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# Radio Digest

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

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

Vol. XIV

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By Radio Digest Publishing Co.

SATURDAY, AUGUST 22, 1925

No. 7

## GOLD CUP AWARD CLOSES

### ESKIMO VOICES MAY SOON BE HEARD HERE

CHICAGO STATION REACHES ETAH BY RADIOPHONE

WJAZ Prepares for Rebroadcast of Eskimo Talk, Songs from Far North

CHICAGO.—Will the voice and song of the Eskimo be relayed from the north pole back to civilization and rebroadcast to the world of listeners in?

Yes! Even before the ink on this page is dry this seeming impossibility may have been accomplished by E. F. McDonald, Jr., and Commander Donald B. MacMillan of the MacMillan Arctic expedition, now at its main base, Etah, Greenland, eleven degrees from the north pole.

Two ships are in the MacMillan party, the Bowdoin and the Peary, commanded by MacMillan and McDonald respectively. John Reinartz, of receiving circuit and short wave fame, is chief Radio operator of the expedition. The Peary carries a 1,000-watt phone transmitter, using a Zenith-Reinartz circuit, and which is transmitting back to civilization on a 40-meter wave length.

#### Two-Way Communication Held

Already the voice of McDonald, victrola music and songs by members of the expedition have been sent successfully from Etah to all parts of the American continent. Already successful two-way communication between the Peary and 9XN, 1,000-watt experimental 40-meter broadcaster of the Zenith Radio corporation at Arlington Heights, near Chicago, has been established.

(Continued on page 2)



### LAST CHANCE TO CAST VOTE IS GIVEN FANS

Field Tops Hay for 2nd

KFNF Head Gets Stupendous Support—McNamee Leads—Closes Aug. 29

The 1925 Gold Cup Award for world's greatest Radio announcer, closes at the end of this week—midnight of Saturday, August 29 to be exact—and the last ballot, the last chance to vote, appears this week in Radio Digest.

As the contest draws near to a close the standings of the contestants are becoming intensely interesting.

With one man getting nearly twice as many votes in one week as he has received during all the other weeks of the contest it looks as if the bonus votes are going to have a lot to do with the deciding of the annual Gold Cup Announcer Award.

Henry Field of KFNF, out in Shenandoah, Iowa, was the man who made the sensational gain during the past week. When the list of standings was made up for last issue, Field stood fourth on the list with but 17,309 votes to his credit, and now look at him! In one week he

(Continued on page 2)



Here we have a child Radio star, a beautiful dramatic director and charming soprano. At the left is ten-year-old Rita Sherie Breen holding the ukulele she uses for her own accompaniment while singing over WGBS, WEBJ or WFBH. Iris Ruth Pavey, center, would be combining talent and beauty on the visible stage were she not engaged as director of dramatics at KOA. When Quin Ryan, WGN announcer, tells his audience that Florence Brower, right, will next sing a soprano solo, the fans are filled with joy because Florence really knows how to sing.



# No. 22 OFFICIAL BALLOT

## Announcers' Contest

### RADIO DIGEST SECOND 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:

8-22-25

## SHENANDOAH BEATS SHELBY AND DAYTON

SHENANDOAH, Iowa.—New York might say that we are "out in the sticks," and Chicago might call us a "hick town," but Shenandoah, in "Iowa and proud of it," through the medium of Radio Station KFNF, has put itself on the map by placing Henry Field ahead of the Chicago man and making the New York one hustle in the Gold Cup Best Announcer Award contest. This is a country town with 5,600 population and KFNF is a home-made 500-watt class A station.

weeks and then instead of progressing upward therefrom he took a tumble into the next lower chair, and Jerry Sullivan, the man who taught the world a new way to pronounce ChiCAWgo, jumped up to the oft called unlucky number.

### August 29 Is Dead Line

And now—bold face type, please—comes the important announcement! If you want your votes to count for your favorite, clip the last one printed here and put it in the mail with all the others so that it will reach the Digest office not later than midnight August 29. This will

enable us to announce the name of the Gold Cup winner in the Radio Digest issue dated September 12.

Another little word of warning! Remember that in order to have bonus ballots count for your announcer the votes clipped from various issues must be in CONSECUTIVE order!

Here is the way they stand now:

Position	Name and Station	Votes
1.	Graham McNamee, WEAJ	70,174
2.	Henry Field, KFNF	49,748
3.	George D. Hay, WLS	48,352
4.	Gene Rouse, WDAW	33,520
5.	Frank S. Lane, KFRU	19,502
6.	Hired Hand, WRAP	17,219
7.	H. W. Arlin, KDKA	13,127
8.	Leo Fitzpatrick, WDAF	9,508
9.	Lambdin Kay, WSB	6,624
10.	W. G. (Bill) Hay, KFKX	6,356
11.	Robert Emery, WEEI	5,169
12.	N. Dean Cole, WHO	5,007
13.	Jerry Sullivan, WQL	5,004
14.	Charles Erbstein, WTAS	5,352
15.	O. E. Becker, WGR	4,553
16.	John Daggett, KHJ	4,553

### How to Vote and Get Bonus

Don't miss a single ballot, for when these are turned into Radio Digest in a group of CONSECUTIVE numbers, extra bonus votes are allowed the announcer for whom you are voting.

The ballots, top of page two, numbered consecutively, will appear in each issue of the Radio Digest until the close of the contest, with the August 22 number.

Each of these ballots will count for one vote when sent in separately. You can hold these ballots until you have 4 that are consecutively numbered, and when they are sent in a bonus of 8 votes will be allowed for your favorite announcer.

For each 8 consecutively numbered ballots your candidates will receive a bonus of 20 votes. For each 12 consecutively numbered ballots, 30 votes. For each 16 consecutively numbered ballots, 40 votes. For each 20 consecutively numbered ballots, 50 votes, and for each 22 consecutively numbered ballots, 60 votes bonus will be allowed.

Send nominations or ballots to the GOLD CUP AWARD EDITOR, Radio Digest, 510 N. Dearborn St., Chicago.

## LAST MINUTE DATA ON CUP NEXT WEEK

LAST MINUTE standings in the 1925 Gold Cup Award will appear in the next issue of Radio Digest, dated August 29. Although the winner will not be named until two weeks later (September 12 issue) the last preliminary standings will continue until that time. Both the August 29 and September 5 issues will contain the latest corrected standings BUT NOT the FINALS.

The FINAL STANDINGS, with the name of the 1925 winner, will appear in the SEPTEMBER 12 issue. WATCH next week's standing!

## ATWATER KENT SAYS 'RADIO MOVIES NEXT'

### EXPECTS AIR PICTURES BY WIRELESS IN YEAR 1935

#### Hoover Committee Member Predicts Ball Games Will Be Broadcast to Home in Picture

WASHINGTON, D. C.—Broadcasting of motion pictures will be the next outstanding advance in the field of Radio communication, A. Atwater Kent, of Philadelphia, a member of Secretary Hoover's committee on broadcasting, believes.

Declaring he has been intensely interested in the recent transmission of motion pictures by Radio across the city of Washington and their projection on a miniature screen, Mr. Kent said he anticipates the time when "Radio movies" will be shown as clearly and large as canned pictures now thrown on theater screens. He added:

"When it is remembered that broadcasting stations and broadcasting words and music of whole vaudeville shows and operas are achievements of the past ten years, perfection of Radio motion pictures during the next few years seems a goal likely to be attained.

#### Expects Radio Movies by 1935

"Recent success in Radio vision experiments indicate that by 1935, and perhaps even sooner, we can sit at home and watch the playing of a championship baseball series, projected on a Radio picture screen, besides hearing the umpire's voice and the crowd's cheers, which the sound receiving set now picks up.

"Possibilities of such apparatus are unlimited. Inauguration of the president, maneuvers of battleships, horse races and football games could be witnessed by persons all over the nation, at the time they happen, for waves carry the pictures across the continent in less than a second.

"Cost of a Radio vision machine for homes is only a matter of speculation yet, but it seems that it could be made as accessible as high-powered sound receiving sets now on the market."

## ESKIMO BROADCASTS

(Continued from page 1)

lished. Newspaper men and other invited guests have witnessed the successful tests and become enthusiastic.

Now only remains to pick up the Peary, transmitting an Eskimo program from Etah, or later from even the north pole, rebroadcast it on a wave length within the range of the average broadcast receiver, and the seemingly fantastical project will have become a recognized achievement.

WJAZ, the superpower broadcasting station of the Zenith Radio corporation at Mt. Prospect, near Chicago, at the time of going to press was being tuned and adjusted for its debut on the air. WJAZ will operate on 322.4 meters, sharing time with KOA at Denver. Before this magazine is on the newsstands, the rebroadcast of the Peary by WJAZ may have been accomplished.

And American jazz band leaders will have a new style of music to add to their repertoires for the fall and winter season.

## Fail to Select Winner of Westinghouse Song Contest

PITTSBURGH.—While more than 1,400 manuscripts from all parts of the country have been submitted for the patriotic song contest recently held by Westinghouse stations, it is impossible to choose a winner, according to a recent announcement here.

The committee of judges, selected from prominent musicians and literary men, stated that none of the entries were of sufficient merit for a patriotic song, the music of which was composed by young Robert Saudek.

The contest will be opened again next fall and those who took part are asked to re-vamp their work and try again.

# CONTENTS

Radio Digest, Illustrated, Volume XIV, Number 7, published Chicago, Illinois, August 22, 1925. Published weekly by Radio Digest Publishing Company, 510 N. Dearborn Street, Chicago, Illinois. Subscription rates, yearly, Five Dollars; Foreign Postage One Dollar additional; single copies Ten Cents. Entered as second class matter at the post office at Chicago, Illinois, under the Act of March 3, 1879.

All the Live News of Radio.....	1 to 7
WCX—The Home of the "Red Apple Club".....	5
Advance Programs for the Week.....	8 to 13
The Reader's View.....	14
An Evening at Home with the Listener In, a chart in Eastern and Pacific time, showing when to listen for your favorite stations.....	15
Editorials, Indi-Gest and Condensed by Dielectric.....	16
A Regenerative Fixed Crystal Two Tube Reflex, by Carl E. Dean.....	17
A. B. C. Course in Radio Fundamentals, Chapter XXII—The Electron Tube as a Detector, by David Penn Moreton.....	18
Single Dial Automatic Regeneration Control, Beginner Can Operate Without Causing Interference, by F. E. Edelman.....	19
Dalet Compensated Tuned R.F. Step; Kinks.....	21
Questions and Answers.....	22
Directory of Radiophone Broadcasting Stations, Part V.....	23

## Looking Ahead

Over in Toronto, Canada, the Mecca of Summer Tourists from the United States, is located Station CHNC, the broadcasting plant of the Toronto Radio Research society, and next week we are going to tell you all about it in word and picture.

Although the Gold Cup Contest does not close until midnight of August 29, there will be additional standings ready for publication in the next issue. Will McNamee retain the lead after the bonus ballots begin to come in or will some dark horse come up from behind to race him to the wire in the stretch? Next week's list will give you the eleventh hour standings in the Best Announcer race.

Taking Care of a Radio Receiver is largely a matter of caring for the accessories. The sets themselves, as built by most of the reliable manufacturers today, are trouble proof in so far as the set itself is concerned. In next week's issue James E. McDonald will give the newcomer in Radio the pointers on taking care of a set that keep it working satisfactorily. The new owner of a receiver should read these simple suggestions carefully.

Professor Moreton Details the Action of a Tube as an Amplifier in his next article. Some understanding of the complex and unseen action of the electrons and the factors that govern their flow, is essential to the experimenter who is seeking better results from his home-built sets, and to the purchaser of a complete set who would set the mysterious knobs at the points for best results.

Selectivity Is the Principal Feature Required This Year and there are many small changes that can be made in sets, and many forms of construction that can be built into new ones, which will improve the selectivity to the elimination of powerful locals and the separation of distant stations on closely similar wave channels. John G. Ryan will begin, in the next issue, to give Digest readers the benefit of several years of experience in improving and designing sets.

## Newsstands Don't Always Have One Left

WHEN YOU WANT

# Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

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

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

Name .....

Address .....

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

## GOLD CUP RACE CLOSES

(Continued from page 1)

gained 38,618 votes or just 181 less than twice the total amount he had before. Boy, when people say that corn grows six inches over night in Iowa, believe them! This gain of Henry Field shows that things do grow out on the western plains. This jump of Fields puts him in second place, a position long held by George D. Hay, the "Solemn Old Judge" of WLS.

### And Mac Still Leads

Graham McNamee, of WEAJ, still leads the race. He has some 30,000 votes between him and the second man, but has not won the cup as yet. Another cyclone such as blew in from Iowa this week would be nearly strong enough to displace the leader and put some one else's name on the coveted cup.

Many of the votes that placed Field so near the top were bonus votes, indicating that the Iowans believe in getting every single counter possible for their man. This also leads us to believe that we may expect a deluge of ballots after the one printed above is clipped and placed in series with the other twenty-one that are being held out in parts unknown.

It was thought for a while that part of McNamee's success could be laid to climatic conditions peculiar to summer broadcasting, his voice going out on the WEAJ link and being heard at short distance in so many cities. However the fact that one station's listeners can concentrate enough votes to put their favorite up in second place, leads to the conclusion that it is possible for any announcer to win, although his listener in field be limited during summer broadcasting.

### Barnett Drops from List

That certain fans are determined to see that their favorite is among the list of the fifteen also rans to receive certificates of merit in the contest is evidenced by the change at the bottom of the list—the first to be noted in some weeks. S. W. Barnett, "BWS" of WOC, who was at the bottom of the list of sixteen winners last week, has dropped down into the great open spaces below and has been replaced by John Daggett of KHJ. Thus we have a contest for both top and bottom of the leaders' list.

Besides the changes told of above there were two other shifts during the week. Lambdin Kay of the Dixie station, WSB, passed Bill Hay, formerly of KFKX. This is not an unexpected change, however, as Bill is now out of the announcing game and in business in Chicago. He is heard, however, occasionally from the local stations in clever Scotch dialect numbers. Lambdin Kay recently presided at the opening of WSB's mammoth new plant that truly enables his voice to "Cover Dixie Like the Dew."

There must be something to this thirteen superstition after all. Charles Erbstein held the thirteenth position for

## NEWS BRIEFS FROM THE BROADCASTERS

### KIDDIES HEAR NEW VOICE; SPRAT TRIO ON WIBO

**"Man in the Moon" Popular in East; "Dry Navy" Talk Over Station WJZ**

There is a new voice in the air. It belongs to Mrs. Bertha W. Edmonds of the Schuster-Martin school and she sends it forth through WLW every Tuesday evening at 7 o'clock. This new voice is especially for the little ears of children but as her stories are sometimes given in dialect, it pleases the grown-up children as well as the smaller ones.

The Jack Sprat concert trio—violin, cello and piano—has been added to the staff of WIBO, Chicago.

Every Tuesday and Friday evening at 6:30 children all over the East tune in on WOR for the "Man in the Moon" stories. The "Man in the Moon" is a lovable character who seems to know all about the good habits as well as the bad ones of his small listeners.

Lieut. Com. S. S. Yeandle, aid to Admiral Billard, chief of the U. S. Coast Guard service, recently told of the experiences of the "Dry Navy" off the coast of Jersey from Station WJZ.

Organists of the feminine sex change their high heel shoes for ones with low heels when they play the Wurlitzer unit organ in the WLW studio. There are so many shoes in the rack, it looks like a sale.

Maxim Eastyluck, Russian baritone, who sings over WKRC, the Kodak Radio station at Cincinnati every Tuesday night, has only been in this country three weeks and is unable to speak English, although he is taking a special course of instructions at the University of Cincinnati during the summer months.

Of special interest to fathers will be a talk on boy problems which has been scheduled during the studio program to be given next Monday evening at KOA.

KDKA fans will miss a familiar voice the last two weeks in August when H. W. Arlin, world's pioneer announcer of that station, will spend a two weeks' vacation at his old home in Carthage, Mo.

Joseph Henry Jackson comes back to KGO with his book talks after a vacation, during which he has been sadly missed on the educational programs.

Travelers returning from abroad report that in England, where American stations are heard quite consistently, the Silver-town Cord orchestra is considered one of the best American features.

"Miss Very Cool" is the name given the young lady singer who has been attracting so much attention in the regular Monday night WCCO theatrical broadcast.

"So happy that she could cry" was demonstrated the other night following a so-called "Old Times Hour" at WFAF. An old lady called in immediately after the concert to thank the artists for taking her back to her youth. Paradoxically, in one breath, she stated she enjoyed to the fullest extent, and in the next, said it made her unutterably sad.

Passengers on the Canadian National railway train en route from Edmonton to Prince Rupert, B. C., recently danced in the observation car to music provided by the Gold Medal Radio station.

### SEPTEMBER DATE FOR CONFERENCE?

**Secretary of Commerce Hoover Says "Better Go Through With It"**

WASHINGTON, D. C.—Unless some unforeseen contingency arises the Fourth Radio conference will be held in Washington in September or October according to a statement made by Secretary of Commerce Hoover upon his return from a vacation.

It is expected that announcement will be made shortly by the department setting the date for the conference. When told that some of the Radio officials of his department had suggested that this year's conference be postponed, Secretary Hoover said that he thought "we had better go through with it." Several of the officials had expressed an unofficial opinion that no good could be accomplished through the holding of a conference.

### 'FATHER SINGS NEXT' SAYS SON AT MIKE

FOR the first time in Radio history perhaps, a son introduced his father as an entertainer over the microphone, when Tom Daniel, well known oratorio concert basso, appeared at WJZ recently and was announced to the invisible audience by his son, John B. Daniel, one of WJZ's regular announcers. The elder Daniel rendered several delightful numbers. John B. has no mean singing voice himself.

### ANNOUNCER MUFFS BUT FAN SAVES DAY

CHICAGO.—"The fielder catches the fly. Three outs and the Cubs lose!" thus announced Hal Totten broadcasting a recent Cub-Giants game over WMAQ. "The hell they do! He dropped it!" cried Harry Madsen, Cub fan sitting near the "mike." And the fan was right. Listeners heard the fan's statement, which went on the air, and remained to hear the Cubs make a ninth inning rally and win, after Hal had announced their defeat.

### NOW KYW CUPID HITS THE 'KIDS'



### New Stations

Many of our readers were no doubt surprised last week not to find a list of new stations. There were none to report. This week's list includes, WIBW, Logansport, Ind., 220 meters, 100 watts; WIBX, Utica, N. Y., 205.4 meters, 4 watts; WRMU, New York, N. Y., 236 meters, 100 watts; and KFWP, Brownsville, Tex., 214.2 meters, 10 watts.

WMAF, Dartmouth, Mass., owned by the Round Hills Radio Corp., is now a 1000 watt station operating on 440.9 meters.

The following commercial class A stations signed off last month: WMAV, Auburn, Ala.; KFER, Fort Dodge, Ia.; WHBX, Punxsutawney, Pa.; WDM, Washington, D. C.; WRR, Dallas, Tex.; WFBK, Hanover, N. H.; KFQR, Oklahoma, Okla.; WGBH, Fall River, Mass.; KFFVJ, San Jose, Calif.; KFOC, Whittier, Calif.; KFPV, San Francisco, Calif.; WBBV, Johnstown, Pa.; WIAK, Omaha, Neb.; WPAZ, Charleston, W. Va.; WHBS, Mechanicsburg, Ohio; WWAQ, Houghton, Mich.; WIBE, Wheatland, Wis.; WCAV, Milwaukee, Wis.; KFOJ, Moberly, Mo.; WQAS, Lowell, Mass.; KFRH, Grafton, N. D.; WCAQ, New Orleans, La.; WRAA, Houston, Tex.; WFBY, Fort Benjamin Harrison, Ind.; WCM, Austin, Tex.; WHBO, Pawtucket, R. I.

### Poland Still Awaits

WASHINGTON, D. C.—Although it has been some eight months since the Polish broadcasting law was enacted, the government has not yet granted an exclusive broadcasting concession for Poland to any firm due to the absence of suitable offers.

### Bowes Directs Radio Bills

NEW YORK.—To his multiple duties as managing director of the Capitol theater, Major Edward Bowes has recently added the important one of serving as liaison between the Capitol theater and the Radio public. To his duties as director of the Radio programs, he brings a friendly and cultured personality with a pleasing voice.

## WHO IS 'MISS RADIO, DIANA OF THE AIR'

### FEMININE HUNTER OF DX TO BE AWARDED TITLE

**Radio World's Fair Offers Trip to New York for Best Log and Letter**

NEW YORK.—International fame awaits America's greatest feminine Radio enthusiast.

Who is the Diana of the air—the fair huntress of elusive DX stations, who has been thrilled by the success of her experiments and who can visualize the joy of listening in to others by describing her experiences in the best letter?

Who is the pretty listener who can tell a real story of Radio's appeal, the joy it brings and the service it renders?

Recognizing that women are now taking the deepest interest in Radio, by virtue of the beautifully designed sets that now adorn their parlors and also by reason of the fine information they are receiving each day on household affairs and beauty hints, not to mention other factors to engage their attention, the Second Radio World's Fair management has announced this special contest in an effort to discover the greatest lady fan of the country, and asks the cooperation of husbands, brothers and friends to make this competition one of the most interesting in the history of Radio.

#### Trip to New York Prize

The winner will be the girl or woman who presents the most impressive accredited log of stations with the best description of her career as a broadcast listener. Here is a real opportunity not only to show the number of stations received, but to tell about interesting happenings in the air or features coincident to the reception.

First prize in the contest will be a silver cup and an invitation to come to New York as the guest of the Second Radio World's Fair (all expenses paid) during the week it is open, September 14 to 19, inclusive. The cup will be presented as a feature of opening night. Of course, royal entertainment will be accorded the winner in the way of theater parties and receptions.

Two other prizes will be awarded for second and third best logs and letters, also cups of handsome design, suitably inscribed.

#### Beauty Picture Gallery

It will increase interest in the contest if the contestants will send photographs of themselves listening in, and this gallery of pretty fans will be displayed at the Radio World's Fair, just to prove to male visitors that they will have to look to their laurels in Radio as well as in all other fields of endeavor when the fair sex makes up its mind to try a hand.

All entries in the "Radio Diana" contest should be sent to the Second Radio World's Fair headquarters, suite 1500, 1475 Broadway, New York, or Radio Digest.

#### No Entry Fee

The contest closes at midnight September 7. There is, of course, no entry fee or financial obligation on the part of any contestant. It is open to any girl or woman in the land. In case of a tie, duplicate awards of the prizes tied for will be made to those tying.

Radio Digest will be glad to receive letters and logs for entry in this contest and urges its fair readers to enter. The 100 best letters received will be selected at the offices of the World's Fair and will be turned over to a group of judges especially interested who will make the final decision as to who will be named "Miss Radio."

## REPEAT ORIGINAL WFAF BROADCAST

### Third Birthday Party at New York Station Is of Particular Interest

NEW YORK.—WFAF, the broadcasting station of the American Telephone and Telegraph company, celebrated the beginning of its fourth year of operation on August 15. Although the initial broadcasting began on July 25, 1922, it was under the call letters WBAY, and it was not until August 16 of the same year that the familiar letters WFAF were assigned by the department of commerce.

The evening was one of particular interest, since as many of the singers and musicians who were heard on the first few weeks of the programs were invited to attend the reunion. Not only the original artists, but also practically the same program numbers were heard, as were originally sent out on the old 400-meter wave length.

WFAF has in three years grown from a group of five people to a complicated organization of eighty-five.

# EXTINCT CRATER IS RECEIVING PARADISE

## BUT ONCE IS ENOUGH FOR LOS ANGELES EXPLORERS

### No Static or Power Line Interference in Mojave Desert Volcano Cone Site

LOS ANGELES, Calif.—The reading of a United States government report on recent experiments, conducted to determine the "live" or "dead" Radio reception qualities of different localities, and a chance meeting with V. M. Bitz, Radio expert, and Dr. A. J. Tiele, consulting geologist, gave C. W. Macfarlane of the Los Angeles Examiner the idea of leading a party far out into the purple reaches of the Mojave desert into the crater of an extinct volcano to record an unusual Radio reception test.

### Hard Climb to Crater

The trip was made to the scene of a once boiling inferno about 250 miles from Los Angeles. Mr. Macfarlane's party motored to within two miles of the now placid volcano cone and after a two-mile hike over the hardened glass-sharp lava reached the foot of the volcano and started the steep ascent. The pitch of the cone was estimated to be between 35 to 37 per cent, and after what seemed hours of heavy exertion the party reached the top of the volcano and installed their receiving set.

The following paragraphs, taken from Mr. Macfarlane's report, conveys the best picture of what happened:

"About 4 o'clock we began receiving and there came to us, sitting there in the scarred pit of a dead volcano, air voices from some of the nearby large broadcasting stations and from scores of the smaller stations sprinkled throughout the North and Middle West, and finally from Westinghouse Station WBZ at Springfield, Mass., this latter station being the farthest reached.

### Clarity of Reception Remarkable

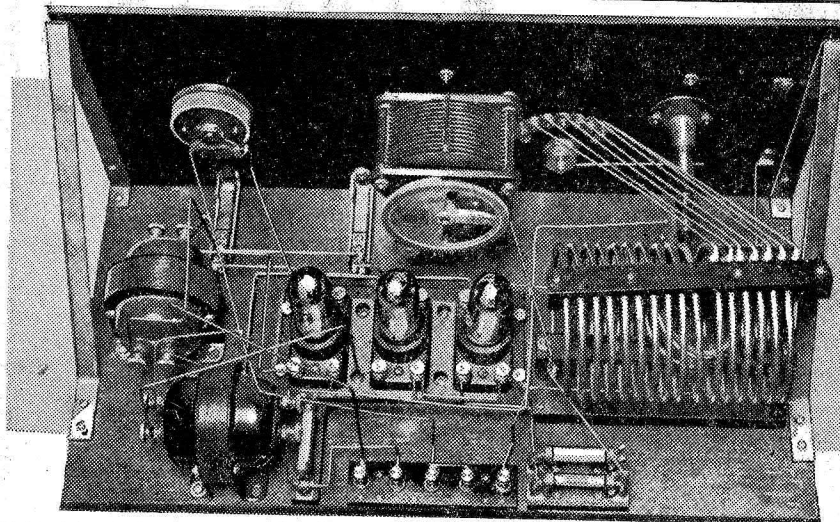
"The clarity of reception was extraordinary, stations in the Middle West and even the more distant stations being received with as much volume as those in Los Angeles. There was an absolute lack of static—and, of course, there were no power line noises. Speaker volume was attained on a loop aerial and the majority of stations could be heard nicely with the small enclosed loop.

"It was weird, it was ghostly; it represented the fulfillment of a 'distance nut's' dream; it was an experience never to be forgotten—but an easy chair is a softer seat than a lump of lava, and the mountain will have to come to Mahomet after this, distance or no distance."

## Frisco Mayor to Speak at Coast Radio Show Opening

Through remote control by direct wire from the San Francisco Auditorium to the KGO studios, the opening exercises of the Pacific Coast Radio Trades second annual convention will be broadcast from KGO on Saturday, August 22, at 8:10 p. m. The speakers include Supervisor J. Emmet Hayden and the Honorable James Rolph, Jr., mayor of San Francisco, and a brilliant array of artists.

# SET HEARS ASIATIC SHORT WAVES



Unique in design is this short wave receiver built by Kenneth Hewitt, known to the amateur transmitting fraternity as 2BK. Mr. Hewitt has been successful in picking up foreign code amateur stations working on waves below 100 meters. He has heard China, India, Australia and Europe. Note tuner winding of copper tubing.

# Friday Sure Is Fish Day Over WEAF When Natural History Talk Is Miked

By Esmeralda De Mars

NEW YORK.—One of the most remarkable and popular series of natural history talks ever given by Radio is being broadcast from WEAF by Miss Ida M. Mellen, assistant to the director of the New York aquarium, on alternate Friday afternoons at 4:45 o'clock.

It began June 5 with a talk, "The New York Aquarium and Its Denizens." This was so greatly appreciated that a dozen more talks were arranged. The second, "Goldfishes and the Care of Fishes in Captivity," met with so many requests for repetition, that it will be given again near the end of the series.

"Fishes That Make Noises and Some That Can Live Out of Water" was equally well received. Coming subjects include fishes that bring forth their young alive, sharks and other dangerous fishes, the intelligence of fishes, the fastest fish in the sea, and others equally interesting, and will continue to December 18 or later.

After the fish series, a final talk, the fourteenth, will answer the common question on which many a wager is lost—"Is a Whale a Fish?"

These brief lectures are a liberal education of the sort that the public has been hankering after. They have been prepared with a view to the general inquiries the public constantly makes of Miss Mellen, by mail, telephone and in person, about fishes and other aquatic animals. Her natural Radio voice and perfect diction are as greatly enjoyed as the subject matter; and there is certainly no other woman in the world who is giving such a delightful and instructive series of natural history talks, and no other who is discoursing on fish.

Her future subjects include:

August 28, "Fishes That Bring Forth

Their Young Alive," also, "Fishes That Build Nests and Defend Their Young;" September 11, "How Much Does a Fish Know?" also, "Gars and Mudfish;" September 25, "The Dreadful Shark;" October 9, "The Slippery Eel" (the only fish that lies in fresh water and goes down to the sea to spawn); also, "About Flounders;" October 23, "Poisonous and Dangerous Fishes," also, "Fishes of the Deep Sea;" November 6, "The Disappearing Sturgeon and Other Animals Nearly or Wholly Extterminated by Man," and, "The Sardines and Herrings, Which No Amount of Fishing Can Exterminate;" November 20, "What Do Fishes Eat? What Is the Fastest Fish in the Sea? Why Is a Fish?"; December 4, "Goldfish Talk" (repeated by request); December 18, "Is a Whale a Fish?" something also about "The Most Terrible Animal in the Seven Seas," which is one of the porpoises.

## "KING OF THE IVORIES" HEARD ON WBAP BILL

### First Appearance at Class B Station on Tour

FORT WORTH, Texas.—Harry Snodgrass, "King of the Ivories," and his announcer, J. M. Witten, formerly of WOS, Jefferson City, Mo., while appearing at the Majestic theater here, were the guests of the Hired Hand, popular WBAP announcer.

It was a reunion of old timers and thousands of listeners in all parts of the country were tuned to hear the familiar voices and Harry's famous interpretations of "Three o'Clock in the Morning," WBAP, the Star-Telegram station, is the first class B station to have the opportunity of entertaining and broadcasting these artists since their departure from Jefferson City on a vaudeville tour.

### French Try Relay Programs

PARIS.—The well-known Paris station, PTT, is arranging for trials in relaying their programs through the local stations of Lyons-La-Dora and Toulouse PTT, which will extend its radius to the whole southeastern and southwestern France. If this is successful, it will probably be the beginning of an extensive relaying system on the lines of that in use in England.

# PLAN TO EXCHANGE PROGRAM OVER SEA

## BRITISH BROADCASTERS TO BUILD SPECIAL RECEIVER

### Will Use 40-Kilowatt Plant to Establish Regular Transatlantic Service

LONDON.—Through the International Union of Broadcasters at Geneva, the British Broadcasting company is developing comprehensive proposals for the exchange of programs, especially with America.

The B. B. C. proposes to arrange its American exchange with all the leading American organizations, but in the first instance the arrangement will be with the Radio Corporation of America. The B. B. C. has sent the following message to America through David Sarnoff, vice-president of the R. C. A.:

"The B. B. C., as responsible for all the broadcasting in Britain and northern Ireland, welcomes the suggestion of a still more ambitious scheme for the exchange of programs between America and Britain.

"In the past years American programs relayed by us in this country, and this year British programs retransmitted in America have received warm support from listeners in both countries. Further to explore the possibility of an international exchange of programs, the B. B. C. has planned to establish a central receiving station, equipped with all the latest devices for receiving the world's most powerful broadcasting stations, and, by this means, it hopes next winter to be able to retransmit to its 10,000,000 listeners, with even greater success than heretofore, Transatlantic programs.

### Already Received in Maine

"The transmitting station used in the B. B. C.'s latest test was located at Chelmsford, and with a power of 10 kilowatts in the temporary antenna was received in Maine. This year the B. B. C. high power transmitter will be ready in its permanent quarters, with a power of 40 kilowatts in a much improved antenna.

"The complete technical arrangements made on both sides of the Atlantic encourage the B. B. C. definitely to allocate parts of its program time as an 'American Program Period,' and similar arrangements will be made in the states.

"Broadcasting, through the regular exchange of programs, should be the means of increasing the good feeling existing between the United States and Great Britain. In addition, a close knowledge of our respective ideals and standards in all phases of life which this affects will have far-reaching results."

## Trade Commission Attorney Prepares for R. C. A. Battle

WASHINGTON.—Edward A. Smith, attorney for the Federal Trade Commission, in its case against the Radio Corporation of America and other firms in the alleged monopoly, has gone to New York to prepare for the opening of the hearings. While no date has yet been announced it is expected that the hearings will be held sometime in September.

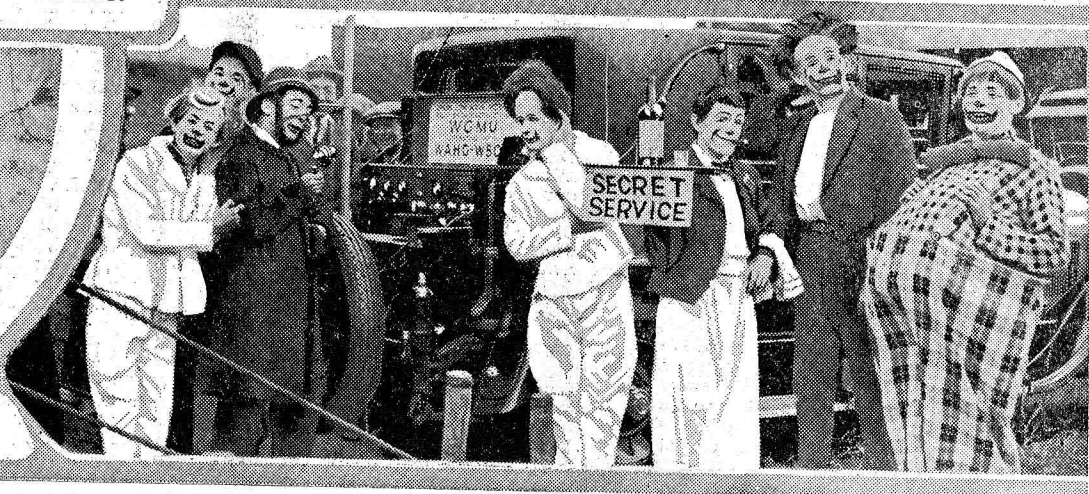
Replying to inquiries as to the progress being made by the department of justice in connection with its investigation into the practices of the Radio Corporation of America, the attorney general recently stated, "This inquiry is still under way and there are no developments which can at this time be made public."

### HEARING STARTS IN SEPTEMBER

WASHINGTON, D. C.—The Federal Trade commission will begin the taking of testimony in its Radio monopoly case about September 15 in New York city.

In addition to the New York hearings it is expected that testimony will be taken in Washington, Pittsburgh, and possibly several other large cities.

The "Sparks Circus" believes in Radio, through WAHG on one hand and WGY on the other. Left is A. O. Coggeshall, WGY announcer, at the microphone before one of the side shows. Right, the clowns do their tricks for the invisible audience of WAHG, rebroadcast from Grebe mobile pick-up station with call WGMU.



# WCX—The Home of the "Red Apple Club"



Above, beautiful studio of WCX. Left, this gentleman is Merrill R. Mitchell, chief engineer, the man who constructed the station on the Book-Cadillac hotel in face of difficulty.



Left, W. C. Tomy, assistant to his father, C. D. Tomy, right, the WCX manager and chief announcer.



"George Lamb" is program director and singer.

"WAY up on top of the Book-Cadillac hotel." This has become one of the familiar phrases to the Radio audience since WCX, the Detroit Free Press station, moved to the thirtieth floor of Detroit's magnificent new hostelry last December.

The phrase alone has given a character to the station that it has lived up to and made known to listeners in every part of the country. Much of its following is derived from the famous Red Apple club, which is an entertainment of the lighter sort, presenting popular music and popular entertainers in a direct and personal way.

The director of the station, C. D. Tomy, was moved to the position from one with the editorial staff of the Free Press, when the paper took up broadcasting on May 4, 1922. Mr. Tomy's newspaper work had been long and varied in three of the largest cities of the country, namely Chicago, New York and finally in Detroit.

In addition to directing the activities of the Radio station, Mr. Tomy takes more than an occasional fling at the microphone. Yes, he has a

big deep voice and when you see him either in person or by picture you begin to wonder where it all came from. His thickness does not warrant the character of his voice, but perhaps because of this deficiency in avoirdupois, his voice can be attributed to his length, which quite warrents the volume of his voice.

It has been to the credit of Mr. Tomy that he has developed one of Radio's attractive and much admired performers. This person is only known to the invisible audience as "Bernice." Since her last name is never mentioned over the air, why should it be mentioned here? Aside from names and the like, she is a good performer. She has earned her claim to a place among the real Radio entertainers because of her ability to play the piano. She does it often and well. You can tune her in every Tuesday night with the Red Apple club.

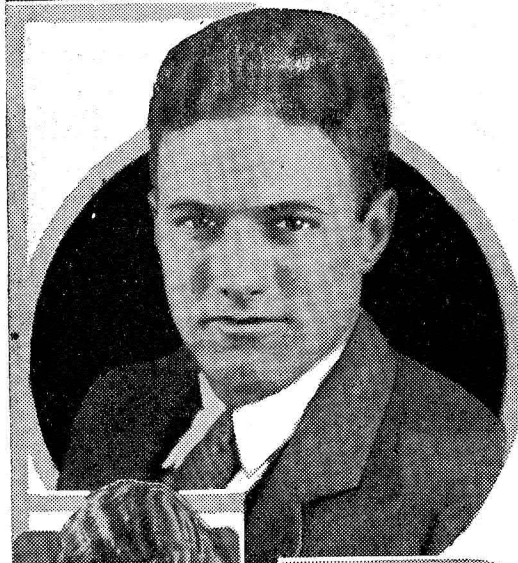
Rettig L'Amoreau, sometimes introduced to the Radio audience as "George Lamb, the Wabash singer and program director and assistant announcer of the station. Even though he has been with the station only a few weeks, he has won a place of high regard for himself, both because of his type of announcing and his distinctive singing.

The chief engineer of the station, M. R. Mitchell, may safely be called the smallest chief engineer of any broadcasting station in the country. Inasmuch as his position does not call

for great physical strength, this is not a handicap. He has done a creditable job all the way through. Especially was his work noteworthy when he overcame a number of obstacles in placing the station on top of the Book-Cadillac hotel. He was told by a number of engineers that the station could not be operated efficiently from that location, but the first night it was on the air reception reports were received from every state in the Union.

Yes, there are some other important personages connected with WCX. Thomas S. Ledyard, assistant operator, has just returned from four years as a ship's operator. And during these four years of key pounding he sailed the seven seas. There is another Tomy connected with the station. He is W. C., son of the "boss" of the station, C. D.

And now that WJR has placed a superstation at Pontiac and the Jewett broadcaster is to have studios in the Book-Cadillac, what will happen to WCX? Nothing at all, that is, WCX will continue to broadcast from the hotel over the Jewett 5,000-watt set, and thus increase its already large circle of friends.



Above, Thomas Ledyard, operator. Left, "Pretty Little Bernice," pianist to the Red Apple club.



The Book-Cadillac hotel in Detroit, away up on top of which are the WCX towers, with the new home of that station and WJR right beneath.



Left, Jean Goldkette, leader of the Goldkette orchestra, below, which furnishes music every evening from WCX's new station in the Book-Cadillac hotel.

## WJR, JEWETT PLANT, OPENS IN DETROIT

FIRST HIGH-POWER RADIO  
TO GO ON MICHIGAN AIR

Lengthy, Well-Balanced Program Is  
Broadcast in Book-Cadillac Hotel  
Superpower Premier

DETROIT.—The new high-power broadcasting station of the Jewett Radio and Phonograph company came on the air August 15, beginning at 7 p. m., Eastern standard time, with an inaugural program of such a varied makeup that the entire Radio audience found some part of it of particular appeal to them. The program was broadcast from the main studios of the station in the Book-Cadillac hotel here on a wave length of 517 meters.

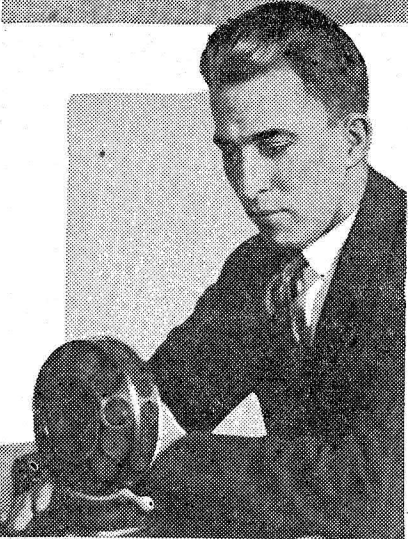
As is quite fitting in this case, the station was officially opened and dedicated to the service of the Radio audience by Edward H. Jewett, president of the Jewett Radio and Phonograph company. In his short talk to the invisible audience, he outlined the aims of the station and greeted for the first time the people his company has been serving for a number of years.

### Program Noteworthy

Following Mr. Jewett, Governor Alex. J. Groesbeck of Michigan was to have been introduced to the millions in his own state, in many other states in the Union and to the Canadian audience. WJR is the first high-powered station to come into Michigan, assuming, of course, that 500 and 1,000 watt stations are no longer rated as high-power equipment.

The third speaker of the evening was J. B. Book, the eldest of the three Book brothers, geniuses behind the Book-Cadillac hotel. C. D. Tomy, representing the Detroit Free Press, which is associated with the Jewett company in the operation of the station, spoke for his concern. Although there were four speakers on this opening program, all of them realized that brevity before the microphone is a virtue. After the speeches, Jean Goldkette, musical director of the station, began a demonstration of his unusual ability at entertaining the public. The pro-

## WJR ANNOUNCER IS OLD HAND AT 'MIKE'



Corley W. Kirby, program director and assistant manager of WJR, new Jewett Phonograph and Radio superstation, is not a beginner at the microphone. Listeners will recognize his voice as one they formerly heard frequently announcing from WWJ, the Detroit News station.

gram continued until 3:00 a. m. Practically every kind of music was presented. In the array of talent which appeared before the microphone was a number of nationally-known musicians.

It was the aim of the program department and the musical director to have the program well balanced, containing types of music that will appeal to the varied likes of the Radio audience. The long program was not designed to simply take up time or to continue into the early morning hours with the hope of establishing distant records, but for the prime purpose of entertaining the vast Radio audience. One feature of the first hour's entertainment was the appearance of Mr. Jean Goldkette himself, as a soloist. His

name has been broadcast thousands of times by two of the Detroit stations, but this was his first solo offer to the Radio audience. He is a pianist of unusual ability, having received his musical education at the Imperial Conservatory at Moscow.

### Nationally-Known Artists Perform

Among the nationally-known artists to be presented during the evening were Cameron McLean, baritone; Mme. Djina Ostrowska, eminent harpiste; Miss Marguerite Schuiling, dramatic mezzo-soprano; The Detroit Operatic ensemble; Joseph Gorner, violinist; Marcus Kellerman, baritone and T. Stanley Perry, tenor. Another group of outstanding performers includes Albert Seibert, dramatic tenor; Mme. Homer DuBard, soprano; Ina M. Lockhart, contralto; The Detroit Symphony trio; Jean Goldkette's concert orchestra; The Blue Room Dance orchestra of the Book-Cadillac hotel; The Stellar male quartet, composed of Messrs. John Renton, Thomas C. Evans, Edward Galer, and George Macdonald; Miss Bernice Raeburn; Miss Charlotte Meyers; O'Brien and Bickle; John Kaaihue, Hawaiian entertainer; Will Collins; Miss Marion Partidge, pianologue, and Ivan Severstrom, piano and accordion.

With talent such as this, WJR made its debut to the Radio world. In WJR is the realization of an ideal—an ideal of Mr. E. H. Jewett, president of the Jewett Radio and Phonograph company—an ideal demanding the best broadcasting equipment that money could buy—an ideal which called upon the Radio manufacturer to direct the business of broadcasting, it being Mr. Jewett's contention that, inasmuch as the very life of the Radio manufacturer ultimately depended upon broadcasting, the Radio manufacturer should do the broadcasting.

## Nebraska Station Reaches To Far Off Belgian Congo

LINCOLN, Nebr.—Henry Hansen of the Botua Trading company of Botua, Belgian Congo, recently made a visit to the Nebraska Buick Automobile company here to tell that KFAB, their station, was received with fair distinction on the night of March 4, 1925.

The distance from Botua to Lincoln is between 6,000 to 7,000 miles. Mr. Hansen and KFAB, but has picked up no others. He uses a homemade super-heterodyne.

## KTHS SPLITS TIME; HELPS CLEAR AIR

"Voice of Oklahoma" Benefits by  
Sharing Hot Springs Station's  
Wave Length

HOT SPRINGS, Ark.—Station KTHS, the new Arlington hotel station, here, has granted a voluntary division of time with Station KFRU, Bristow, Okla., according to an official announcement by Director G. C. Arnoux, of Station KTHS.

"The division was not at the request of the department of commerce officials or other governmental agencies," Director Arnoux stated in making the announcement, "but the decision of the Arkansas station as its small bit in helping to solve the present congestion in class B wave bands."

"Station KTHS was petitioned by the 'Voice of Oklahoma' station," Arnoux said, "to allow it to share the Arkansas wave length of 374.8 meters, thus enabling it to withdraw from dividing time with San Antonio and so allow another station in that city, soon to take the air, to assume the former KFRU wave length. This would prevent a three-way split on time and thus not only benefit the stations but also the fans in general who listen to these stations." It was this benefit to the Radio fraternity in general that brought about the decision of KTHS to share its exclusive wave.

## Former Bootleg Craft Is Kodel Radio Patrol Boat

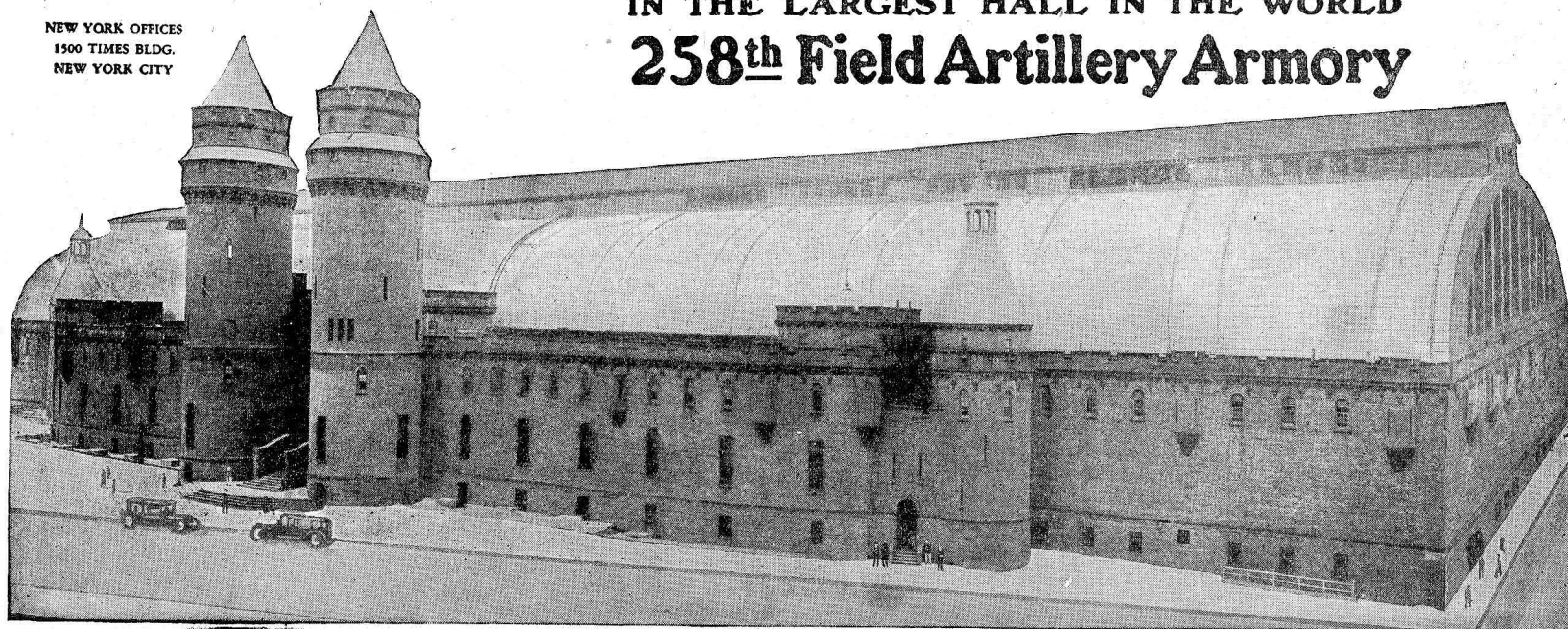
CINCINNATI.—The Ohio river now has a Radio patrol boat with the launching of the 37-foot cabin cruiser, Betty Mae, owned by the Kodel Radio corporation, on which will be built a low wave transmitter for picking up and broadcasting Radio programs from towns along the Ohio and Mississippi rivers and tributaries.

The boat, originally a rum runner confiscated off the Jersey coast, was purchased by Clarence E. Ogden, president of the Kodel corporation.

John F. Church, chief engineer of WKRC, Kodel corporation station, is arranging the installation of a 20-watt transmitter for the boat.

The Great  
Manufacturers'  
Exposition  
Attended by  
Leading  
Jobbers and  
Dealers

NEW YORK OFFICES  
1500 TIMES BLDG.  
NEW YORK CITY



# The Official 1925 R.M.A. Show THE SECOND RADIO WORLD'S FAIR NEW YORK CITY

U. J. HERRMANN, MANAGING DIRECTOR

SEPTEMBER 14<sup>th</sup> to 19<sup>th</sup>

MONDAY NOON TO SATURDAY MIDNIGHT

ENTIRE EXHIBITION ON GROUND FLOOR  
IN THE LARGEST HALL IN THE WORLD

258<sup>th</sup> Field Artillery Armory

## WLW HEAD REPORTS ON ENGLISH SYSTEM

### FRED SMITH FINDS BRITISH RADIO WELL EXECUTED

America's Radio Ambassador Visits 2LO and B. B. C. Executive Office—People Satisfied with Plan

**Article II, by Fred Smith**  
LONDON.—The American who believes that broadcasting in Europe has something to do with the middle ages should spend a week in London!

The British have built up a system which is at once efficient, practical, profitable and artistic. The revenue resulting from the small tax levied upon each receiving set enables an energetic monopoly called the British Broadcasting company to produce concerts and programs of a high, professional quality, and distribute them through a network of stations to crystal set owners all over Britain.

We came up from Dover in the afternoon. The suburbs of London had a lace-work of pretty, regular aerials along the roofs of the houses. That first night I listened on a crystal set to Clara Butt singing to 10,000 people in Albert hall. Since then I have listened to 2LO practically every night. Musically, the concerts are superb. The singers are frequently accompanied by the excellent station orchestra. One night I remained up to hear the famous Savoy hotel jazz band; but it was not as good as our first class American dance orchestras.

#### A Visit to 2LO, London

Just as soon as I got into London, I phoned Major Atkinson of the B. B. C. publicity department, since it was he who had answered my letter from America some weeks before. Thanks to the major, I was able to visit Station 2LO and go all over the building from office to office, meeting practically every one of importance on the huge staff.

I was curious to know what part the announcers played in the program. Major Atkinson told me that personal publicity for the individual members of the staff is generally restricted. Voices that talk to children and the youngsters take on the title of "Uncle." It seems that "Uncle Rex" in London holds the palm. Everybody loves him.

Many of the original announcers have become station directors in the provinces and still remain very prominent and popular. There are 562 names on the B. B. C. pay roll, so they can't all be stars! The main offices of the B. B. C. are right in the center of London—Savoy Hill—which is near Piccadilly. Provincial stations, such as Manchester, have about fifteen members on the staff.

The stations do not use their call letters as we do in America. Neither is the name of the company mentioned. The announcer rarely tells you about the selection that has been played, but comes on to announce the next group of songs or instrumental numbers. Now and then, he says, "London calling." He still clings to the "Wait a moment, please." Pauses are not bad, but sometimes are a minute in length.

#### Types of English Stations

There are three kinds of stations outside of London: First, main stations, located at Cardiff, Aberdeen, Glasgow, Birmingham, Manchester, Bournemouth, Newcastle and Belfast. These main stations run about 85 per cent of their own programs and use 15 per cent from London by relay. Next are the relay stations at Sheffield, Plymouth, Edinburgh, Liverpool, Leeds-Bradford, Hull, Nottingham, Stoke-on-Trent, Dundee and Swansea. These latter receive practically all of their programs from London.

The third kind is altogether different. This is the high power station. Until now it has been located at Chelmsford. But, since the purpose of the high power station is to bring the concerts to crystal set owners practically anywhere on the island, Chelmsford is at a disadvantage, being right on the edge of the island.

A new location was chosen. Daventry, in the very center of England, is the site of the new 25-kilowatt station of the B. B. C. The formal opening took place on July 27.

I was invited by the B. B. C. to be present, but my schedule led me to other lands. Also I was asked to make an English-American friendship talk from 2LO on July 4, but had to decline because that date was to find me in Berlin.

#### Inside Details from an Editor

England has a number of excellent Radio magazines. I looked them over on the newsstands and picked out "The Wireless Magazine" as the most attractive. Then I phoned Bernard Jones, the editor, and forthwith went over to see him—offices in the buildings known as "La Belle Sauvage," named after our own Pocahontas. I arranged with Mr. Jones to have published in his magazine a number of photos of American studios. He

## NEW ENGLISH SUPERSTATION OPENS



Looking down from an airplane on the power house of the new superpower station, 5XX, at Daventry, England, the gigantic proportions of the equipment can be visualized. The broadcaster recently was opened and now is an important link in the British Broadcasting company's scheme. 5XX operates with 25 kilowatts (25,000 watts) of power on a wave length of 1,600 meters. The above photo was presented to Fred Smith of WLW during his visit at Daventry.

asked me to write an article for him on American Radio and another on Radio in Europe. You may be sure that I shall endeavor to do my best for America—and happy indeed for the opportunity.

Mr. Jones gave me a lot of information about the situation in Britain. Of course the B. B. C. has come in for a great deal of red-hot criticism—there were plenty of people who could find numbers of reasons why broadcasting should not fall into the hands of a monopoly. But the English love to criticize and at bottom the B. B. C. is a mighty popular institution.

The best thing Mr. Jones did for me, though, was to phone headquarters and arrange an interview for me with J. C. W. Reith, managing director of the B. B. C., the man upon the throne so far as British broadcasting is concerned. I want to tell you about Mr. Reith after I've seen other lands and other personalities.

The B. B. C. has a network of telephone lines tying the twenty stations together. At five in the afternoon these lines, which are used during the day for commercial purposes, are turned over to the company. From five to seven the lines are used for conversation—business details between the various stations. At seven the programs begin.

All relayed programs go through 2LO, London. That is to say, if Birmingham has a special concert to be given to any one or all other stations, the concert goes first to London and then out over the network. Even if a station is relaying to only one other, the relay must go through London. In other words, the capital of the British empire is the capital of the British Broadcasting company.

Herein lies the great advantage for the B. B. C.: a thousand years of history has been preparing the situation. London is the commercial, political, educational and artistic capital of the country in a much more complete sense than any other metropolis with regard to its respective nation.

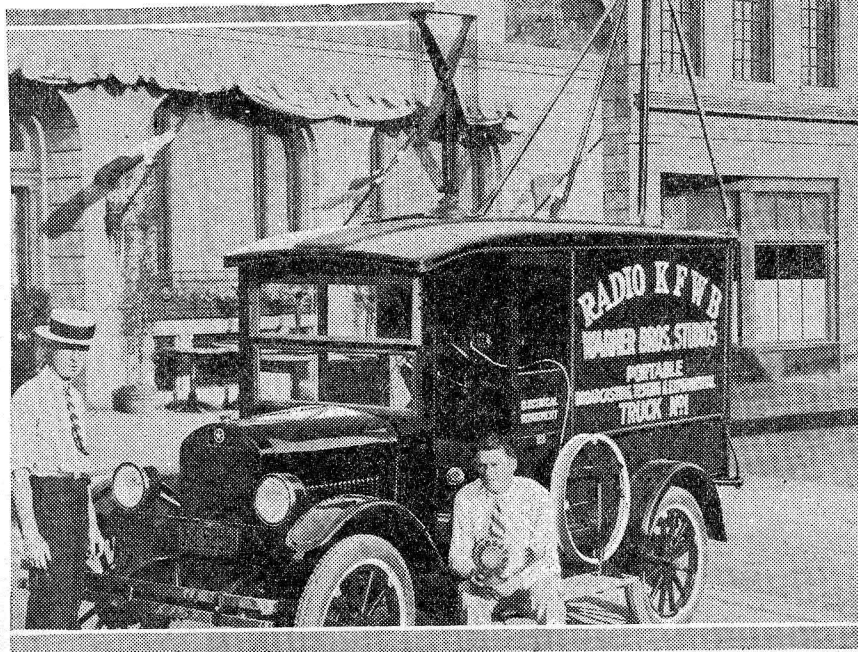
(TO BE CONTINUED)

### 9XH Hears from NRRL

MADISON, Wis.—Don Mix, operator of Burgess Station 9XH, here, communicated with A-3EF, Melbourne, Australia, on August 5, for about twenty minutes, with dry battery power. Communication was without trouble and he learned that the operator had that day bid good-bye to Lieut. F. A. Schnell, the A. R. R. L. experimenter now with the United States navy flagship (NRRL) in Australian waters.

## KFWB TRUCKS TO BRING STARS NEAR

This is KFWB's first portable broadcasting and experimental truck. Warner brothers, who incidentally run one of the world's largest movie studios in addition to KFWB, intend to have not less than four more similar trucks. Norman Manning, manager of KFWB, is holding the microphone, while Frank Murphey, chief electrician for Warner brothers, and who is responsible for many of the present-day movie lightning effects, stands in front, thinking what a cinch this Radio is compared with some of the problems put up to him daily in the business of making our best movie sellers.



## MOVIES AND RADIO ARE DRAWN CLOSER

### HOLLYWOOD FILM MAKERS USE PORTABLE PLANT

Station KFWB Mounted on Trucks to Aid the Picture Folk When on Location

HOLLYWOOD, Calif.—The thrill that comes once in a lifetime may become a reality this fall and Radio fans have the privilege of hearing, direct from Hollywood, the voices of some of movieland's greatest directors as they put such stars as Monte Blue, John Barrymore, Marie Prevost, Patsy Ruth Miller, Mary Astor, Kenneth Harlan and others, through their paces. This will be broadcast direct from the firing line of motion picture sets on the lot of Warner brothers' west coast studios and will be accomplished through the use of one of the new portable broadcasting, testing and experimental trucks, the first of which was just recently put into service by KFWB.

In addition to other equipment, these trucks have a complete Western Electric public address system, with the lily-horns mounted on a steel shaft that sticks up above the car top and which is collapsible. A super-heterodyne and power amplifier is also incorporated, making it possible to switch over and receive programs from stations over long distances.

#### Aids on Movie Set

Recently a Radio Digest correspondent was given a demonstration of the uses to which this portable broadcaster, as it might be called, is used. The car, which had been touring the streets of Los Angeles picking up programs of various stations, was run onto a set in the studio at Warner brothers and the director, James Flood, presented with a hand microphone and told to use that in place of the time-honored megaphone. A number of scenes were taken, ranging from a ballet, which ordinarily would be difficult for one man to handle, to close-ups. In the larger scenes particularly the broadcasting of the director's voice evenly to all parts of the set showed the value of the installation. During lulls between scenes, and while lights were shifted and cameras replanted, music was brought in from a number of stations, much to the enjoyment of the waiting crowd of actors, extras, electricians and lookers-on. The only persons who did not seem to enjoy these concerts were the musicians who are hired to play music for the emotional scenes.

#### Plan Hollywood Broadcast

While such a use in the studios is not new, this application of it is and there is no doubt that it will be widely copied and all the larger motion picture companies make use of the portability and flexibility of the truck method of handling the public address systems. But none of the other studios have Radio stations and so it may be, if a satisfactory solution of the wave length problem can be found, that KFWB this fall will be housed on the roof of the new Warner brothers' theater at Hollywood with a new 5,000 watt transmitter with not less than four smaller stations in strategic points throughout the country to rebroadcast some of the novelties that can only be found in Hollywood. Such, briefly, are the ambitious plans of Warner brothers in the Radio broadcast field. Radio and the movies are coming closer together every day.

## Dedicate Edna Field Memorial Pipe Organ

Shenandoah Station Scene of Impressive Ceremony

SHENANDOAH, Iowa.—The Edna T. Field Memorial organ at Station KFNF here, recently was formally dedicated with appropriate Radio ceremonies in the plant studio. Playing of Mrs. Field's favorite selections by several organists in turn was the principal part of the program. Relatives of Mrs. Field and entertainers on the station staff also sang many of the songs she loved so well. One song, a beautiful number, was especially written for the occasion by Miss Estella Priest of Red Oak, Iowa. Philip Field, a minister, son of Henry Field the station owner, journeyed to Shenandoah to make an address at this occasion.

The organ has a beautiful appearance and lovely tones and seems to fit in with the studio and the music of the station.

#### Need Expensive Sets Only

WASHINGTON, D. C.—Inductive interference caused by the many high tension power lines in Switzerland necessitates the use of receiving sets that will minimize this disturbance and consequently precludes the possibility of the sale of the cheaper make of receiving equipment.













T; GANIA ZIELINSKA SINGS AT WEAF



Al Handler, left, is the leader of the orchestra which will be heard regularly from the Stewart-Warner studio of WEBB. Charles G. Seelbach, upper right corner, is the director and violinist of the Century orchestra, which will play during the dinner hour Monday at WGR.

DANCING Central Standard Time Saturday, August 22: Kgw, Wgy, Wmbb...

WCX, Detroit, Mich. (516.9), 6 p. m., dinner concert, Book-Cadillac hotel; 8, the Detroit Symphony orchestra...

Field, violinist; Sue Field, flutist; 8:30-9:30, Elizabeth Bonnell Davis, soprano; Colonial dance orchestra...

Index to Classical Concerts TABULATED below is a time table of the stations giving classical concerts this week.

Classical Atlantic or Eastern Daylight Saving Time Stations Saturday, August 22: 6, WEAF; 6:05, WIP; 6:30, WCAE; 6:45, WPG; 7, WEAF, WJZ; 7:30, CKAC, WEAF...

# CHISHOLM SECRECY SCHEME SAID BEST

## GREAT BRITAIN INTERESTS SELF IN VARIOUS PLANS

Secret Broadcast System Would Permit Selling Programs, News and Other Services to Fans

By A. C. Blackall

LONDON.—The most serious drawback to the use of Radiophony for commercial purposes—lack of secrecy—has not only been overcome by J. D. Chisholm's epoch-making discovery recently described in Radio Digest, but has since been solved in many other ways.

Apart from the advantages of cutting out unauthorized listeners from a private conversation, secret transmission will open up the way of the creation of a limited or "narrowcast" service of special financial and other news—or entertainment—to a select circle of subscribers.

A new system of disguising ordinary speech so that it is unintelligible to an unauthorized listener consists in abstracting, by means of suitable filtering circuits fitted to the transmitter, certain of the frequency components or "side bands" that go to form a speech-modulated carrier wave. The abstracted portions are subsequently restored at the receiving end by means of a local tube oscillator, which must be set at a given frequency or cycle of frequencies. So treated, the incoming message is restored to its original form. By ordinary receivers the signals are heard as an unintelligible jumble of sounds.

### Second Secrecy Device

A further refinement to this type of secret transmission is deliberate inversion or distortion systematically, of speech frequencies by a process of overmodulation, and the provision of tube demodulation at the receiving station so set as to reverse the deliberate distortion, and thus restore the original speech form. Telephonic messages radiated in this manner would be absolutely unintelligible to the ordinary crystal or tube receiver.

The recently developed system of beam transmission also affords a considerable degree of secrecy—perhaps selectivity is a better term—by confining or localizing the signal energy within a comparatively narrow zone of space, outside of which no reception is possible under any circumstances. The Radio beam presents, in fact, an approximation to the conditions of ordinary line telephony, and to this extent protects the message from the casual listener.

### Chisholm Method Simplest

The simplest method of baffling unauthorized eavesdropping, however, is to utilize Chisholm's principle of introducing at the transmitting and a deliberate and irregular variation in the emitted wave length. An ordinary listener, unequipped with special means for keeping the tuning of the aerial circuit in constant step with the imposed perturbations, would find it impossible to pick up more than a fragment of the transmitted speech.

The objection to systems using this principle lies in the practical difficulty of providing a simple yet efficient mechanism for maintaining the receiving circuit in synchrony with the superposed "wobble." One inventor, at least, has suggested the use of clock-work driven cams of irregular outline to control the setting of the transmitting circuits, a similar equipment being added to each receiver.

Chisholm, however, is the only person who has yet perfected a system on this principle.

## PROVE RADIO IS NOT CONCERT DETRIMENT

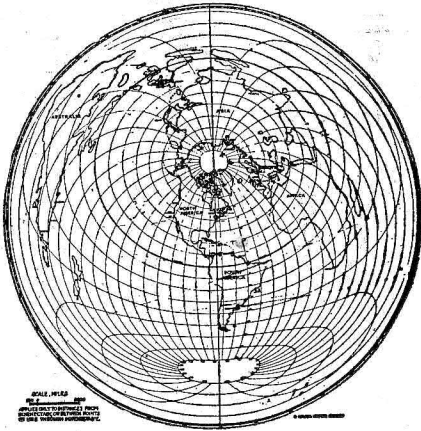
### Broadcasting Helps Rather Than Hinders in New York

NEW YORK.—There seems to be the feeling among certain ones in the theatrical and sporting world that broadcasting an event will adversely affect the patronage received. As yet there appears to be no definite proof for this belief and the recent opening of the Philharmonic concerts at the Lewisohn stadium indicate that such belief is entirely erroneous.

The Philharmonic society has been broadcast for several years. Therefore it is not a novelty. Furthermore, Station WJZ broadcast the opening concert and definitely announced that they would broadcast at least three of these stadium concerts each week for the rest of the summer. Also in a performance of this nature, little is to be seen; practically all is to be heard. Radio gives all there is to get.

But at the opening stadium concert more persons attended than ever before in history. The stadium was sold out.

## THIS 'MAP OF MAPS' TELLS LOTS AT WGY



IF YOU have ever tried to figure the distance between any point in North America and a city in Asia, or South Africa, making due allowance for the curvature of the earth, you will appreciate this distorted map which was drawn for the convenience of Radio engineers of the General Electric company in interpreting transmission tests.

It is known as an "equidistant zenithal projection," which means that you don't have to resort to spherical trigonometry or a slide rule to get either direction or distance between two points on the face of the earth, one point of which is the center of the map.

### Map Has Three Uses

This map is drawn with Schenectady as a center and all measurements to be accurate must be from or to Schenectady. An entirely different distortion would be produced if the map were drawn with London or Melbourne as a center.

The projection has three main uses. First, it gives the straight line distance between Schenectady and any other point on the earth's surface. This is obtained by measuring the distance from Schenectady to the point in question and converting this measurement in inches into miles by means of the scale at the bottom of the map.

The map is valuable in the second place because it shows the nature of the intervening territory between Schenectady and any other point. This is highly important for the Radio engineer for, as is well known, the distance over which Radio signals can be transmitted depends, among other things, on the nature of intervening territory, that is, whether it is land or water. Distance transmission over territory three-fourths of which is water and one-fourth land is not so difficult as transmission over the same distance three-fourths land and one-fourth water.

### Shows Surprising Wave Paths

In the third place the map gives the exact bearing or direction from Schenectady to any other point on the earth's surface. This bearing is obtained by extending a straight line through Schenectady and the point in question to the scale on the periphery of the map which reads directly in degrees. It would not be supposed, for example, that Radio signals from Schenectady would travel within a few degrees of the North Pole to reach Manila, Philippine Islands. The average person would not expect Radio waves, traveling in a straight line—the shortest distance to Calcutta, to take a north-easterly route. But they do!

## Need License to Listen in If You Live Up in Canada

WASHINGTON.—Every owner of a Radio receiving set in Canada must obtain a government license and pay a fee of \$1.00 annually, according to reports received here by the department of commerce. These licenses are obtainable at the post offices and through many Radio dealers. There are, however, say the reports, no restrictions that have a tendency to limit the advance of Radio in Canada.

Radio has not become popular in many of the rural districts of Canada, especially in the province of Quebec, due largely to the fact that most of the farmers in the province are French Canadians, and do not understand English, and only a very few stations broadcast in French.

## Mooseheart Dedicates New Organ By Radio Concert

MOOSEHEART, Ill.—The new organ which has been in the process of construction four months in the Roosevelt Memorial auditorium here, was dedicated recently with a concert by the popular Radio organist, Mr. Albert F. Brown. This dedication concert was broadcast by the Loyal Order of Moose Station WJJD.

Although no definite schedule has been arranged for the broadcasting of this new organ, it will undoubtedly be used in conjunction with the Catholic services and the Protestant services which are broadcast every Sunday morning by WJJD.

## STATIONS IN ORDER OF WAVE LENGTHS USED

Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call
217.3	WOK	275.3	WJAS	313	CNRA	361.2	WHN	405.2	WOR	468.5	WCAP
226	WBBM	278	KOIL	315.6	KPDM	365.6	WDAF	406	WBAR	468.5	WRC
226	WIBO	278	WCAU	315.6	WAHG	365.6	WHB	410.7	CKAC	475.9	WBAP
240	KFVE	278	WLBL	315.6	WGFS	370	CYB	416.4	WCCO	475.9	WEEI
243.8	WAMD	278	WRBC	319	WG	370.2	WEBB	421	KIAF	475.9	WFAA
250	WGES	280.2	WNAC	319	WSMB	370.2	WGN	422.3	WLW	480	CYL
250	WMBB	282.8	WOAN	322.4	KOA	374.3	KTHS	428.3	WSB	483.6	WOC
252	KFWB	285.5	WKAR	325.9	WSAI	379.5	WGY	428.3	KPO	483.6	WSUI
252	WGCP	285.5	WREO	326	WKRC	379.5	WHAZ	434.5	CNRO	491.5	KGW
261	KFWA	293.9	KJS	330	CYX	384.4	CKY	434.5	NAA	491.5	WEAF
265.5	WMAK	293.9	WBAV	333.1	WBZ	384.4	KJR	435	AT9	499.7	WMC
266	KFNF	293.9	WEAO	336.9	KNX	384.4	WMBF	435	CFCN	508.2	KLX
266	WBCN	296.9	KPRC	340.7	KFAB	389.4	WEAR	434.5	CLDS	508.2	WIP
268	WCTS	296.9	KPMQ	340.7	WKAQ	389.4	WTAM	440.9	WDWF	508.2	WOO
272.6	WBBR	299.8	KFMQ	340.7	WCAQ	394.5	WFI	440.9	WOS	516.9	CJCA
272.6	WBBJ	299.8	KSL	344.6	WCBW	394.5	WLT	440.9	WMAQ	516.9	WCX
272.6	WFBH	299.8	WPG	344.6	WLS	394.5	WQJ	447.5	WQJ	526	WJR
273	WRW	302.8	WJJD	348.6	KFAE	399.8	WHAS	447.5	WQJ	526	WHO
275	KEAU	302.8	WTAS	348.6	WTIC	399.8	WHT	454.3	KFOA	526	WNYC
275	WCAC	302.8	KTCL	352.7	WWJ	399.8	WHT	454.3	WJZ	526	WOAW
275	WHAD	305.9	WJAR	356.9	CFCA	400	PWX	455	KTW	535.4	KYW
275	WHAR	305.9	WJAR	356.9	CHNC	405.2	KHJ	461.3	WCAE	545.1	KFUO
275	WORD	309.1	KDKA	361.2	KGO	405.2	WJY	467	KFI	545.1	KSD

## INSTRUCTIONS FOR USE OF TABLES

THE "Evening at Home with the Listener In" table is not difficult to understand and use. It is this fact that makes it so popular with the readers of Radio Digest. It is presented in three different standard times; Eastern, Central and Pacific. Two of these are presented each week. Listeners using one of the three kinds of time named, should utilize the table printed in that time and so designated by its headline.

For listeners whose standard of time is not shown here, the following instructions should be remembered:

Listeners using Mountain time: Use table for Pacific time but add one hour to every figure given. Can also use Central time table by subtracting one hour from every figure given.

Listeners using Eastern daylight saving, or Atlantic time: Use Eastern time table by adding one hour to every figure given.

Listeners using Central daylight saving time: Use Eastern time table. No changes are necessary.

The periods given in the "Evening at Home" tables are only representative of each station's evening sign-on and sign-off hours, and on Sunday, the late afternoon sign-on and sign-off. If a station has an intermittent rather than continuous program, the table cannot show this.

Above is given a list of all stations in the "Evening at Home" tables, arranged in order of the wave lengths used (or supposed to be used) by the stations. This arrangement provides a handy index for the other tables.

The "Evening at Home" tables are corrected every week. The number of changes often run as high as thirty per cent of the whole. Keep the "Evening at Home" tables from the current issue at the side of your receiver.

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## The Reader's View

### Later Symphonies and Operas

Would you, through the columns of your Radio Digest, suggest that symphony orchestras and operas play occasionally, beginning at 10:15 local standard time? Our friends all are connected with the theater and it makes it discouraging to miss Marine band concerts, symphony orchestras, operas, etc.

This is just a suggestion, and with your cooperation might let us enjoy more good programs.—Jack Drew.

### Suggestion to Announcers

There are a few good announcers, and a great many not so good, for identification of the various broadcasting stations. The name of the station should follow the call letters, at regular intervals. Many of the letters sound alike, for instance, WEAJ, New York City, and WDAF, Kansas City, Mo.

Announcers should use their voices correctly and announce the name of the station, instead of giving the pedigree of some foreign "gink," which is just as welcome to the Radio fan, as a monkey in Tennessee.—C. B., Ithaca, N. Y.

### Congestion and Selective Sets

Yesterday I filled out one of your "Consensus of Opinion" slips and mailed it in with a remark that in my opinion most of the fuss and feathers about this congestion was due to inexcusably broad tuning receivers. After writing the note I thought more and more about it and finally determined to express myself more fully on the matter, for it is one about which I have done considerable thinking for months.

In the first place, it seems to me that very few people have any real conception of what a really selective set is. Anything coupled inductively to the antenna is selective to them; yet any Radio engineer knows that even a non-regenerative single-circuit set can be made fully as selective as the average Neurodyne or other tuned radio frequency set if the proper precautions are taken. I used to think a set was selective if at fifty miles a class A station could be kept within one one-hundredth of a semicircle. Many people today think that a neurodyne of the usual type or a super-heterodyne are about the last word in selectivity. Place most of these sets within a half mile of WEAJ, WGY, KDKA, or the Philadelphia stations and they spread over two or three degrees (usually that is; occasionally one finds an exception, but I am dealing with the average neurodyne operating on 100 feet of antenna or a super-heterodyne on a loop). Most people say "Well, did you ever see a set cut out stations that were less than half a mile away?"

I have not only that, I built one. There was nothing startling about it. I even used cylindrical coils wound on a bakelite tube—a construction that I can give no

excuse for except that it was six months ago, before low-loss equipment had become as prominent as it is now, for cylindrical coils invite interference, being regular miniature loops, and the dielectric upon which they were wound invited losses which made tuning even broader. Yet merely by having a filter-like circuit using two tuned circuits, and loose antenna coupling, I discovered selectivity which cut out WEAJ half a mile away and brought in WOC eight meters away without any background of interference. The set used a stage of tuned radio frequency which provided the two tuned circuits (antenna and detector-grid) as well as regeneration to increase selectivity and make up for the inevitable losses caused by the obsolescent coils; and by really loose coupling to the antenna which was but 25 feet long (I have yet to be convinced that more length improves matters). I achieved an inherent—no, not really inherent, say an acquired—selectivity which was O.K. Had I used up-to-date toroidal low-loss coils I could have moved within two blocks of the station.

So my advice is to learn what real selectivity is. Not merely selectivity at fifteen miles, or five miles, or one mile, from the station, but within several blocks of it. Then these yowlers about congestion will find it doesn't exist nearly so much as they thought, although of course it is perfectly true that no one can deny that there is an inexcusable amount of congestion even for such really selective sets.

There are one or two matters of some importance which I have never read discussed in Radio articles. I refer to critical tuning controls and selectivity. Many a time I have seen a set which promised to be very selective. On moderate DX, if verniers were not used and the operator's hands were on the tuning dials while the set was oscillating, the squeal would rise and fall with the heart-beats of the operator. Yet at short range the selectivity was gone. A set like that is of little use.

The opposite is found in sets of the tuned radio frequency type which are built on low-loss principles; there each dial of itself is not particularly selective or critical, but when the three are adjusted to an easily found resonance, the selectivity is high, provided, of course, that it is not nullified by an obsolete type of neuroformer and other broad-tuning elements. Hence I would recommend those who wish to improve their selectivity to try using two non-critical low-loss tuned circuits and a short aerial.—S.W., Princeton, N. J.

## Programs Fresh and Peppy Because Studio Is Cool

MINNEAPOLIS.—The cool air of WAMD here, washed by pure artesian well water, makes this studio one of the most pleasant for summer broadcasting. Artists at this station do not mop their brows nor fan themselves. Perhaps this is the reason their programs sound fresh and peppy even in the warmest weather.



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## Good and Bad Transmission

ROBERT L. KERR of London, Ontario, Canada, writes a letter voting his confidence in the crusading ability of Radio Digest and asking that this publication step out and comment upon the good and bad operation of class B stations. Microphone clicks, poor modulation, inexcusable fading and other evils traceable to poor operation or technical arrangement would so be criticised.

Our correspondent has the germ of a splendid idea. Its only weakness is to find a means of execution. Perhaps our readers will help by reporting now and then what they consider excellent technical operation of equipment and flagrant cases of mismanagement on the part of the station engineers. Thus the entire continent could be covered practically.

Good operators would be complimented. Misfunctioning operators would be constructively criticised. Better broadcasting would result. Perhaps less congestion would exist, as a result of stations slipping off of or overmodulating their wave bands.

Mr. Kerr's letter follows:

"Going back over my files of Radio Digest, I note the absence of a column devoted to either commendation or criticism of operation by the technical staffs of broadcasting stations. Programs as to their make-up, telegram reading, station events and artists' abilities are commented upon weekly; still nothing is written as to the good or bad operation of stations' transmitters and those responsible for same.

"Quite a number of class B stations I tune in regularly, have operating staffs that should be commended, and others should be criticised for the manner in which they handle the station equipment. Many a good program is 'bent' by the indiscriminate handling of microphone plugs and switches. Thuds, clicks, hisses and bangs come over the ether. Then, to top off the performance, comes a noise like a ton of coal being dropped into a cellar when the microphone is moved from one location to another.

"Alack! This is not enough. When a microphone exchange of controls is made, the difference in modulation is often so bad that the voice or instruments seem as far away as China.

"This lack of synchronization seems to point to—well, one wonders if the operating staff ever tests out its equipment? Many an evening's entertainment, otherwise faultless, is ruined by the inattention of the station engineer to such little details.

"Knowing that Radio Digest is fearless in attitude to transgressions or transgressors, will you pay attention to the foregoing as it applies to the many class B stations, giving credit where it is due, and laying on the stick where it belongs?"

We will, Mr. Kerr, for the good of Radio. All we ask now is that our readers help us to make such a weekly column possible.

## Banish Song Over-Plugging

REPRESENTATIVES of song publishers are hereby notified that the practice of repeating the same numbers evening after evening or of using the same number more than once on one program, must be discontinued immediately. Indiscriminate 'plugging' will not be countenanced at this station.

The foregoing announcement was recently posted on the bulletin board of a metropolitan station and almost immediately they began to receive letters complimenting them on the betterment of their evening popular programs although the public was not aware of the announcement.

The Radio audience demands certain amount of popular music and many stations depend upon the music publishers to furnish artists to put this sort of entertainment on the air. Unless the program directors of stations so doing put their feet down and demand variety, such as the station which posted the above bulletin has done, they will find that their former listeners will be elsewhere on the dials.

Some stations go so far as to prohibit the same number being used on consecutive evenings even if it is once rendered as a vocal selection and the next night as an instrumental number. Stations following this policy very seldom receive criticism containing the "same old stuff" phrase.

## RADIO INDI-GEST

### This Week's Poem-try

It seems customary to have  
A bit of poetry in each column  
Hence we are trying to make this  
Look like verse.  
If we were like the announcer  
Who is leading our worst tin cup award  
We would ask you readers to  
Kick in some verse  
But we are not like him.

**Freddy the Viking**, our own wandering correspondent, has recently returned from Florida with glowing accounts of mosquitoes, alligators, swamps and cows. He reports that static has been cut to a minimum in that state as most of the aerials are naturally under water in the summer time. Freddy will next venture into the wilds of Wisconsin to hunt for the Third Trombone Player, whose "Milwaukee Daily Beverage" has been suppressed.

### Bad Luck for the Monkey

First Organ Grinder: "Nobody gives no more."  
Second Organ Grinder: "Damma da Radio."—Life.

Not long ago the boys at WBBM read one of Delmer Buglass' reviews from this column over the air and the next morning they forwarded one million votes for Delmer as the world's worst announcer. However, these votes will not be placed to his credit until they are properly scrutinized. We fear he may have voted too many times for himself. Some people have such a hard time distinguishing between notoriety and popularity.

### The Radio Announcer

(Extract from editorial by that name in N. Y. World.)  
"They should employ the technique of train announcers: a clear, distinct tone of voice and an impersonal manner."

It seems that some comment is necessary here, but after having heard a train announcer call a train for what we thought was St. Paul and, after having boarded such train and finding oneself on the way to Buffalo, all we can say is "piffle."

### Sum Tecknickle Stuff

Realizing that Radio terms are rather difficult for the layman to understand, Indi-Gest has made arrangements with an unknown tecknickle expert to furnish our readers with a list of definitions of common Radio terms. The first list follows:

**AERIAL.** Maiden name of Aunt Enna. A mess of wires strung over roof tops for gutter repair men to trip over, cuss and tear down. Also used by tenants in apartment buildings for clothes lines. Always too short or too long.

**AMPLIFIER.** An instrument used to increase the volume of static disturbances in summer.

**CONDENSER.** An essential part of a receiver used as the basis for jokes about milk, sent to us in every mail.

**DETECTOR.** The part of the set that is alleged to cause trouble on nights when friends are invited to hear DX on a crystal.

**ELECTRON.** Smaller than a chigger but with thousands of times more kick.

**ETHER.** The stuff the signals come through and the basis of "real beer."

(More next week—maybe.)

### Bedtime Stories Up-to-Date

"Tell me a fairy story," pleaded little Patricia, when told that it was time to go to bed.

"Wait a moment, dearie," answered mother. "Your father has just finished trying to listen to New Zealand on his new six tube set. He'll tell you a good one."

LONDON BOBBY.

### Indi's Own Q. and A. Department

Q.—Why do heterodynes cause crystalization in non-radiating tuned reflex antennas?

A.—We will bite! How?

Q.—Is it true that the announcer at BVD is a close guy?

A.—Just in the summer time.

Q.—I just adore the tenor who sang from PDQ Christmas eve. What is the color of his eye?

A.—Her name is Mike.

Q.—How can I learn how to be a Radio announcer?

A.—The courses in the Podunk Correspondence School of Applied Brick Laying are very beneficial for those desiring to become poultry raisers.

Q.—What is the wave length of Station XYZ?

A.—Her right name is Mabel and she has a permanent wave.

Q.—Why?

A.—Because.

### Another Crowded Wave Band

Dear Indi: I see where Chicago fans are kicking because they have trouble tuning through the sixteen stations in and around that city. They have no kick at all! Last week my aerial got shorted on the sixteen party line telephone that crosses my farm and I got three grocery orders, a divorce suit, a marriage proposal, news of twins, and the latest bootleggers' quotations along with the World Crier, a bed time story and a Radio drama.

RURALINE.

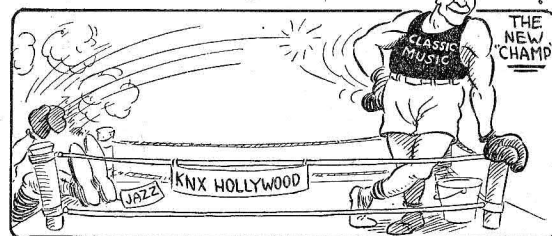
### Just Like Henry's Votes

"A stalk of corn fourteen feet ten inches high was grown in a field near Shenandoah, Iowa." (News item.)

We bet that it was grown from one of Henry Field's seeds assisted by Radio wave fertilization from Henry's own station, KFNF.

A new trade nickname for portable Radio sets is "Mary's lamb," because wherever John or Mary go the Radio is sure to go too.

## News Review of the Week



## Condensed

BY DIELECTRIC

The announcer in the studio of KYW, Chicago, seemed to be having a humorous time the other evening at the expense of one he called "Shorty." While the weather was not excessively hot the program was particularly suited to a broiling night; nothing that was said or done demanded much brain work on the part of listeners in. This sort of program is a pleasant diversion from classical concerts, theses on political economy, etc., and a little more fun would do us all good.

Those Pasadena Warblers. At the time they were scheduled to come on the air at Station WEAF, New York, my set was pleading for a respite, but fortunately that came after they finished a delightful musical concert. "Heaven," a negro spiritual, sounded peaceful as these four singers rendered it, following a delirious jazz period. Then the soprano and contralto sang a selection of Saint-Saens in a manner wholly enjoyable with voices blending harmoniously.

When you desire dinner hour of music try WTAM, Cleveland. It will not prove disappointing unless your taste is exceptional. One result of listening to this station at such a time may be the consumption of less food, for it is difficult to listen to the players and pay attention to commonplace edibles. Perhaps the music may aid you in reducing. Billy Jones, one of the Happiness Boys, declared that the way to reduce, or put on weight, is "not to eat fast" in one instance and "not to eat—fast" in the other.

Certain hours in every evening's broadcast are dedicated to tire, candy, battery, tooth paste or other necessities of life at those stations where each minute on the air means several dollars exchanging hands. WMCA, New York, recently reserved sixty minutes of their allotted time on the ether to a chiropractic entertainment. That is not to say that during said time listeners stepped up to their loud speakers and received spinal adjustments. On the contrary! One spinal column "creeped" that evening.

It may not be fair to presume that all dancers are confined in the state of Georgia, but all dancers in that southern state hearing WSB, Atlanta, were certainly on their feet the other evening during the broadcasting of terpsichorean melodies. Those players were capable of arousing ardor in the pedal extremities of gouty individuals. Even the announcer did the Charlestown as he introduced the various numbers to his audience.

Lest some of you lovers of classical music overlook the opportunity to tune in on programs presented by one of the best orchestras in the country, let me remind you that Station WCX, Detroit, presents the Detroit symphony orchestra for your enjoyment. Look up the schedule arranged for your convenience in another section of Radio Digest and note the date of the next concert. It will repay the slight effort involved.

Superpower stations are coming into the Radio limelight with the approach of winter. They may, or may not, meet with universal approval from listeners. There remains somewhat to determine the usefulness of this new type of broadcaster and your comments will help. Referring to those three tests made recently by WGY using superpower it is interesting to observe that fading persisted even with so much power, while at the same time the quality of transmitted sound apparently suffered not at all.



# Regenerative Fixed Crystal Two Tube Reflex

## Sharpens Tuning and Eliminates Adjustable Detector

By Carl R. Dean

THE writer has been using a two tube reflex for some months with results that were, at first, highly satisfactory. Loud speaker operation was had from scores of stations and head phone reception could be accomplished consistently on stations more than half way across the continent. Then the broadcast situation changed, with scores of new stations on the air and as many as fifteen on a wave channel, and our set no longer was such a perfect source of enjoyment. The selectivity was insufficient and it was impossible to bring in certain distant stations with sufficient volume to hear them enjoyably through the faint undercurrent from nearby powerful transmission on closely similar wave lengths.

### Regeneration Helps

Various schemes were tried to improve this condition such as tube detector, loose coupling and longer aeriels, but none seemed very effective, and each brought in some new problem while it eliminated one of the old ones. Having seen the statement made by several writers in Radio Digest that the introduction of regeneration, under control, would sharpen the tuning by lowering the effective resistance, regeneration was added and proved most efficient. After a little practice in tuning, until one learns the relationship between the tickler dial and the wave length dials at all wave lengths, the set rarely spills over and will cause little, if any, interference.

The use of a crystal in an ordinary single tube reflex set is usually annoying. When using an adjustable crystal, fooling around with the catwhisker becomes tiresome. In the case of a fixed crystal, the trouble is to find a detector adjusted to comply with the design of the circuit and the apparatus used. The adjustment of the crystal partly controls the degree of radio frequency amplification because of its partial control over the regeneration. In this set, regeneration is controlled by a tickler coil, and a fixed crystal detector is used.

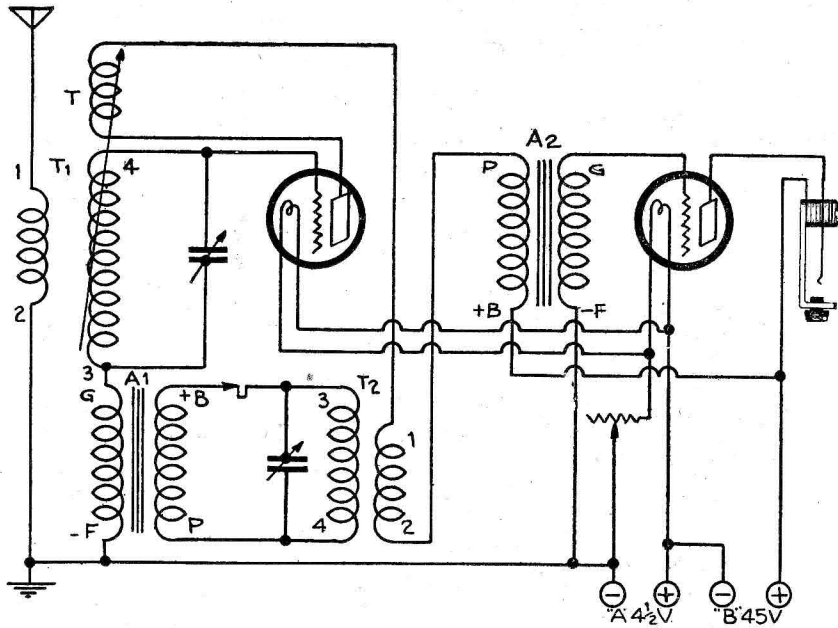


Figure 1

The results of any set depend to a great extent on the quality of the parts used. The most important unit in this set is the crystal and only a good reliable detector should be installed. The complete list of apparatus required is shown elsewhere in this article. As built by the writer, the accessories needed are two 199 or 299 tubes, 67 volts of B battery, 31½ volt No. 6 size dry cells, phone plug, phones and speaker.

### Coil Construction

The coils of the radio frequency transformers are all wound in the same direction. T<sub>1</sub> is wound on one of the tube forms, and the secondary S between points 3 and 4 consists of 50 turns of

No. 26 ssc. wire. A piece of insulating paper or Empire cloth is placed over this winding and the primary, points 1 to 2, is wound directly over this and in the same direction. It consists of 12 turns. One of the primary ends is marked 1, the other 2; the end of the secondary nearest the primary is marked 3 and the remaining secondary lead is marked 4. T<sub>2</sub> is wound in the same way as T<sub>1</sub>, with the secondary having 50 turns, but for T<sub>2</sub> the primary should have 32 turns. The terminals should be marked in the same manner as were those of T<sub>1</sub>.

Coil T which controls regeneration is wound in the same direction as the other

coils with the same size of wire and should contain 25 turns wound on a form 1½ inches in diameter and three-fourths of an inch wide. This coil is to be secured to a shaft and mounted inside the transformer T<sub>1</sub> near the number 3 terminal of the secondary. The mounting and bringing out of leads are the same as is done on an ordinary variocoupler rotor. This coil is to be rotated by means of a dial.

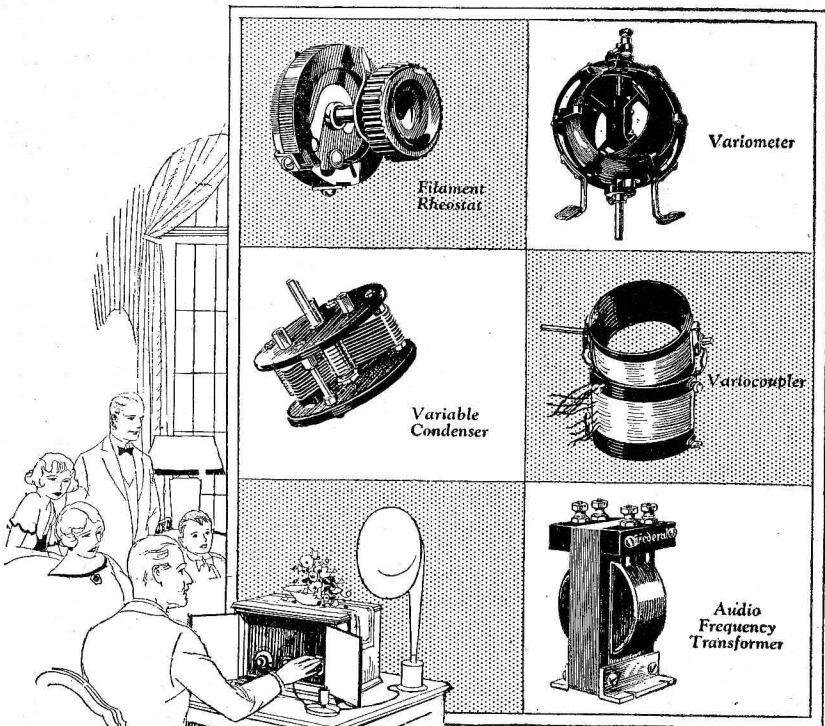
### Mounting and Assembly

The two radio frequency transformers should be mounted at right angles to each other, as should the audio frequency transformers. A good looking job can be made by using bus bar but there might be a possible gain in stability if the cabling suggestions in one of the recent articles by Milo Gurney are followed. Make the detector leads as short as possible. The stator plates of condensers should be connected to high potential ends and the rotor plates to the coil ends of low potential. This is clearly shown in the diagram. The 5 or 6 to 1 audio transformer is that identified by A<sub>1</sub> while the 2 or 3½ to 1 is that labelled A<sub>2</sub>.

When the set has been assembled and wired, the rheostat should be adjusted until the filaments burn at the proper brilliancy (determined by voltmeter or the eye), and should not require retouching unless the A battery is permitted to get very depleted. Then slowly rotate both condensers at the same time, keeping them at about the same setting. If a station is heard, leave C<sub>2</sub> at about the setting of C<sub>1</sub> and clear up the signals with C<sub>1</sub> and T. The quality and volume of the programs are controlled by the tickler coil and remember, too much regeneration will spoil the quality.

If no programs are heard at first, the tickler leads should be reversed, or the leads to the crystal detector, or both. In any case, try reversing the detector connections. It will be found that the opera-

(Continued on page 20)



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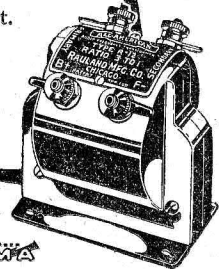
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# A. B. C. Course in Radio Fundamentals

## Chapter XXII—The Electron Tube as a Detector

By David Penn Moreton

THE fact that the plate-current grid-voltage static characteristic of the three electrode vacuum tube is not a straight line is taken advantage of in using the three electrode vacuum tube as a detector in Radio work. The form of this curve was discussed in the previous chapter and you doubtless remember that it was not a straight line, especially at its upper and lower ends.

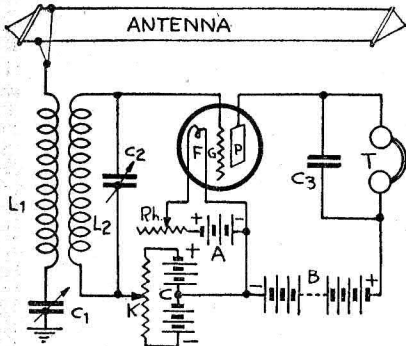


Figure 93

Let us consider the action of a three-electrode vacuum tube connected in a Radio receiving set as shown in figure 93. The filament F of the tube is heated by current from the battery A. The plate circuit is composed of the telephone receivers T and the battery B, which produces a difference of potential between the plate and filament of the tube, and, as a result, maintains a current in the plate circuit. The grid of the tube G is connected to the filament through the inductance L<sub>2</sub> and a battery C and potentiometer K. By means of the potentiometer, it is possible to adjust the potential of the grid G to such a value E<sub>g</sub> that, under static conditions which prevail when no oscillations are being received from the aerial circuit, the operating point of the tube is some point P<sub>1</sub> or P<sub>2</sub> at either bend of the static characteristic curve as shown in figure 94.

Let us assume that conditions are such, under static conditions, that the plate potential E<sub>p</sub> and the grid potential E<sub>g</sub> result in a steady current I<sub>p</sub> in the plate circuit, and the tube will be operated at the point P<sub>1</sub> on the curve, which is on the lower bend. Now, if an oscillation is received by the antenna, there will be an oscillation current set up in the circuit L<sub>2</sub> C<sub>2</sub> and there will be an alternating potential produced between the terminals of the condenser C<sub>2</sub>. An inspection of the circuit shown in figure 93 discloses the fact that the alternating potential between the terminals of the condenser C<sub>2</sub> is impressed between the grid G and filament F of the tube. As a result, there will be produced at every cycle approximately an equal increase and decrease in the steady potential of the grid E<sub>g</sub> by an amount plus e and minus e. Changes in the grid potential are shown in figure 94, and it is seen that the variations in the plate current I<sub>p</sub> resulting from the changes in the grid potential are unequal

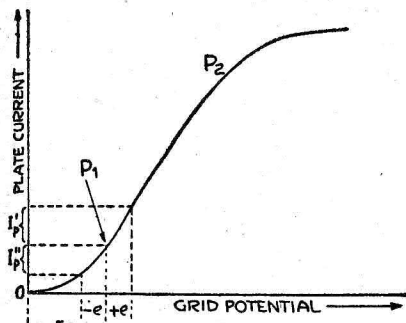


Figure 94

due to the curvature of the characteristic curve of the tube. In other words equal variations in the grid potential above and below a definite value produce unequal variations in the plate current, which results in the tube having a rectification action.

### Plotting Against Time

Perhaps a better way of showing the rectification action of the tube is to plot the variation in grid potential and plate current with respect to time. The variation in grid potential, with respect to time, due to the incoming oscillations is shown in figure 95A. The normal steady value of the grid potential is represented by E<sub>g</sub>. The variations in plate current I<sub>p</sub> due to the variations in grid potential shown in figure 95A, are shown in figure 95B. The curve shown in figure 95B is not symmetrical with respect to the nor-

mal plate current I<sub>p</sub> which exists in the plate circuit when the grid voltage has a steady value E<sub>g</sub>, due to the fact that an increase in grid potential of plus e produces a greater increase in I<sub>p</sub> than a decrease in grid potential of minus e produces a decrease in I<sub>p</sub>. The variations in plate current shown in figure 95B will produce resulting deflections of the telephone receiver diaphragm which may be represented by a curve such as the one shown in figure 95C. The small condenser C<sub>3</sub> connected in shunt with the telephone receivers, as shown in figure 93, improves the operation of the telephones by allowing the high frequency currents to pass through the condenser.

The big advantage of the three electrode vacuum tube as a detector is due to the fact that the oscillating electrical potential is not acting upon the telephone receivers direct, but upon the grid of the tube and its effect upon the plate circuit is therefore multiplied by the amplification factor k of the tube. In other words, the signals are not only detected, but they are amplified at the same time, which results in the vacuum tube being the most sensitive detector.

The tube can be worked at some point P<sub>2</sub> on its static characteristic curve, as shown in figure 93. Under these conditions the incoming oscillations produce approximately equal increases and decreases of the grid potential above and below its steady value, but the plate current I<sub>p</sub> does not increase nearly so much as it decreases for a given change in grid potential. The plate current curve shown in figure 95B would be turned upside down, but the effect on the motion of the diaphragm of the telephone receiver would

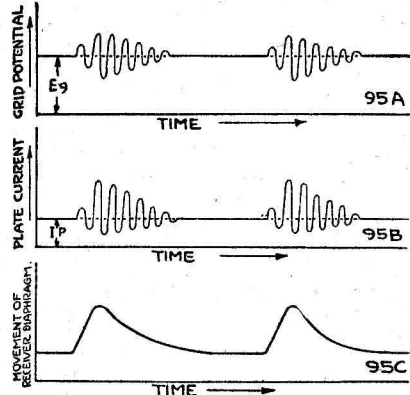


Figure 95

be practically the same. When the tube is operated at the lower bend, the steady plate current I<sub>p</sub> in the plate circuit, where no oscillations are being received, is smaller than it is when the tube is being operated at the upper bend and as a result there is not nearly such a large drain or demand on the battery B connected in the plate circuit.

It is obvious that the tube would not function as detector if it is worked on the straight part of the curve, as equal increases and decreases in the grid potential will produce equal increases and decreases in the value of the plate current I<sub>p</sub>.

### The Grid Condenser

Another method of using the three electrode vacuum tube as a detector which operates on a somewhat different principle is shown in figure 96. The connections of the tube are the same as shown in figure 93, except there is no battery connected in the grid circuit and there is a condenser C<sub>4</sub> connected in series with the grid. When the tube is connected in this manner there is no current in the grid circuit, as the grid is insulated from the filament by the condenser C<sub>4</sub>. When there are no oscillations being received, there is a steady plate current I<sub>p</sub> produced by the plate battery B. The potential of the grid will be zero, assuming the tube is a hard one or free from all gas. Now when the antenna picks up the oscillations, there will be an oscillation current set up in the circuit L<sub>2</sub> C<sub>2</sub> and, as a result, there will be an alternately positive and negative potential appear at the terminals of the condenser C<sub>2</sub>.

This potential at the terminals of the condenser C<sub>2</sub> alternately charges the grid positively and negatively through the condenser C<sub>4</sub>. During the half of the cycle where the grid is positive, it attracts some of the electrons present in the tube. During the half of the cycle where the grid is negative, it does not loose these electrons and a negative charge builds up on the grid at every cycle, the cumulative effect of which is

to produce a decrease in plate current during the entire wave train. After each incoming damped oscillation has been completed, it is necessary to restore the grid to its original condition by moving the negative charge which it accumulated during the time the wave train lasted. In the case of soft tubes, or those containing considerable gas, this negative charge automatically leaks off of the grid

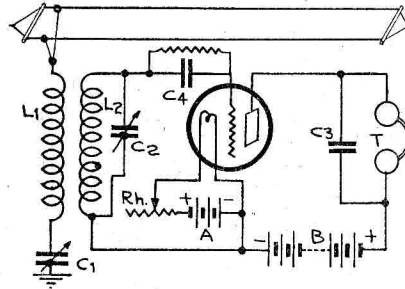


Figure 96

through the gas of the tube. In the case of the hard tube, it is necessary to shunt the condenser C<sub>4</sub> with a high resistance in order to provide a leakage path through which the negative charge on the grid may escape. This resistance is called a grid leak and usually ranges in resistance from one to five megohms. In some cases the grid resistance is fixed in value and in other cases it may be varied in value.

The operation of the tube using a grid condenser and grid leak is shown in figures 97A, 97B, 97C and 97D. Figure 97A shows the variation in the potential between the terminals of the condenser C<sub>2</sub> in figure 96. As a result of these oscillations in potential being impressed on the grid, the potential of the grid becomes negative and at the end of the wave train there is a negative charge on the grid, or its potential is negative. A small interval of time, see figure 97B, is required for this charge to leak off either

through the gas of the tube, or through the path provided by the grid leak, and eventually the potential of the grid is zero before the reception of the next wave train starts. While the potential of the grid is negative, the plate current will be less than it is when the potential of the grid is zero. The variation in plate current is shown in figure 97C. The variation in plate current, of course, produces

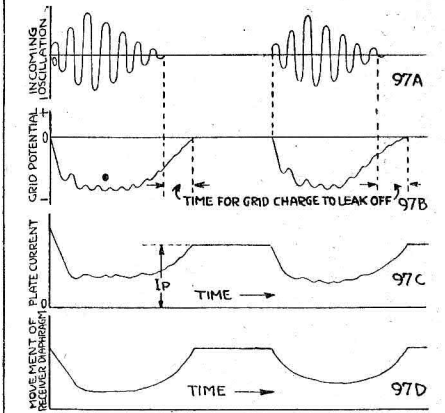


Figure 97

a motion of the diaphragm of the receiver which may be represented by a curve such as the one shown in figure 97D.

When the tube is used with a grid condenser and grid leak, it is not necessary to operate it at a particular point on its characteristic curve as was the case when the connections are made as shown in figure 93. In fact, the operation of the tube as a detector when using a grid condenser and grid leak is best when the operating point is at the center of the straight part of the curve, or where the curve has the greatest slope. The reason for this is as follows: An incoming oscillation will result in the accumulation

(Continued on page 20)

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# Single Dial Automatic Regeneration Control

## Beginner Can Operate without Creating Interference

By P. E. Edelman

THE secret of clear reception in a set employing intentional feedback is regeneration control. Many sets built by home constructors, and quite a few manufactured varieties, have manipulation controls which do not permit smooth operation. Worst of these are the types which "blurr" into whistles or audio howls. Regeneration under control, however, offers well known possibilities. In figure 1 is shown a simple circuit

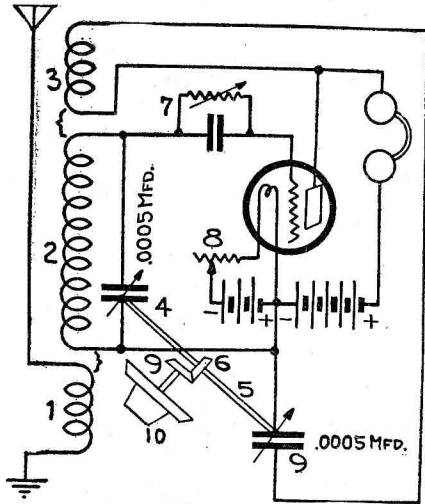


Figure 1

in which automatic control of regeneration is obtained by mechanically connecting two condensers. This circuit operates on the following principles.

Given an input coil 2 coupled to coil 1 and tuned by condenser 4, a feedback coil 3 may be coupled to the other end of coil 2. Coil 1 may have ten turns of No. 22 dcc. wire on a tube 2 1/4 inches in diameter. Coil 2 may have 60 turns of No. 22 dcc. wire on the same tube started 1/2 inch away from coil 1. Coil 3 may comprise ten turns of No. 22 dcc. wire on another tube or at the end of the same tube as coil 2. The leads of coil 3 must be in direction for aiding coil 2, and can be reversed if necessary to secure regeneration.

Condenser 9 is connected to condenser 4 and both condensers may be controlled by one dial 10 via gears 9 and 6 operating common shaft 5. Both condensers will increase and decrease together.

### Factors in Regeneration

The more turns on coil 3 the less capacity required by condenser 9. The more turns on coil 3, the further out must this coil be turned or have its coupling loosened from coil 2. To get fairly close coup-

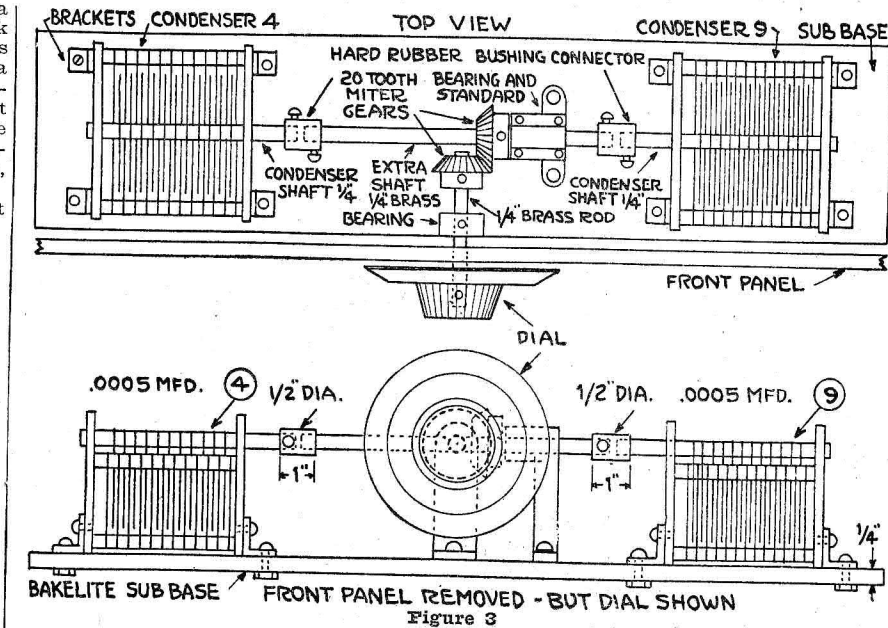


Figure 3

ling of coil 3 to coil 2 fewer turns must be used. For a fixed value of coil turns and coupling, there will be a fixed value of condenser 9 which will afford regeneration in this circuit for most of the range of setting of condenser 4. But if left fixed, condenser 9 will not afford regeneration over the full range of setting of condenser 4. One could either change the coupling of coil 3 or the value of condenser 9 to get regeneration smoothly over the full range of condenser 4.

Supposing a fixed setting for 400 meters. Then if condenser 4 is turned back to tune for say 250 meters, there may be an audio howl, as the coupling of coil 3 to coil 2 is now too much for the new setting of condenser 3. But by reducing condenser 9 in value, this is corrected. Or again, if a fixed setting were made for 250 meters, then on turning up condenser 4 to 400 meters, there would not be enough coupling for efficient regeneration at 400 meters. This also could be corrected by turning up condenser 9, or by bringing coil 3 closer to coil 2, or turned more in alignment for maximum coupling thereto. That is what the usual regenerative set manipulation does, but many operators spill through squeals and whistles in making changes.

Why not make the regeneration control automatic? Yes, why not? Figure 1 shows how this can be done by practically any home assembler. This type of feedback

is selected as the audio currents do not need to pass through coil 3, whereas the Radio current can pass this coil via condenser 9, even when the phones are in use as shown.

Figure 1 thus gives Radio feedback with minimum audio feedback, hence quiet operation without howls. To get settings, the two condensers can be tuned on any program for best adjustment, then the mechanical connector can be tightened. Or, if a fixed coupling of the two condensers is used, coil 3 can be put into a fixed coupling relation to coil 2 once for all.

In practice this works out well. There is no apparent reason why manufactured sets should not be sold with connecting adjustments which will be at all times

smooth and free from whistles. In figure 2 is shown how the coupling of the coil 3 can be varied automatically and correctly by means of a cam attached to the tuning condenser shaft. In this case a fixed condenser 7 is used, with a value of .001 mfd. The connection is arranged so that the coupling increases as the tuning condenser is turned up to higher value.

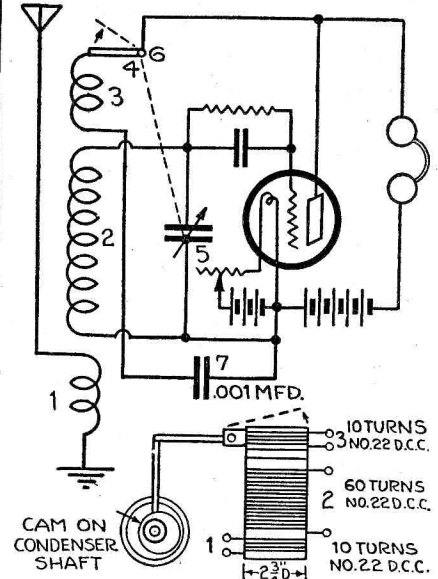


Figure 2

The cam permits correct approximation for smooth regeneration at all settings.

### Rheostat and Grid Leak

Referring back to figure 1, two other factors are important for smooth operation. With most detector tubes, the rheostat 8 should be turned down for best results or brought up below the critical

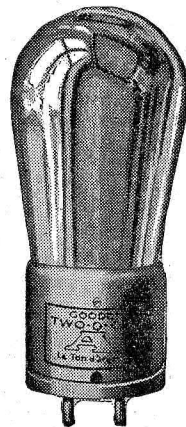
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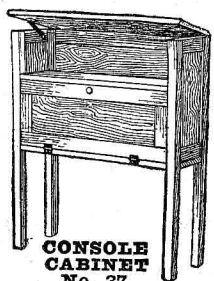
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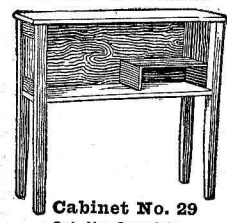


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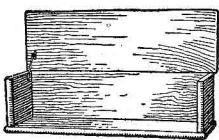
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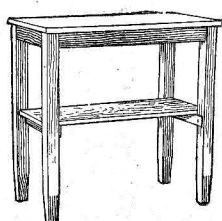
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### SINGLE DIAL CONTROL

(Continued from page 19)

hissing point heard in the phones. For other factors fixed, it is possible to bring the circuit in and out of sensitive operation by manipulation of the rheostat. Then the grid leak 7 requires consideration. Usually an adjustable grid leak will be varied until best results are obtained. This is a sensitive part of the circuit and is best adjusted with a long insulated handle. If, on close coupling of coil 3 to

almost no inductive coupling to coil 2 in such case, else there will be strong whistles. Audio feedback currents can be obtained but usually blur the result due to difficulties in phasing correctly.

#### Tuned Plate Hook-ups

Similar arguments and circumstances apply to regenerative radio frequency amplification. With a coil 3 of larger number of turns not inductively coupled to coil 2 but operating on plate variometer principle, even a fixed coil such as the primary of a Radio transformer will give

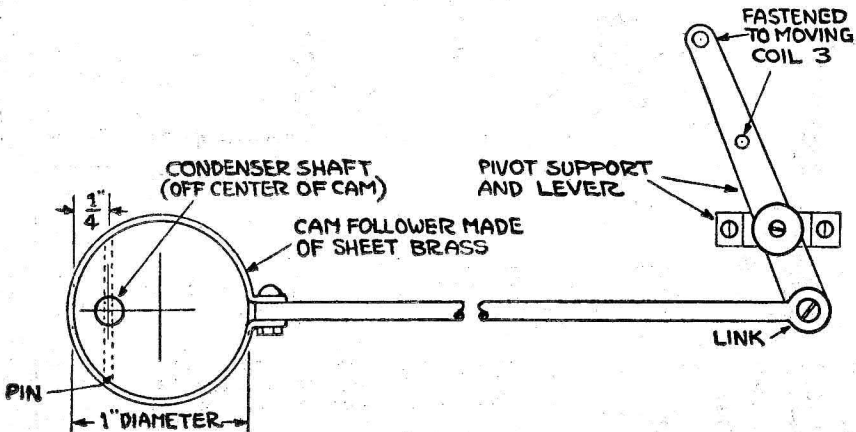


Figure 4

coil 2, there results an intermittent "plop-plop-plop" sound, the grid leak can be reduced in value until the pitch increases to the point where it finally becomes inaudible. This may be too low a resistance for most sensitive operation and in such case shows that the coupling of coil 3 to coil 2 is too close.

With these factors understood, smooth control of regeneration is easily obtained. A circuit such as shown by figure 1 or figure 2 can be made and turned over to any beginner for smooth clear results,

resonance feedback through the tube's plate to grid capacity, for certain ranges of radio frequencies. Provided that the resistance of the coil 3 used as such a Radio transformer primary, is not too high, a condenser 9 can be arranged per figure 1 to tune fixed Radio transformers to marked amplification advantage, without complicating controls.

Figures 3, 4, and 5 show examples of mechanical connectors for simultaneously operating the different tuning elements. Standard Boston gear parts and bearings

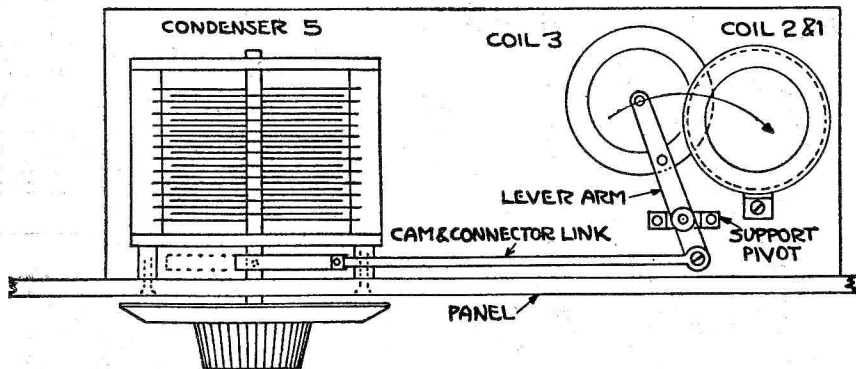


Figure 5

free from the annoying "blurps" and swishing sounds obtained from old style panel controls.

If coil 3 is connected wrong, the feedback will oppose and not aid the current in coil 2. This is easily remedied by reversing the leads of coil 3. As between the use of a larger number of turns on coil 3 and a fewer number of turns more closely coupled to coil 2, smoother operation may result from the fewer turns on the tickler. With a large number of turns, the condition of a plate variometer is approximated so that coil 3 must have

can be used to advantage and if one has not the necessary mechanical facilities, the aid of any small machine shop can be sought.

It is when such mechanical devices are added to tuned Radio stage circuits that most practical and satisfactory results may be obtained, as the operation is thereby greatly simplified. Five tube sets using such mechanical aids with single dial control and all tuning elements simultaneously operated at maximum adjustments have been constructed by the writer.

### A. B. C. RADIO COURSE

(Continued from page 18)

of a negative charge on the grid and the potential of the grid decreases in value. Referring to figure 93, it is seen that a given decrease in grid potential will produce the greatest change in plate current at the point where the slope of the plate-current grid-potential curve is a maximum.

In the above discussion of the vacuum as a detector no account was taken of effect of resistance, inductance and y in the plate circuit. These elements have a great importance in the on of the tube and may be made ace a pronounced amplification of als under proper conditions. This amplification is not a property itself, but a function of the hich the tube is connected.

receiving circuit must con- this function of the tube However, in order to loud speaker volume, e operated as an for this purpose f Radio in Pro- Editor's Note)

### REFLEX

that of ceiv h

would be to mount the first radio frequency transformer horizontally near the left end of the panel behind the first variable condenser which will put the tickler at the center of the panel and the shaft may be made long enough to protrude through the panel. The second variable condenser would then be mounted at the right end of the panel with the second radio frequency transformer behind it. This will leave space to the right and left of the tickler shaft close to the panel for the tube sockets. The rheostat can be below and between the center and left hand dials while the output jack can be between the center and right hand dials and slightly below them.

If there is insufficient selectivity for your location, the coupling between primary and secondary on the first radio frequency transformer can be loosened by removing the 12-turn primary and winding it on a separate short piece of tubing which can be placed against the end of the secondary or moved a fraction of an inch away. However, this should not be carried too far as there will be loss of volume.

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# Dalet Compensated Tuned R.F. Step

## Can Put Amplification in Front of Super-Het

Although few of the super-heterodyne receivers described by the Radio publications show a stage of radio frequency amplification ahead of the first detector, there are a number of us who feel this

### WORKSHOP KINKS EARN A DOLLAR—

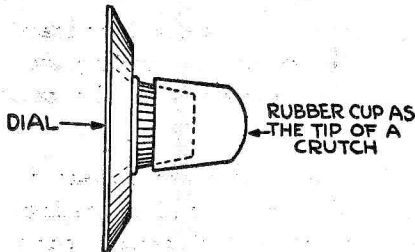
**T**HERE are many little kinks worked out at home that would aid your fellow Radio worker if only he knew about them. There are new hook-ups, new ways of making parts and various unique ways of operating sets that are discovered every day. Radio Digest is very much interested in obtaining such material.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

is a great help which raises the strength of faint signals well above the threshold value necessary to actuate the detector. I built the "Simplest Super" that you ran last winter in Radio Digest and later added the regeneration which Mr. Ryan suggested for the first detector.

Then we saw where some of the manufacturers of kits had circuits containing a stage of tuned radio frequency ahead of the actual set and frequently reflexed it. We tried several types of tuned radio frequency with varying success and finally came across the Dalet method of compensating the capacity within the tube. This worked so well that I am sending you the details of this addition to our super as several of your readers may like to try it. The constructional details are given on the drawings and you will see at once this is easy to construct.—Frank Lott, Chicago, Ill.

### Rubber Tip Stops Body Capacity

Having trouble with body capacity I overcame the difficulty entirely by placing a rubber tip, made for the end of a crutch, over the knob of the dial and

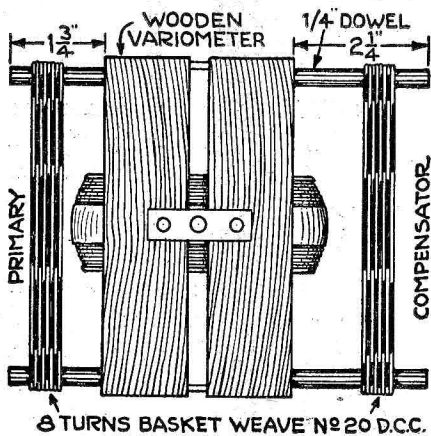
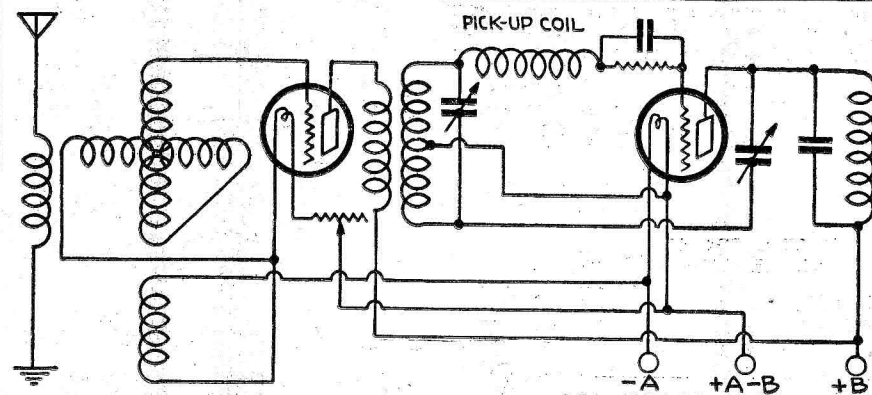


turning the dial with that. Rubber tips may be obtained to fit most any size knob, and may be easily removed if desired when not in use.—Charles Ackerman, Philadelphia, Pa.

### Save the Nuts!

When throwing away dry cells that have become exhausted it is a thrifty plan to first unscrew the small thumb nuts and save them for some future use. They may come in handy if the top nut of a binding post on the set becomes lost.

## DALET STAGE ON 'SIMPLEST SUPER'



## Success Insured with Steady Full Current

When the faint signal of a distant station is received, rectified and amplified by a three-element tube, it is done in conjunction with a steady stream of outside electrical energy supplied to the filament and plate of the tube. If this energy is weak in amperage and voltage, no matter how good the receiver, or how many steps of amplification are used, reception will not be up to standard.

Many broadcast listeners have had the common experience of encountering exceptional results the day when fresh batteries were installed. The chances are they will credit this to the kind of circuit used, type of aerial, etc., but the all important role which fully charged batteries play in the logging of distant stations and in obtaining volume and clear tone is often overlooked. In many instances it is taken for granted that batteries are as efficient up to the point of exhaustion as when first put to use.

In the operation of a tube, of the type commonly used, two currents are employed. One lights the filament, the other impresses a high voltage on the plate. These tubes are generally known as three-element tubes, because besides the filament and plate they have still another element, the grid.

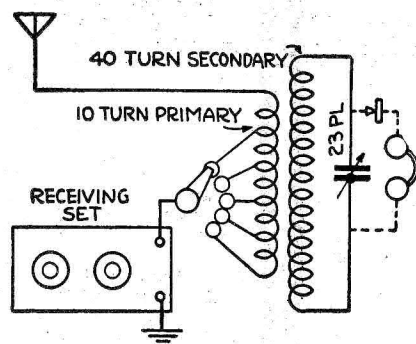
To understand why an even and constant flow of electrical energy is required to enable the tube to function properly, it is necessary to understand how a tube works. The passing of a current of proper value through the filament causes

the element to emit a stream of electrons or tiny particles. If, in turn, a heavy positive voltage is applied to the plate, the electrons emitted by the filament will be induced to travel to the plate, and a plate current is said to be thus established.

Any factors that will increase the flow of electrons will increase the plate current, and, conversely, any factors which will decrease the flow of electrons will decrease the plate current. Any minute variation in the flow of electrons will cause like variations in the plate current. This is what makes reception possible. But any other factors which will actuate this current other than those which produce proper vibrations will cause distortion and unpleasant interruptions. This, for instance, will take place if a steady and even flow of current is not supplied both to the filament and plate.

### Wave Trap Gives Selectivity

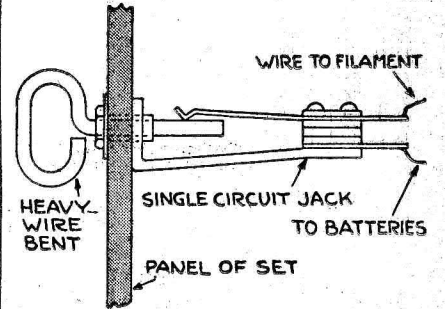
With my two tube regenerative set located about three miles from Station WOAW, I can silence them by using a wave trap and bring in stations up to within 50 meters before they again leak through.



I connected a crystal and phones to the wave trap as shown by the dotted lines and find that by tuning WOAW out of the tube set (and into the wave trap) I can hear them very plainly through the wave trap, and can also tune in DX stations on the other set just the same as before.—C. L. Beardsley, Omaha, Nebr.

### Lock Switch for Battery

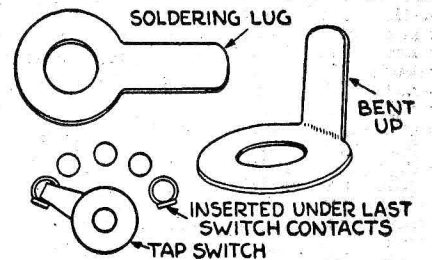
Having immediate needs of an A battery switch and not being able to get it at a store without some delay, I made use of the following: One single circuit jack, one 2" piece of heavy copper wire to fit mouth of jack.



I drilled the hole near the phone jack and fitted in this new jack, then bent the wire to a shape like a key, having soldered on the wires as shown in the diagram. I plugged in the copper "plug" which makes a good lock switch, and also reminds me to shut the current off when through using set.—John Gung, Victoria, B. C., Canada.

### Emergency Switch Stop

In the home workshop while experimenting a switch stop was needed but one was not readily obtainable. A neat and inexpensive switch stop was quickly



made by taking a soldering lug of the type shown in figure and bending it as pictured. It was then inserted under the last switch point.—Claud Hart, Charrington, Ia.



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# Questions and Answers

## Tuned R.F. Bridge Hook-Ups

Q.—I have been following Mr. Gurney's articles on advancements in tuned radio frequency and have noticed no signs of a ground connection in his articles or illustrations. Would you please inform me as to where this connection should be placed if used. Also about the balancing condensers; can they be a Chelton midget of .000045 mfd. or a Rathbun .00002 mfd. or a Bremer-Tully .00004 mfd. or a Hamerlund .000032 mfd.

A.—The circuits shown in the first five articles of Mr. Gurney's series are all more or less theoretical, to explain a principle or method and are therefore without ground connection. Mr. Gurney also shows a tuned output on many of these circuits which will not be the case in actual practice. He is giving our readers all of the information which his promises to various engineers will permit and must leave some of the details to the ingenuity of the individual reader. We wish to advise that, in our opinion, none of the condensers mentioned would be suitable for compensation in these hook-ups except the .00002 mfd. unit, as they are too large even though only between .000032 and .000045 mfd. There are no condensers to Mr. Gurney's knowledge exactly suited to the purpose which was why he gave constructional suggestions.

## Battery Eliminators

(14001) WSW, Claremont, Calif.

Would like to get in touch with someone that can furnish practical battery eliminator for my set, to go in cabinet, for both A and B batteries. Also more satisfactory booster than I now use. I am using coil in record album connected to outside aerial and ground and it makes wonderful difference in distance and power. Would like to see an article on preventing heterodyning between station and second harmonics on super-het; also have trouble with the second harmonics from other stations coming in right on other station's wave lengths. Have no trouble separating stations, were it not for the second harmonics. Hope you can help me out.

A.—We wish to advise that as far as the B battery power is concerned you will find the Balkite unit perfectly satisfactory for anything up to 10 tubes. So far however there has been no successful device for the elimination of the storage battery to light the tube filaments. At such time as the data is available for the construction of an A or B eliminator or both, we will be glad to publish this information.

## On Basket Weave Coils

(14005), WAL, Detroit, Michigan.

I would like to make a Harkness two tube reflex set with crystal detector and wish to use air core basket weave coils as described in Radio Digest by Mr. Fournier some months ago. My variable condensers are .00025 capacity and I want to know how many turns for primary and secondary with the same diameter coils Mr. Fournier described. This set is to be used where there are no facilities for charging storage battery. Will it work with UV-199 tubes?

A.—We are not sending the data requested for the following reasons. In the first place the success of the Harkness set depends on the incorporating of parts which contain some losses and will stabilize the circuit sufficiently to keep regeneration under control. The use of basket weave coils would reduce the losses and sharpen the tuning but you would lose the stability and the set would howl. There would also be much more interaction between coils which would make it. As to the second point, we do believe in the use of dry cell tubes

even of the 199 class in reflex receivers since there invariably is an overcrowding of the tubes. As to the third point, Mr. Fournier has not done any experimental work with .00025 condensers and therefore this data is not available. The coils are somewhat large even when used with .0005 capacities and the interaction between coils is very great. Coils for use with these smaller condensers would have to be about 4½ inches long which makes them impractical.

## Edison Battery Solution

(14135) EL, Milwaukee, Wis.

Q.—I am a constant reader of the Radio Digest and in the issue of June 27, there is a very interesting article by D. P. Moreton on the Edison storage battery. In the article it says the solution of the battery is caustic soda. What proportions of caustic potash and water are used in making the solution?

A.—We wish to advise that 3 lbs. of potassium hydroxide are to be dissolved in from 5½ to 6 pints of distilled water and you will have the correct mixture. Potassium hydroxide for this use comes in powdered form in sealed cans from Edison B battery parts jobbers. The water should be pure, the potassium hydroxide should be put in slowly and the mixing done in a large earthenware crock or enamelled ware. These last two precautions are necessary since there is a terrific heat developed during the operation.

## Eliminating Body Capacity

(14015) FWC, Watertown, N. Y.

I have been troubled greatly with my Radio set. As I put on the phones, move my head or even touch the rubber part of the phone caps, it detunes the set completely. I added a stage of audio frequency, as per the hook-up on the other side, but to no avail. I am using C-12 tubes and a Premier Hedgehog 10-1 audio transformer. There is no distortion whatsoever but the only trouble is, as I have stated, the least move I make it detunes the set completely. I cannot let anyone else listen since as soon as I take off the phones the set detunes. I wish you could aid me in some way to overcome this, as it is very aggravating, especially when tuning in DX.

A.—We have your letter relative to trouble with body capacity when tuning. If you will take the variable condenser out of the ground lead and put it in the antenna lead, it still will serve to tune the antenna circuit but the filament circuit of your set will be at ground potential and there should be no body capacity. We would also suggest that you connect a fixed condenser of .002 capacity across the primary of your audio frequency transformer so that the radio frequency component of the energy in your plate circuit can pass through this fixed condenser and not have to battle with the high impedance of the transformer primary. These two points should in no way decrease the sensitivity of your outfit and we know the first will eliminate the body capacity.

## Increasing Neutrodyne Volume

(14104) JP, Manchester, Okla.

I have a five-tube Hazeltime neutrodyne receiver which I built myself and it works the best of any I have heard but I would like to know if there is any way I could add three or four more tubes. This is a storage battery set using 301A tubes. It is made of all standard parts.

A.—We wish to advise that there is no way you can add any more tubes to a five-tube neutrodyne receiver. If you do

not get sufficient volume and you think that the tone might be improved you could put on four stages of resistance coupled amplification instead of two stages which use transformer coupling. There can be no distortion in resistance coupling and you will be able to increase the volume to a higher point without causing feedback that will result in oscillation.

## Dry Cell Amperage

(14064) CJB, Savannah, Ga.

What amperage should a fresh dry cell show, and at what amperage should it be discarded? I have been using Eveready dry cells, but I noticed in the last two sets I have purchased they only show 15 to 17 amperes with a 1½ volt.

A.—Wish to advise that it has been the writer's experience that a number 6 dry cell should show 30 amperes on test when new. However, the Eveready Radio Cell, No. 7111, is a high resistance unit and will show but 17 to 22 amperes on test. This is on open circuit with the ammeter connected across the two terminals and no apparatus in series. It is much better to run your tube on a voltage basis with the voltmeter connected directly across the socket terminals in the set. The rheostat is turned up until the operation is satisfactory and the voltage across the terminals on the socket noted. If you are using WD-11 tubes this will be about 1.1 volts and the dry cells should be discarded when it is impossible to bring the voltage up to that voltage even with the rheostat clear out. If you are using 199 tubes it will be found that the best operating point is about three volts and the dry cells should be discarded when this voltage cannot be reached. It used to be the general practice to run tubes against amperage but the R. C. A. advises that it is better practice to run them against voltage.

## Tuned R.F. Inductances

(14147) HLW, Syracuse, N. Y.

Q.—A friend of mine made a set for me after the Harkness Counterflex and used two 17 plate condensers supposed to be .00025 mfd. Coils were wound for this capacity but upon trying same we found they did not balance. I wrote the manufacturers regarding their capacity and found they were .00038 mfd. Would like to find out how many turns of No. 24 wire to use for coils to cover from 200 to 550 meters. My limit now is 263 to 492 meters.

A.—It will only be necessary for you to tune your receiver to station WEAJ, disconnect the secondary of one of your transformers from the grid, wind on about six turns, and then retune the condenser connected across the increased winding. You will now find that WEAJ comes in a little farther down on the dial and, if it comes in at about 88 to 90 you should be able to tune in stations up to 536 meters around 98 or 99 on your dial. If six turns are not sufficient add more two at a time, until WEAJ comes in at about the numbers mentioned. When you have determined the correct number on the one coil, you can then add the same number to your other coils. If your variable condensers are really .00038 mfd.

your range should certainly be a lot greater than 263 to 492. With a maximum limit of 492 the minimum should be around 200 meters.

## Short Wave Super-Het Reception

(14161) ABP, Texas City, Texas.

Q.—What can I do to the Fournier Four Filter Super to enable it to receive wave lengths as low as 50 meters without impairing its reception of the higher wave lengths.

A.—To fix your four filter super so that you can receive down to 50 meters it will be necessary for you to have another oscillator coupler and oscillator condenser, and possibly a separate tube so arranged that you can switch it in when you desire to receive these shorter wave lengths. A much smaller antenna coupler and secondary tuning condenser will be necessary for use on an outside aerial. The two variable condensers should preferably be .000125 mfd. as made by several manufacturers and coils will vary in the number of turns for the different ranges between 4 and 20.

## Carborundum Crystals Poor

(14074), JM, St. James, Mo.

I am enclosing a diagram of a crystal receiver, the crystal being carborundum, which does not work well. Please publish a hook-up using a battery with it. What should be the range of a set like this?

A.—We wish to advise that we do not have hook-ups for the use of carborundum crystals since this type of detector is the most inefficient of the many possible and its use was discontinued by the Radio field some years ago. Why not use one of the more popular crystals such as galena or silicon or some of the synthetic crystals manufactured by various concerns? We can assure you that no hook-up using this crystal will give anything like the range or volume possible from any of the other two crystals mentioned.

## No DX on Two Tubes and Loop

(14149) JWM, Macon, Mo.

Q.—I want to build a two tube receiver that will bring in DX with enough volume to be easily heard with head sets. I want also to use a loop instead of an outside aerial. My idea is to use the variable condenser across the loop then one tube followed by a variocoupler, then the second tube as a detector.

A.—We wish to advise that what you want is practically an impossibility when you expect to get DX with two tubes on a loop aerial. You could put two tubes on an outside aerial and practically cover the country with headphones, but we do not see how you are going to do it with a loop. A single stage of radio frequency on a loop aerial is not enough to produce satisfactory results.

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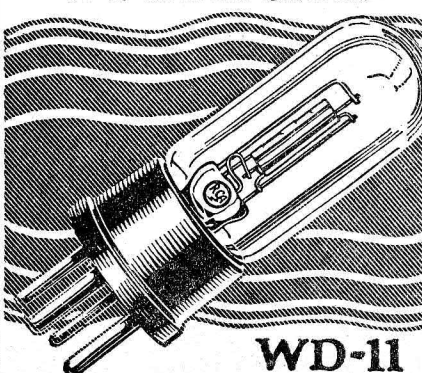
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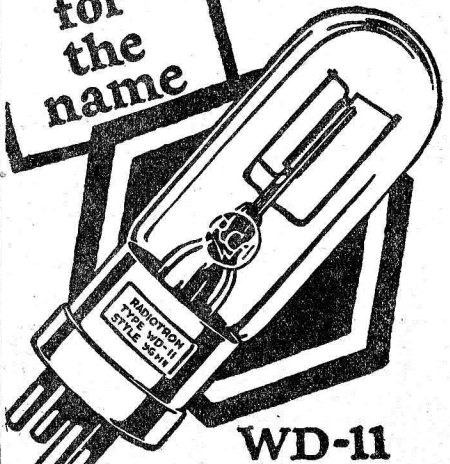
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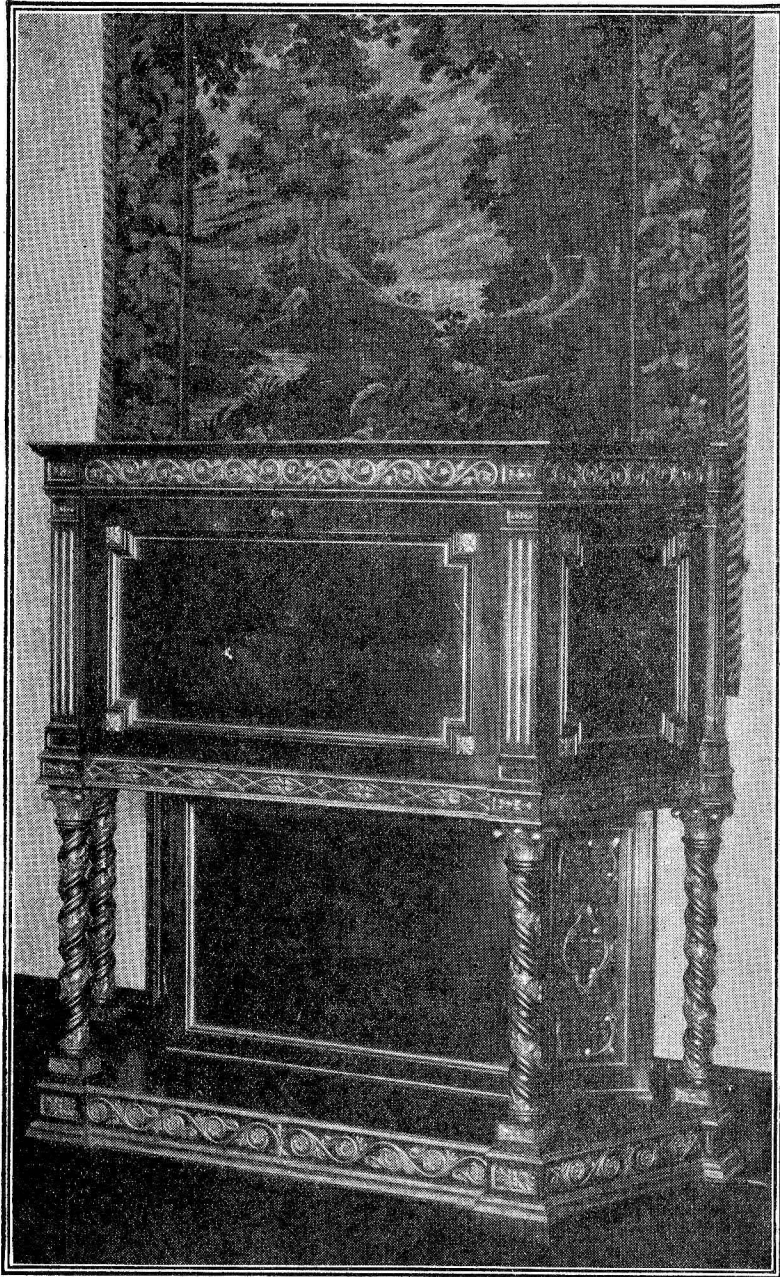
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