductance from the power plant. Remedial measures are offered in changing the direction of an-

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tenna or using a very short one. A counterpoise in place of the customary ground will doubtless minimize it. However, a reflex circuit is probably more sensitive to this type of interference than a regenerative, preferably three-circuit, type of receiver, which I recommended.

**Neutrodyne Range**  
(8553) RSK, San Jose, Calif.  
Please advise what results I can expect if I build a 5-tube neutrodyne from your blue prints?

How many miles could I hear from? I am a steady reader of Radio Digest and it would be more interesting to us novices who want to be fans if results and distances were expressed more often.

A.—A properly constructed and skillfully operated neutrodyne receiver is a superior type affording quiet, selective reception at a good range, from 1,500 to 2,000 miles or more.

It is a difficult matter to state definitely

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what receiving range will be accomplished in particular cases as many varying factors must be taken into consideration and we must base such a statement on the inherent ability of circuit which may be entirely unrealized when operation is unfavorable. Location has also a large

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That's the common expression when using dry "B" batteries. Purchase the economy way. Put together a "Bawley" rechargeable "B" storage battery at dirt cell prices. These are put up in various size units by the oldest and largest pioneer dealer in this line and consist of everything for the actual construction of battery with the highest quality material such as special flat bottom glass rubber stoppers, etc., together with large size Edison elements. Sold on an unconditional guarantee of greater volume, clearness and satisfaction or your money refunded with no ifs nor ands. An 8-page illustrated folder of instructions showing simple putting together, making of charger and charging tree with all orders. Complete units as follows: 22 volt, \$2.33; 45-volt, \$5.75; 90-volt, \$8.95; 100-volt, \$9.95; 135-volt, \$12.75; 200-volt, \$17.00. Complete sample coil 35c prepaid. Wanted dealers to write. "A" batteries at special prices. Order direct or write for my literature and 30 trial offer and guarantee. Orders shipped same day received. **B. D. SMITH, DANBURY, CONN.**

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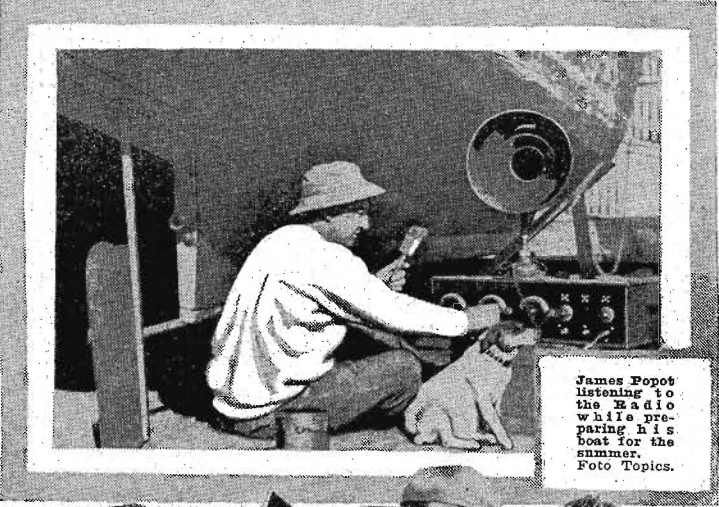
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# Radio Illustrated



Aileen Riggin, Olympic diving champion, and a group of friends celebrating her eighteenth birthday with a Radio-birthday party on the beach. © U. & U.



James Popot listening to the Radio while preparing his boat for the summer. Foto Topics.



The varimeter loop, the smallest loop aerial in the world, made by Helen Obermiller. In spite of its size, it works. K. & H.



Boy Scouts receiving the baseball scores and news over the Radio while at their summer camp. Foto Topics.