

"A. B. C. Course in Radio Fundamentals," by Prof. D. P. Moreton, Starts; Experimental Static Drain System; Pictures and Story of KFDM, Beaumont

# Radio Digest

EVERY WEEK

PROGRAMS Illustrated

TEN CENTS

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

Vol. XII

Copyright 1925  
By Radio Digest Publishing Co.

SATURDAY, MARCH 28, 1925

No. 12

## WHO'S BEST ANNOUNCER?



### HOOVER WOULD LET PUBLIC RULE RADIO

SEES STATION POPULARITY AS POSSIBLE GUIDE

The Secretary of Commerce Suggests Scheme as Method of Settling Interference Problem

WASHINGTON, D. C.—Practically all of the wave lengths available for Class B stations are taken up and the result is that a great deal of trouble is being caused for the department of commerce, according to a statement made by Secretary Herbert Hoover. Up to the present time no way out of this difficulty is in sight.

Secretary Hoover seems to be of the opinion that the listener in will be the principal factor in working out the difficulty. He has stated that literally hundreds of letters are being received by the department from listeners in, many of

(Continued on page 2)

### FANS' VOTES TO PICK MIKE KING OF 1925

To Give Victor Gold Cup

Radio Digest Second Annual Gold Cup Award Contest Opens at Once—Interest Is Keen

Once more the stage is set for the selection of the world's most popular Radio announcer. Once more the victor will be presented with a solid gold cup, the gift of Radio Digest. The Radio Digest Second Annual Gold Cup Award is under way, beginning with this issue.

Who will prove to be 1925 Champion Radio Announcer? Who is it that has proved himself this year dearest to the hearts of most members of the invisible audience?

Curious listeners who remember the first annual Radio Digest Gold Cup Award, won in 1924 by George D. Hay of WLS, have been wondering when they would be given the opportunity of picking the 1925 champion. Their questions are answered this week.

The great enthusiasm of Radiophans shown in last year's contest is expected to

(Continued on page 2)

### LIBERTY BELL TO RING ONCE MORE

Will be Broadcast Next Year When Sesqui-Centennial Celebration Opens

PHILADELPHIA.—The Liberty bell is to ring again—and over the Radio! Its resonant sound will once again reverberate through the universe, recalling stirring memories of the historic days of 1776, when the old bell summoned the first patriots to Independence hall to hear the formal proclamation of the Declaration of Independence.

Preliminary tests have been completed. For some time experiments have been going on behind closed doors in the vestibule in Independence hall, where the Liberty bell is housed in a massive glass case. Wilfred Jordan, curator of the hall and a metallurgist, conducted the tests, and Mr. Jordan says there is every reason to believe that the famous old bell will

Lillian Ojala, above, to dancer and one of Jimmy Clark's entertainers, who gives talks on the "art of toe dancing."



Above, WEBB Big Brothers' secretary. Her name is Katherine Tree and she gives helpful suggestions nightly to club members. Right, Claire Windsor, recently heard from KMX.



once again ring to formally open the sesqui-centennial celebration to be held in this city next year.

It is not planned to use the old clapper to sound the notes. A small mallet will be used, and the microphone will be placed as closely as it is scientifically possible to the point where it is to be struck.

The plan is to have Mayor Freehold W. Kendrick strike the old bell, and then have several broadcasting stations relay the sound throughout the nation.

# No. 1 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:

### WHO'S BEST ANNOUNCER

(Continued from page 1)

be surpassed by far when the balloting begins this year.

#### Purpose of Award

Radio Digest, realizing the contact power of the station announcer, endeavors with its Gold Cup Award to determine by an international vote who is world's champion master of Radio ceremonies. Listeners in of the United States, Canada, Mexico, Hawaii, Great Britain, France—in fact, of every country in the world—are invited to join in the election of the man or woman to be "king" announcer for 1925 and recipient of the Radio Digest Gold Cup.

The annual competition aims not alone to pick a favorite announcer, but to raise even higher the already high standards of announcing. The 1924 contest proved invaluable in this respect. Radio personality, an almost indefinable factor of successful Radio speaking, was found to be of utmost importance. And many poor personalities showed marked improvement from competition in the first annual Gold Cup Award.

#### Announcer Stands for Station

Broadcast announcers are a big factor in the success of each and every station. No single person appearing before the microphone is so representative of what a station stands for in the minds of the Radiophans as the man who announces the program, who tells what will be broadcast next, and what station is doing the broadcasting. Many of these men and women have become known internationally because of vocal mannerisms and intonations coupled with charm of wit or philosophy.

#### Gold Cup Is Annual

Radio Digest Gold Cup Award is an annual trophy presented to the most popular Radio announcer in the world. Each year Radiophans are given the opportunity to select a new "king."

The golden trophy that will be given to the victor selected by listeners' ballots in the 1925 competition is depicted on page six of this issue. The design of this beautiful gold cup is based on the microphone, symbol of the gateway to the listening world. Its dignity of line and grace of symmetry are truly worthy of the winner.

#### All of Family Can Vote

On page six is given the regulations governing the balloting and a nomination certificate by which the Radiophan may enter his favorite announcer in the contest. On this page (page two) is the first official ballot form.

The ballot form on page two will appear for twenty-two consecutive weeks. There is no limit to the number of ballots sent in by anyone. This provision is made to allow all members of the family an equal opportunity of voicing their approval of their candidate for the Radio Digest Gold Cup Award.

#### Why Twenty-Two Ballots

Some Radiophans may be undecided as to their choice. Three or four announcers may come to their mind as the most popular. In this case the twenty-two ballots will afford an opportunity of splitting the vote among the several favorite announcers.

The rules provide bonus votes when consecutive ballots are saved and sent in together. The bonus makes it well worth while to save consecutive vote coupons. See page six.

The world's most popular Radio announcer will be decided entirely by the highest number of votes received.

#### Who May Be Nominated

Any broadcast station announcer is eligible to be nominated in the Radio Digest Second Annual Gold Cup Award.

Any Radiophan anywhere is eligible to do the nominating. All that is necessary is for the Radiophan to clip, fill and send in the nomination certificate appearing on page six.

Every listener has one or more well-liked announcers in mind. Radio Digest believes the invisible audience will welcome this new opportunity to express their collective applause of their 1925 favorites.

Be sure to read carefully the rules on page six and the ballot on this page.

The dramatic club of Station WOC, Davenport, Iowa, recently broadcast the drama "Magda," by Hermann Sudermann, the German dramatist.

### MAY LET PUBLIC RULE

(Continued from page 1)  
whom complain against some of the broadcasting stations and the programs which they are rendering. He feels that eventually this public opinion will demand the giving up of certain broadcasting stations, so that the more popular stations can continue without interference.

**Would Allow Public Sentiment Rule**  
The letters indicate, according to the secretary, that the listener in is interested in the better stations and they do not wish these to divide time with stations of lower quality. In fact the fans are protesting through the department against the division of time between two stations.

Mr. Hoover has pointed out that if public sentiment could be definitely registered it might be possible to work out a plan that in effect would permit the public to license the broadcasting station. In other words, preference in granting licenses and in the assignment of wave lengths would be given to broadcasting stations that the invisible audience prefers to hear. The secretary admitted, however, that this is merely a theoretical proposition and has not in any way been made practical or advisable up to this time.

#### Elkhart, Ind., Has Club

ELKHART, Ind.—The Elkhart Radio Broadcast Listeners association was recently organized here with the following officers: H. E. Nelson, president; Earle G. Wolfe, secretary; W. C. Davis, treasurer. Mr. Nelson invites correspondence from other clubs. His address is St. Joseph Valley Bank, Elkhart.

#### Baritone Cop at WHN

NEW YORK—Sergt. Edward Goldfield, New York mounted policeman, was heard again recently from WHN, when the "Troop C Entertainers" presented a program every night for one week. The "baritone cop," as he is known, has been heard from nearly every New York station.

## CONTENTS

Radio Digest, Illustrated, Volume XII, Number 13, published Chicago, Illinois, March 28, 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 5
KPDM—"Kall for Dependable Magnolene".....	5
Rules and Regulations for Radio Digest Second Annual Announcers' Gold Cup Award.....	6
An Evening at Home with the Listener in, a chart showing how to listen in for your favorite station.....	8
Advance Programs for the Week at All the Larger Stations.....	9 to 14
A. B. G. Course in Radio Fundamentals, by David Fern Moreton. First in a series of articles covering Radio work in all branches from the beginning to the most intricate circuits.....	15
Editorials, Indigest, Condensed by Diectric.....	16
Four-Filter Eight Tube Super-Heterodyne, Part IV—Filter Connections and Front Panel Assembly, by Jacques Fournier.....	17
Broadcast Listener's Reference Library, Part VIII—Suitable Antennas, by E. T. Jones.....	19
Experimental Static Drain System, by Jack Rodgers. Something for the fan to experiment with.....	21
Questions and Answers.....	22
Radiophone Broadcasting Stations, Part IV.....	23

### Looking Ahead

Prof. Moreton's Radio Course includes some of the fundamental principles of electricity in the second lesson. Many of these are essential to a clear understanding of Radio, but only those necessary are taken up that the reader may not be overburdened with too much of that which is so new to him.

Wiring the Four-Filter Super will be the subject of Jacques Fournier's next article. A super-heterodyne is not a particularly difficult set to wire if the parts are laid out with the connecting of terminals kept in mind and the builder will find that Mr. Fournier's layout proves logical and convenient.

The use of Filament Control Jacks will, we are sure, prove of interest to our readers. This subject has been ignored for some time by the Radio press and newcomers in the field have not had much opportunity to become acquainted with these useful little pieces of apparatus. Harry C. Lodge presents several types of jacks and the circuits in which they are used.

Various Types of Audio Amplifiers would seem an excellent subject for discussion at this time that the home constructor may decide which he prefers with the various dynes, flexes and gens that he can place in front of the detector. Variations and combinations of transformer and resistance coupling will be taken up next week by William Alexander.

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 Dollars for Year's Subscription to Radio Digest, Illustrated.)

Name .....

Address .....

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

## London, Madrid Newcastle, Aberdeen--

that's just a few of them.

AGAIN Elgin Super-Reinartz leads all others! Every trans-Atlantic report investigated was found to be ABSOLUTELY authentic! Many happy owners of Elgin sets again tuned in the European stations.

## ELGIN Super-Reinartz The Ford of Radio

will give you the selectivity and distance it has given others. And you can save \$50.00. Let us tell you how—

### FREE

Mail the coupon TODAY for the complete working drawings of the famous Elgin Super-Reinartz, the set that gets the distant stations. They are free—no obligations, just a stamp for postage, please!

tear out this coupon—

ELGIN RADIO SUPPLY CO.,  
Dept. A, 207 E. Chicago St.,  
Elgin, Illinois.

Send the FREE drawings of the Elgin Super-Reinartz at once. Also tell me how I save \$50.00 on this set. I enclose a stamp for postage.

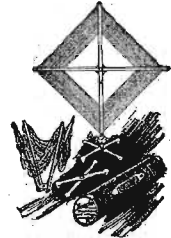
Name .....

Address .....

(Please PRINT in pencil)

## Lincoln Collapsible Loop Aerials

Standard of the Radio Industry



The only loops of their kind sold at popular prices.

Built by radio engineers—electrically and mechanically correct—beautifully finished and sturdy. A touch and a new station comes in—or one is cut out. Their selectivity is remarkable.

And remember that Lincoln Loops sell at moderate prices. No other loops of their kind or efficiency sell at these low prices.

Lincoln 4-point Tapped Loop .....\$8.00

Built for any circuit where it is desired to vary the inductance of the loop. Exceptionally fine for super-heterodynes.

Lincoln Center-Tapped Loop .....\$6.50

For any set employing radio frequency amplification. For certain Super-heterodynes requiring a center tap.

#### Write to Lincoln

If your dealer cannot supply you, order direct giving your dealer's name. Lincoln Loops are fully guaranteed. Send for literature. We welcome correspondence with legitimate dealers and jobbers.

Lincoln Radio Corporation  
224 North Wells Street CHICAGO

## STATION GLEANINGS AND NEWSY BRIEFS

### THIS WEEK SEES ANOTHER VICTOR PROGRAM

KGO Presents "Smilin' Thru" April 2—President and Mrs. Coolidge Attend Performance of Roxie

The next Victor concert, announced as this issue was going to press, was to include Reinhold Werrernath, soloist, one of the most widely-known concert baritones; Victor concert orchestra under the baton of Josef Pasternack, chief musical director of Victor company and the Shannon quartet. The program includes both popular numbers and those of stronger appeal to cultured music lovers.

Radio drama will again be on the air April 2, when the KGO players, Oakland, Calif., present "Allan Langdon Martin's, three-act drama, "Smilin' Thru." Between the acts the Arion trio will be heard.

Bobby Brown of KYW, Chicago, Ill., fame, is doing the "wandering minstrel" stunt. He will visit all the larger stations in the Middle West for about six weeks.

A series of talks on "American History" are being presented by Columbia university every Thursday evening from Station WEAJ, New York. They will consist of ten twenty-minute weekly talks.

Good news comes from Station KFWD, Hollywood, Calif., that Jack Warner, one of the Warner brothers, owners of the station, will put on a "burnt cork" show every Sunday night from this station.

President and Mrs. Coolidge, with the members of the cabinet, attended a performance of Roxie and his gang, with a full studio orchestra. The performance

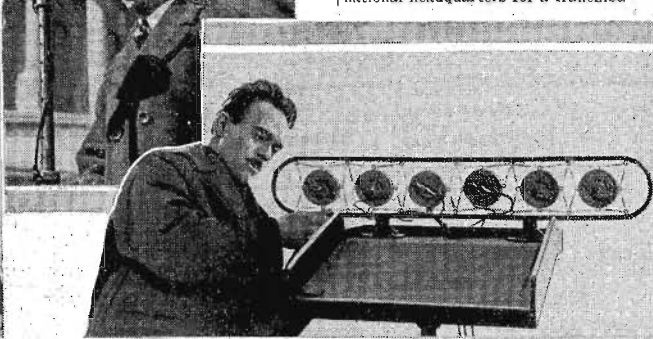
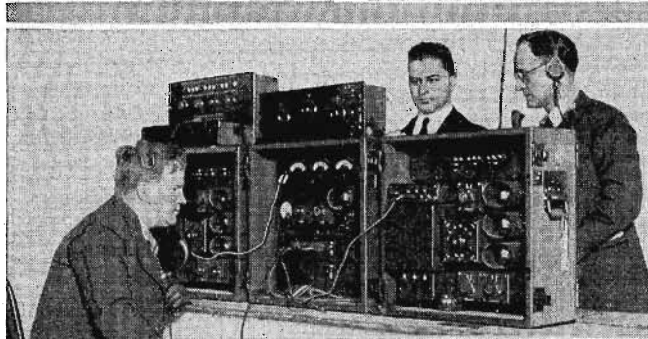
### COOLIDGE ADDRESS RECORDED BY RADIO

LINCOLN, Nebr.—Though President Coolidge's inaugural broadcast is but a matter of memory with most people, it is a permanent thing for Dale P. Stough, attorney of this city. Mr. Stough received the speech by Radio from a station 300 miles distant and recorded it on dictaphone records. Five and one-half records were used to make a complete record of the address.

### NAME OF SONG GETS LADY BROWN DERBY

CHICAGO.—The proverbial brown derby, this time somewhat worn and fully autographed by all members of the staff of Station KYW here, was awarded recently to Mrs. Richard Vogl of this city, for sending in the best name for a nameless medley which jokingly had been called "Dirty Keys" by "Steve" Trumbull, KYW announcer. The new name is "Impish Ivory."

## BROADCASTING AN INAUGURATION



Broadcasting the proceedings of President Coolidge's inauguration. Above is shown Graham McNamee, famous announcer from WEAJ, telling the unseen audience all about it. Left, view of the control room beneath the steps of the Capitol at Washington. Right, the six microphones placed in front of the President to pick up his inaugural address.

was given under the auspices of the National Press club.

In co-operation with the Cincinnati office of the U. S. bureau of agricultural economics, Station WLW, Cincinnati, Ohio, is now broadcasting market reports at 6:45 p. m. daily, except Friday.

One of the cleverest ideas in broadcasting occurs every Friday night at 7 p. m. from WAAM, Newark, N. J., when jolly Bill Stenke, feature cartoonist of one of the local newspapers, gives his "foreign hour."

Regular programs have been arranged by Station WFEZ, Galesburg, Ill., broadcasting at 254 meters, to be given from 8:45 to 9:45 p. m. on Wednesdays.

A delightful bi-weekly feature now heard from WOR, Newark, N. J., every Wednesday and Saturday evening at 11 p. m., is a concert by the Ciro orchestra, with Dave Bernie as director.

The name of the Irish tenor heard each Tuesday evening during the Silvertown

Cord orchestra program from WEAJ, New York, still remains a mystery.

"Before You Invest—Investigate." This is the title of a series of five-minute business talks being broadcast from WEAJ, Columbus, Ohio.

The U. S. S. Milwaukee, in southern waters, now lying at Balboa, C. Z., is nightly entertaining its crew with music broadcast from Station WHN, New York.

Through the efforts of the Los Angeles Examiner the entire opera "Aida" was recently broadcast over remote control lines through KFI, Los Angeles, Calif., from the Philharmonic auditorium.

Clem Yore, poet of the Rockies and widely-known fictionist and magazine writer, greeted KOA's unseen audience, Denver, Colo., for the first time March 18 in a special program.

Jean W. Hight, better known as "Sunny Jim," has severed his connections with WIP, Philadelphia, Pa., and will try his fortune among the movie stars at Hollywood.

Malle and Stept will be heard from WOC between March 25 and 28. They need no introduction to Radiophans, having been heard from numerous stations throughout the country.

Station WEMC, Berrien Springs, Mich., now has a lady announcer. As a result, fans are beginning to like the co-ed program much better.

Si Berg, KYW's Skandehoovian monologist, will perform before the mike on Saturday evening, March 28, at the Congress carnival.

Station KFOA, Seattle, Wash., is now issuing verification stamps, so that the fans can prove that they heard the station on certain occasions.

The smallest studio in the country has been completed "back-stage" at the Rendezvous cafe, Chicago, Ill. They will broadcast through WJJD, Mooseheart, Ill.

Boy Scouts winning in the rally at Madison Square Garden heard their names broadcast from WJZ, New York, the same evening.

"Il Trovatore" was recently presented in full by the WGY, Schenectady, N. Y., opera company.

### Ford Hall Forum Magnifies Influence by WBZ Tie-In

BOSTON.—The Famous Ford Hall forum, held every Sunday evening in Ford Hall on Beacon Hill, Boston, has gained a new and greatly interested audience since the forum proceedings have been broadcast by Westinghouse Station WBZ. Breathlessly the listeners in await the "torture session" that follows every speech when the Ford Hall audience frolics volley upon volley of pointed questions at the speaker of the evening. And to that bombardment of verbal questions has now been added the telegraphic and mail discussion from the invisible audience.

## R. A. A. HELPS TO GET REMUNERATION

### PLACES MEMBER-ARTISTS IN PROFITABLE JOBS

Broadcast Talent Body Meets with Success from Start—Organization Work Progresses

NEW YORK.—The general impression that Radio artists must give all their services without remuneration has already been disproved by the Radio Artists' Association of America, according to a statement received from national headquarters at 220 West 42nd street, New York. Within the few weeks of its existence the new association has managed to secure paying work for a number of its members. There is every indication that this will increase.

A number of theater owners have approached the association and offered to pay for entertainment programs by Radio artists at their theaters on one or two nights a week. The theater owners are coming rather to the association than to private booking concerns, because of the unlimited supply and diversity of talent to be secured from the association. In this way at last has been discovered a method of paying the artists.

**Prove Value of Organization**  
The value of having an established organization of Radio artists has been proven beyond doubt even in the few short weeks that the R. A. A. has been in existence. The quick success of early efforts and the remarkable influx of new members has caused the officials of the organization to redouble their efforts to make it a stabilized national institution. In addition to securing work for a number of the artists in New York theaters it has been possible to place a few on programs for commercial broadcasting.

The latest addition to the branches of the organization in other cities is the Chicago chapter, which has just applied to national headquarters for a franchise.

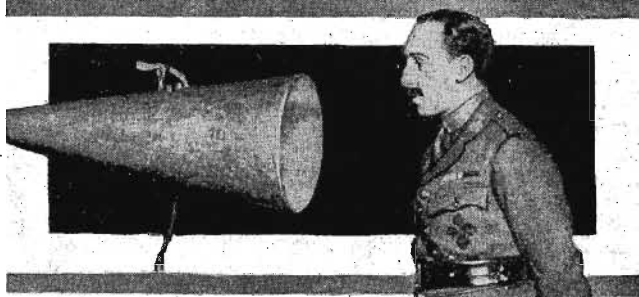
### WMAZ One of Few College Stations with Full Service

MACON, Ga.—WMAZ, Mercer university station here, is one of the few college stations to maintain a complete broadcasting service. WMAZ is on the air five nights each week. Not only are educational programs rendered, but entertainment and religious features are regularly put on the air. The university broadcasts on 261 meters. A. J. Moncrief is program director.

### SPEED COP CLOCKS SPEEDING TALKERS

OKLAND, Calif.—Radio announcers and other talkers over the air are warned that there is a speed cop listening. His name is F. C. Parks. At the ether crossroads, Portage, Wisconsin, he twirls his dials, clocks his victims and sends out notices for first offenses. Wilda Wilson Church, at KGO here, who conducts a Monday night Radio hospital for the broken-down English language, recently received her first notice of word speeding. "Dear Mrs. Church," the writing reads, "I am the Radio Speed Cop from this part of the world at large. The limit of audibility is reached at 160 words per minute. Faster than that it sounds like static. KGO announcers never exceed 140, but I clocked you last night, and you were spinning along merrily at over 200 words per minute. Beware, the jail is yawning for you at the second offense."

**KING ALFONSO'S FIRST BROADCAST**



His Royal Highness, King Alfonso of Spain, made his first Radio appearance recently when he broadcast from "Radio Madrid," a station sometimes heard in America. Note the peculiar megaphone sound collector attached to the microphone. Megaphones were employed likewise in this country before the development of the super-sensitive pickups now in use.

**REBROADCASTING IS NOW MUCH IN VOGUE**

**EPIDEMIC OF RELAYS AFFORDS FANS THRILLS**

**WAHG, 6KW, WQJ, WOC and WSAI Experiment with One Another—Results Good**

CHICAGO. — Rebroadcasting is now very much in vogue. A number of stations have taken up this idea to entertain their listeners who are unable to get the stations otherwise, and it is proving very popular.

Grebe station, WAHG, Richmond Hill, N. Y., recently rebroadcast 6KW, located at Tuinicu, Cuba. The station's slogan is "When you hear the call of the Cuckoo, think of Tuinicu." Shortly after the above accomplishment, Frank H. Jones, owner of the station, wrote to Station WAHG and said that an unusually large card response came in.

During the recent Kansas City Radio Electric show, Station WDAF, rebroadcast a special program from WAHG. One of the most interesting features of the experiment was the picking up and rebroadcasting at 90 meters of the WDAF rebroadcast, by the low wave station of the Grebe company, 22V.

**WSAI, WOC and WQJ Experiment**

On Sunday morning, March 8, WOC, Davenport, Iowa, and WSAI, Cincinnati, held a two-way conversation. The program started shortly after midnight with a half-hour program broadcast by WSAI and rebroadcast by WOC. This was followed by a similar program broadcast from WOC and rebroadcast by WSAI.

Following this preliminary test the two stations then carried on their conversation, and listeners in were able to hear both sides of the conversation from either point by tuning either to WOC or WSAI. This was accomplished by clever switching of the transmitter at both ends from the microphone to the output of a receiving set tuned to the wave length of the opposite station.

On March 11, Station WSAI rebroadcast a program from WQJ, Chicago, for more than two hours.

**Station Changes**

Station WRBC, owned and operated by the Immanuel Lutheran church, Valparaiso, Ind., went on the air officially March 15. They are broadcasting on a wave length of 278 meters, using 500 watts.

Commencing Sunday, March 15, an afternoon of music is being broadcast regularly every Sunday from 4 to 5 o'clock as an added feature to Station KOA, Denver, Colo., schedule.

Station WOOD, the "Dynamo of Dixie," located in Chattanooga, Tenn., will be formally dedicated within the next sixty days.

WOC, Davenport, Iowa, has changed the time of their weather forecast schedules in the evenings. Instead of broadcasting at 5 o'clock, they will broadcast at 9 o'clock, except Sunday and Monday, when they will broadcast at 9:30 p. m.

Station WFEM, located in Indianapolis, Ind., is now on the air, broadcasting on a wave length of 268 meters, using 250 watts power.



**Foreign Notes**

Broadcasting will begin this month in Peru, according to consular reports. The first station will be at Lima and will be a duplicate of Station 2LO, at Marconi House, London, England.

Station SPE, Rio de Janeiro, Brazil, is broadcasting daily on a wave length of 250 meters, using 500 watts.

Due to loss of life among pigeons and other birds, British legislators are advocating the placing of corks on the aerials throughout the country so that the birds will not be killed on the aerials.

More than 35,000 messages were sent from the White Star liner Majestic during a recent trip across the Atlantic. This is equivalent to three and one-quarter words a minute during the entire voyage.

A group of Russian engineers have been searching the mountains of Russia in hopes of finding deposits which could be used as crystals in receiving sets. Up to the present time they have been unsuccessful.

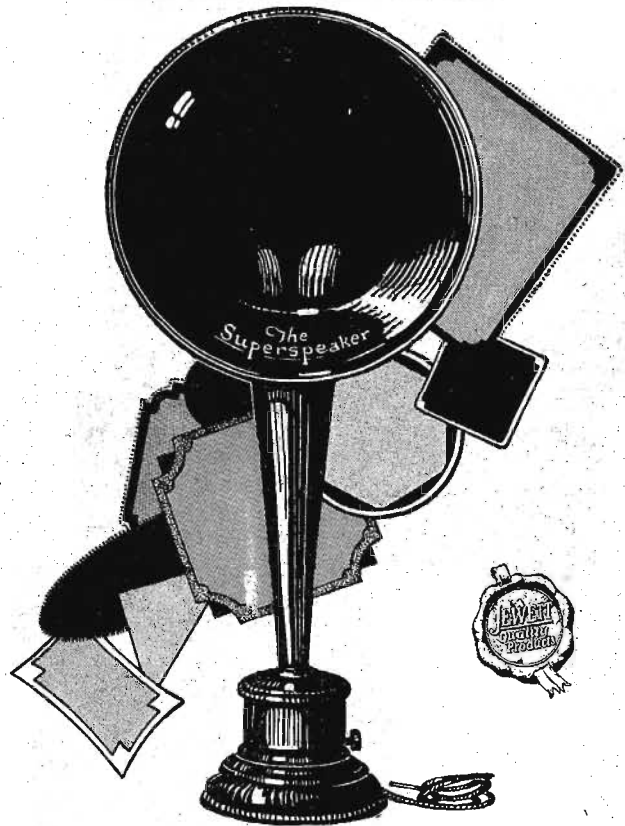
When the big liner Leviathan makes her first trip from New York, after her winter rest, she will broadcast music and talks by various personages on board. They will transmit on a wave length of 317 meters.

When it was announced that the new station in Melbourne, Australia, had not picked an announcer, more than 300 applied for the position, thereby proving that Radio is becoming more popular than the movies.

Another broadcasting station, this time at Haelsiikki, Finland, has joined the group of new stations that have been rising up at scattered places in the small nations of middle eastern Europe.

Mice, by eating vaseline and cotton bating used in the apparatus, recently prevented the carrying out of the program of the broadcasting station at Sheffield, England.

Latest Berlin advices state that the German postal ministry intends to build new broadcasting stations at Kiel, Dortmund and Stettin. They will broadcast on a wave-length of 292 meters.



**There Is No Substitute** for the best, when you come to the choice of a Radio loud speaker. Anything less than a Jewett Superspeaker robs you of just so much range, volume, quality—**Enjoyment.**

Exclusive air-gap adjustment provides volume control and enables you to bring in distant stations to the absolute limit of your Radio set. No extra batteries. A big, substantial musical instrument beyond duplication or successful imitation. Just try it!

"THERE IS NO SUBSTITUTE FOR THE BEST"

*The*  
**Superspeaker,**  
Trademark Registered

**Jewett Radio & Phonograph Co.**  
PONTIAC 5670 Telegraph Road MICHIGAN

# KFDM—"Kall For Dependable Magnolene"



Above, Miss Gladys Harned, who awakens and sets into vibration the emotions of the listeners with her violin. Below, Miss Jewell Harned, another popular entertainer.

Corner in the studio at KFDM, where all the famous "oil" men entertain listeners throughout the continent. It is here that "Magnolene Mike," "Caster Oil Clarence" and "Petroleum Pete" hold forth.

"Magnolene Mike," famous announcer at Station KFDM.

"Petroleum Pete," hokum vocalist at KFDM.

## By "Petroleum Pete" of KFDM

THE equipment of KFDM is a 500-watt broadcasting set complete, assigned a wave length of 306 meters—980 kilocycles—what ever that is. The above-mentioned, together with an ornately furnished studio, consisting of a microphone, a grand piano and a steam radiator, is located on top of the administration building in the center of the refinery.

Speaking of the refinery, we are one of the five refineries owned and operated by the Magnolia Petroleum company, of which I am an employee. Said refinery is located in Beaumont, Texas, a city with a 30-foot channel to the sea, which affords an outlet to the countries of the East—the Latin-American, Mexico and Cuba—for the immense commercial trading brought from all points of the Middle West by the five railways entering our city. Here our Station KFDM performs a wonderful service in cementing a friendship among the countries of this continent, thereby encouraging international commerce. This is accomplished to a great extent through our Latin-American concerts and our announcer in Spanish,

known as Statie, hundreds of letters having been received by this station from our Latin-American neighbors expressing their appreciation of our Broadcasting and complimenting the Magnolia Petroleum company on their courtesy as shown by their programs.

Starting at the front, I will give a short synopsis of one of our prosaic Tuesday night programs rendered by local artists and employees of the refinery.

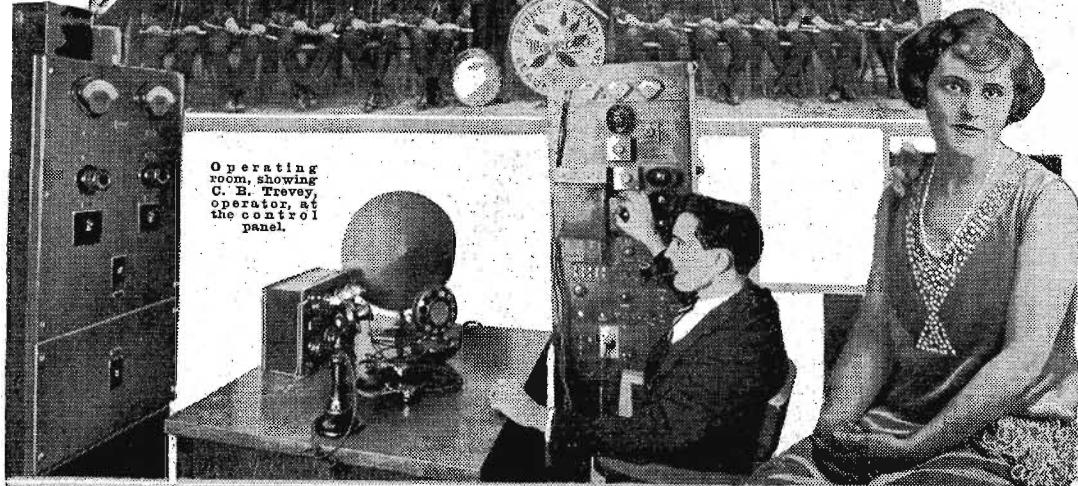
From 7 to 7:30 p. m. Central standard time, a children's program is rendered under the auspices of Miss Magnolia Blossom, who has become very popular among the juveniles who happen to be home about the time this is furnished—the waiting room of the studio begins filling with the performers for the free-for-all program beginning at 8 p. m. Central standard time. The ladies present proceed to start powdering their noses, while the men stand around biting their finger nails, all of them more or less self-conscious and nervous. Then, just at the initial moment amid whispers of "There he is," "That's him," and "Ain't he grand?" Magnolene Mike, our famous announcer, enters

(Continued on page 7)

Miss Magnolia Blossom, director and announcer of the children's half hour from 7 to 7:30 p. m. on Tuesdays and Fridays from Station KFDM.



The Magnolia Petroleum company's refinery band, heard over KFDM every Friday at 8 p. m. Central standard time.



Operating room, showing C. B. Trevey, operator, at the control panel.



Above, "Caster Oil Clarence," harmonica artist and engineer of the famous KFDM "Santa Fe Special."

Left, Mrs. Charles Chinski, vocal soloist, who is well known to thousands.

# Announcers' Contest

*Radio Digest Second Annual*

## GOLD CUP AWARD

**T**HIS beautiful **GOLD CUP** will be awarded by Radio Digest to the World's Most Popular Broadcast Announcer for 1925.

You are invited, together with Radiophans all over the world, to help us select the man or woman who will receive this priceless trophy. You will find a ballot on page two of this issue which you can use to vote for your favorite announcer.



**R**ADIO Digest **GOLD CUP AWARD** is an annual trophy presented to the most popular Radio announcer in the world. Every year Radiophans are given the opportunity to select the announcing "King." Everybody is invited to vote for their favorite announcer. It is up to you who will be the winner in the 1925 competition. Send your ballots in early. Don't wait!

## ENTER YOUR FAVORITE'S NAME

### How to Nominate and Vote

**O**N THIS page will be found the rules and regulations governing the Radio Digest Second Annual **GOLD CUP AWARD** to be given to the world's most popular broadcasting station announcer in a competition which starts with this number and will continue until the issue of August 22. Below will be found a nomination certificate. All that is necessary for you to do to place your favorite announcer in the contest is to fill out this certificate with your candidate's name and the broadcasting station call letters. Write in your name and address and mail to **GOLD CUP AWARD** Editor of the Radio Digest. This will place your choice of announcers in nomination. If you will then turn to page two of this issue you will find a ballot with which you can vote for your candidate. These ballots, numbered consecu-

tively, 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 candidate 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 in Your Nomination Certificate and Ballot Today

### NOMINATION CERTIFICATE Announcers' Contest

Radio Digest Second Annual **GOLD CUP AWARD**

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

Dear Sir:

I nominate.....

Station.....

Broadcasting Station

Signed.....

Address.....

Town.....

State.....

### Rules and Regulations

1. Radio Digest offers its second annual **GOLD CUP AWARD** to the most popular broadcasting station announcer. This popularity to be determined by the balloting of the readers of Radio Digest, and the winning announcer will be the one polling the largest number of votes.

2. All broadcasting station announcers are eligible to enter. Nominations can be made either by the announcer or any Radiophan. Nominations should be made by using the "Nomination Certificate" appearing in the issues of Radio Digest. The names of the announcers entered in this contest will be published from time to time in Radio Digest. The progress of the voting for the announcers will be published frequently during the contest at the discretion of the **GOLD CUP AWARD** Editor.

3. Effective with March 28 issue a ballot will be printed in each issue of this publication on page 2. These ballots will be numbered consecutively from one to sixteen. The voting officially opens with the publication of ballot No. 1 in March 28 issue. The contest closes with ballot No. 22 published in August 22 issue of Radio Digest, and the official closing date of this contest is midnight, August 29, 1925.

4. Voting will consist of filling in these ballots with the name, initials or nickname of the announcer and the station and mailing to the **GOLD CUP AWARD** Editor.

5. Ballots when sent in separately will count for one vote. Bonus votes will be allowed during the contest according to the following schedule:  
For each 4 consecutively numbered

ballots sent in at the same time a bonus of 8 votes will be allowed.

For each 8 consecutively numbered ballots sent in at the same time a bonus of 20 votes will be allowed.

For each 12 consecutively numbered ballots sent in at the same time a bonus of 30 votes will be allowed.

For each 16 consecutively numbered ballots sent in at the same time a bonus of 40 votes will be allowed.

For each 20 consecutively numbered ballots sent in at the same time, a bonus of 50 votes will be allowed.

For each 22 consecutively numbered ballots sent in at the same time, being a complete set, a bonus of 60 votes will be allowed.

6. The broadcasting station announcer polling the largest number of votes in the contest will be awarded the **RADIO DIGEST GOLD CUP**. In the event of a tie for the **GOLD CUP AWARD** each tying contestant will receive the same identical award.

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

8. All votes to be credited must be received on or before midnight, August 29, 1925.

9. The Radio Digest second annual **GOLD CUP AWARD** will be made by a committee appointed by the publication.

10. Any question that may arise during the contest will be decided by the **GOLD CUP AWARD** Editor and his decision will be final.

11. These Rules and Regulations are complete and cover the awarding of Radio Digest Second Annual **GOLD CUP AWARD**.

# BROADCAST FARM SCHOOL OPENS

## WELL-KNOWN AUTHORITIES AID FARMERS

National Radio Farm School  
Is Supported by Blue Valley Creamery Institute

Five Stations in School

Give Talks Five Days Each Week  
to Help Agriculturist Make  
More Money

CHICAGO.—What is the first national radio farm school in the world opened its curriculum to the farmers of the United States Monday, March 23, at 1 p. m. C. M. Long, chief of farm service of the Blue Valley Creamery Institute, under the auspices of which this educational project is being launched for the improvement of American agriculture, is director of the school.

The lectures are being broadcast over five of the larger stations of the country: WOC, Des Moines; WMAQ, Chicago; WHK, Cleveland; KFQV, Omaha, and WDAY, Fargo, North Dakota. The school is in session five days a week from 1 to 2 p. m. More stations will be added later.

Agricultural college professors, experiment station directors, leading experts in all branches of agriculture are included on the staff of lecturers who will give the farmers the benefit of their knowledge in their daily "Money Making" talks, for the aim of the school is to show the American farmer how he can make more profit with less labor and expense than he is doing today. The program is arranged on a definite schedule that the farmer may know just what day the subject in which he is especially interested will be broadcast. The other days he may "cut classes" if he so desires.

### Monday Is "Hog Day"

Monday is "Hog Day." The senior professor in this branch of the school is John M. Eward of Iowa State Agricultural college, who is known throughout the nation as the "Hog Man of Ames." He is conceded to be the greatest expert on feeding, whose methods, experiments and interpretations of his own and other scientists' achievements have practically revolutionized one of the greatest industries in the middle west.

Tuesday has been set as "Poultry Day." The chief of this department is Prof. A. G. Phillips, head of the Poultry department, Purdue university, who is a noted authority on poultry.

### Many Dairying Authorities on List

Every Wednesday dairying will be the subject. For this branch some of the most noted experts in the country have been obtained. They will include Prof. O. E. Reed, head of the dairy department, Michigan Agricultural college, a widely-traveled practical dairyman; Prof. H. H. Kildee, head of the animal husbandry department, Iowa State Agricultural college, whose life has been an inspiration to young live stock breeders, and one of the five best American live stock judges; Prof. Oscar Erf, in charge of the dairy department of Ohio State university, a leader in the dairy industry because of his insight into the farmers' problems; Dr. C. H. Eekles, head of the dairy department, University of Minnesota, one of the ablest scientists and teachers in the country; Hugh G. Van Pelt, nationally-known breeder, feeder and lecturer; Prof. O. F. Hunzaker, recognized authority on dairy manufacture, and C. M. Long, chief of farm service, Blue Valley Creamery Institute.

### Thursday "Legume Day"

Thursday is known as "Legume Day." Prof. W. L. Burselen, chief of the agronomy department, University of Illinois, will lecture an alfalfa, while Prof. J. C. Hackleman, crops extension specialist, University of Illinois, will broadcast talks on soy beans. He is considered the greatest authority on this subject in the country.

The last day of the weekly school—Friday—is devoted to a "question box" program, when the problems of the farmer-students of the school are answered. Special lectures also will be arranged for this day, which will include talks by prominent men on subjects for

## WILL HE CONTINUE AS CHAMPION?



George Dewey May, world's champion Radio announcer for 1924 by reason of his winning the Radio Digest Gold Cup Award last year, will no doubt be a strong competitor for the title again this year. "The Solemn Old Judge," as he is known, has many friends who will help him to defend his title. But will he win the second annual Radio Digest Gold Cup Award? Read page six for details of the contest.

which the members of the Radio farm school make special requests.

### Students Should Enroll by April 1

Director Long also announced that a certain number of manuscripts of the broadcast "money making" talks containing more material than actually broadcast were being prepared to be sent to those who enroll in the school before April 1.

In addition to these Radio talks, literature of experiment stations, U. S. government official information and timely articles from the leading agricultural papers also will be mailed to the farm students who enroll within the designated time. Examinations will be held for the enrolled students and certificates issued by the registrar of the school to those who prove their qualifications. The only requirement for admission to the National Radio Farm school is to send in one's name to the registrar.

## KFDM, "OIL" STATION

(Continued from page 5)

and begins identifying the artists and scratching names off the program that he can't pronounce.

Promptly at 8 p. m., Magnolene Mike, assuming his favorite position in front of the microphone, one foot on a chair, right hand in his pocket and left hand clutching a program—informs his unseen listeners that KFDM is now taking the air.

I must mention in passing that the most distant point we have heard from is Valparaiso, Chile, a distance of 4,500 miles. At 10 p. m. Central standard time, Magnolene Mike bids his widely scattered audience a tender good night and informs the ladies—who have been gasping for breath, because the pleasure of speech has been denied them—that they can talk, which they proceed to do with no loss of time.

Now that we have finished the Tuesday night program, we will jump to Friday, on which occasion, after Miss Magnolia Blossom

has put the children to bed at 7:30, the band boys begin drifting in preparatory to tuning up.

Dr. Harry Cloud, composer of the now famous "Magnolia Blossom," officiates as director of this organization, which first entered the limelight at the Dallas State Fair of Texas. We play everything from "Orpheus of the Underworld," "Humoresque," "Shubert's Serenades," "William Tell," etc., down to the latest popular "Hokum," which last named is my specialty.

But to continued with the program, Magnolene Mike, who has been valiantly struggling with the pronunciation of the names of some of the composers which he knows he can't leave off the program, again informs the Radio world that KFDM is on the ether. After his "Oil right, Doctor," the famous Magnolia Petroleum company band then proceeds.

About 9 p. m. we have a rest and smoke while "Castor Oil" Clarence, blacksmith, who has risen to dizzy heights of popularity with his interpretation of the "Santa Fe Blues," as played on a harmonica, entertains the fans, who think no program is complete without his specialty.

Some evenings during this time we have such oil characters as "Lubricating Luke," "Crude Oil Hill," "Paraffin Powell," "Kerosene Kate," "Gasoline Gus," "Asphalt Al," etc. help to make our smoking interval longer.

Like the oil that comes to us as crude, and is turned out refined, our programs are given by purely local talent and employees of the refinery boiler-makers, bricklayers, blacksmiths, pipeliners, etc., and judging from the returns we get in telegrams, letters and cards, we are entertaining and amusing our audience, which is the height of our ambition.

"Hollywood Nights" are to be a regular feature from KNX, Hollywood, Calif. Many noted people who call the film capital their home, will be on the programs.

## MORE CALISTHENICS TO GO UPON THE AIR

METROPOLITAN LIFE WILL  
BROADCAST DAILY

WEAF, WCAP and WEEI Linked Up  
Every Morning—Exercises Broadcast from Tower

NEW YORK.—Setting-up exercises are getting to be a great thing—when accompanied by Radio. The Metropolitan Life Insurance company of this city is building a studio on top of the Metropolitan tower, from which daily morning exercises will be sent out through WEAF, New York; WCAP, Washington, and WEEI, Boston.

The exercises will go on the air at 6:45 a. m. for one hour. They will be divided into three separate classes of twenty minutes each, beginning at 6:45, 7:05 and 7:25 a. m., respectively. Exercise charts will be distributed along with other special literature devised to give the fullest measure of health value to the work.

Station WIP has begun the broadcasting of setting-up exercises every morning at 7 o'clock. Dr. Francis D'Eliscu, director of department of physical education of the Y. M. and Y. W. H. A. of Philadelphia, will conduct the broadcasts.

### Other Stations Give Exercises

Dr. D'Eliscu, one of the widely known figures in physical education both in this country and abroad, has arranged a program which includes fun, hygienic and development value, correct posture, abdominal exercises and other forms of exercises. He was at one time connected with the Boy Scout movement in Belgium, and is now director of athletics for the Pennsylvania National guard.

Reducing to music instead of laughing it off has been selected by several thousand people who tune in every morning to WLW. It is difficult to impress the beginners with the fact that exercises will reduce those who are too plump and put on weight for thinner members of the class. It is not as easy to build up muscle as quickly as it is to take off fat.

Among the other stations who are giving the setting-up exercises in the morning besides those listed above are: KPLO, San Francisco, Calif.; KYW, Chicago, Ill.; WWJ, Detroit, Mich.; WOR, Newark, N. J., and KDKA, East Pittsburgh, Pa.

## Warner Brothers Open Plant with Big Party

KFWB First of Chain of Seven  
According to Plan

LOS ANGELES.—While thousands of people, tourists and residents alike, recently jammed that portion of Sunset boulevard, Hollywood, known as "studio row," the new Radio station of the Southland, KFWB, located on the lot of Warner Brothers' West Coast studios, came on the air, presenting an array of motion picture talent the equal of which has never before appeared before the microphone at any single time.

Aerial bombs and 500,000,000 candle power of light, used as only an experienced studio lighting engineer can effect were unusual features of the outside celebration, while inside prominent members of the screen, under the tutelage of Monte Blue, took their turns at the microphone.

This new station, the first in the world to be officially connected with the motion picture producing industry, indicates that the film wing of the theatrical business intends to join hands with the new giant of entertainment rather than attempt to fight it.

It is the intention of Warner brothers, at the time the new station gets firmly on its feet, to erect not less than six more stations in a big chain to extend from the Atlantic to the Pacific oceans.

## 68th Congress Forgets All About Radio; 69th May Not

WASHINGTON, D. C.—The 68th session of Congress, which adjourned on March 4, did not enact any Radio legislation and the White Radio bill, about which there had been so much discussion, died in committee, where it was re-referred at the request of Representative White. While it is early to do any predicting, it seems to be a foregone conclusion that some kind of Radio legislation will have to be enacted by the 69th Congress.

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

Table with columns for Station and City, Met., and broadcast times for Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday, and Friday.

STATIONS IN ORDER OF WAVE LENGTHS USED

Table listing stations in order of wave lengths used, with columns for Meters, Call, and Station Name.

Czechoslovakia again figures prominently in current Radio news, with the announcement that a huge exposition will be held for Radiophans in the spring.

MAGNATRON advertisement featuring an illustration of a vacuum tube and text describing its benefits for radio sets.

The New Spring Model advertisement for MARV-O-DYNE, featuring an illustration of the radio set and a price tag of \$110.

MARV-O-DYNE is the biggest value in a radio set that has ever been offered. The new spring model tops even the record-breaking original MARV-O-DYNE in this respect as well as in performance.

The Fil-a-meter—a new device that saves both tubes and batteries—is to be found only in the MARV-O-DYNE. In addition there are such high lights as a genuine Weston meter with a switch for measuring B batteries, Haig and Haig Stratline condensers, and a Cutler Hammer Radioc.

MARV-O-DYNE duplicates the speaker's voice or the artist's music exactly. It adds no touches of its own; it detracts not the slightest shade or intonation. Go to your nearest dealer at once!

AMBER MANUFACTURING CORP. 115 West Broadway, New York City

The Amber MARV-O-DYNE advertisement with the slogan 'The set with the Fil-a-meter' and a price of \$110.

Instructions for Use—All the hours above are given in Eastern Standard Time. If your city uses Central Time, subtract one hour from each of the periods stated; if your city uses Mountain Time, subtract two hours; if your city uses Pacific Time, subtract three hours. This table includes only the evening and, on Sunday, the late afternoon programs.

"Uncle Billy" New Mystery for WBAP Child Listeners

PORT WORTH, Texas.—Identity of the new members of WBAP's official family known as "Uncle Billy" is still a matter of surmise to the hundreds of little tots who have "tuned in" on the new "Kiddies Hour" on Sunday mornings, at which time "Uncle Billy" reads the Star-Telegram comic section.

WEMC Commemorates First Birthday with Celebration

BERRIEN SPRINGS, Mich.—Celebrating its first birthday, station WEMC here recently broadcast a special program of music and short speeches in honor of its first year of operation. Beginning as the result of the dreams of two college boys, WEMC has grown from a 50-watt amateur to a 500-watt class B station broadcasting regular programs.



# WIP TO SURPRISE FANS SATURDAY

## Saturday, March 28

### Eastern Time Stations

The following schedules of programs are given in Eastern time. To change to Central time, subtract one hour; Mountain time, subtract two hours; Pacific time, subtract three hours.

**Saturday, silent night for:** AT9, CFAC, CFCA, CHNC, CHYC, CKY, CNRO, KFAB, KFAE, KFBU, KFCK, KFMO, KFMC, KFDQ, KFX, KGB, WAAJ, WAP, WCAU, WCB, WDF, WEAD, WEBI, WEEI, WFG, WFT, WHA, WHD, WHAS, WJAZ, WJG, WJL, WJW, WKAC, WKAK, WOL, WOO, WOS, WRBC, WSAC, WSWI, WWI.

**CKAC, Montreal, Can. (410.7), 7 p. m.,** Kiddle's stories; 7:30, Windsor hotel dinner concert; 8:30, variety program; 10:30, Windsor hotel dinner program.

**CNRO, Ottawa, Can. (434.5), 7:30 p. m.,** bedtime story; Aunt Agnes; 8, James McInyre and his Chateau Laurier orchestra; 8:30, instrumental trio, Donald Heins, violinist; Helen Langdon, cellist; Dr. Herbert Sanders, pianist; vocal solos, Octavio Strasser; "Boys in Canada's National Parks," M. B. Williams; James McInyre and his Chateau Laurier dance orchestra; Jack Green.

**KDKA, Pittsburgh, Pa. (309.1), 6 p. m.,** Westinghouse band; 7:35, last minute help to Bible school teacher, Carmen Carr Johnson; 8:30, Westinghouse band; 10:10, concert, Washington and Jefferson glee club.

**PWX, Havana, Cuba (400), 8:30 p. m.,** concert, program, Juan Gonzalez, tenor.

**WARG, Richmond Hill, N. Y. (315.6), 12-3 a. m.,** special program, Glen C. Smith's Paramount orchestra; **WBBI, New York, N. Y. (262.6), 3 p. m.,** Dr. Hans

Comus club orchestra; 7-7:10, Alfred Seeger, baritone; 7:30-8:30, Armand Vesce's orchestra; 9-9:20, Joint recital, Carlo Dinova, Italian baritone; Giovanni Marzani; 10-10:15, Della Riordan, lady baritone; 10:20-10:25, Popsy O'Neil with Bob Emmerich, pianist; 11:15, Hotel Vanderbilt orchestra.

**WGB, Buffalo, N. Y. (319), 2:30-4:30 p. m.,** Radio Dealers' musical program, Joseph F. Quinn, director; 6-7:30, Halprin string quartet, A. J. Brisman, director.

**WGY, Schenectady, N. Y. (379.5), 8:15 p. m.,** Marino band; 9:30, Phil Romano's orchestra.

**WHN, New York, N. Y. (381.2), 6:30-7 p. m.,** violin solos, Glenn Vail, accompanied by Stephen Balogh.

pool Grand National Steeple Chase; George Lovel (Chester); 10:30-11:30, Joseph Knacht's Waldorf-Astoria dance orchestra.

**WLIT, Philadelphia, Pa. (384.5), 2 p. m.,** Sam Miller Crosby, soprano; Abraham Crosby, baritone; Marcelle North, pianist; 7:50, Acadia club concert orchestra.

**WWSF, Miami Beach, Fla. (384.4), 10-2 a. m.,** Rosebrook's Radio serenaders; Nautilus Lucky Soren orchestra.

**WNYC, New York, N. Y. (526), 6:30-7:30 p. m.,** Club Albanian orchestra; 7:35-8, Chateau four; 8-9:15, Symphonic concert, Metropolitan Museum of Art; 10-10:15, studio program; 10:15-10:25, travel talk.

Washington hotel orchestra; 8, Bible talk; 8:15, United States Marine band, Taylor Branson, leader.

**WREO, Lansing, Mich. (285.5), 10-12 midnight,** Frank Logan and his orchestra.

**WTAM, Cleveland, Ohio (388.4), 6-7 p. m.,** dinner music; Hotel Statler concert orchestra; Maurice Spillane, director; 9-12, Er Jones and his WTAM dance orchestra; Robert Patrick, Irish tenor.

**WWJ, Detroit, Mich. (352.7), 9 p. m.,** Detroit News orchestra.

### Central Time Stations

The following schedules of programs are given in Central time. To change to Eastern time, add one hour; Mountain time, subtract one hour; Pacific time, subtract two hours.

**KNF, Shemondah, Ia. (266), 6:30 p. m.,** orchestra concert, Avoca; 8:30, program, Oregon high school.

**KSAC, Manhattan, Kans. (346.7), 5 p. m.,** High School glee club of Florence, E. D. Davis, director; Mrs. Amelia Ullman, violinist; Mrs. Corinne Barber, pianist; Venus Cary, pianist; Dorothy Furell, contralto.

**KSD, St. Louis, Mo. (545.1), 7 p. m.,** Grand Central theater; 8, Missouri theater.

**KTHS, Hot Springs National Park, Ark. (374.8), 8:30-9 p. m.,** variety concert, Charles L. Fischer orchestra; Tubby Vail, tenor; 9-10, Hendrix College glee club; 10-10:15, dance concert, Alroy Davis-New Arlington orchestra.

**KVM, Chicago, Ill. (536), 6:35-7 p. m.,** children's bedtime story, Uno Bob; 7-7:50, Congress hall; 8-8:58, Inez Hubbard Hicks, soprano; A. M. Havis, tenor; Walter Burchard, violist; Marie Wright, soprano; 9:35-11:30, Congress classic; 12-1, Congress artistic; 1-2, "Insomniac club."

**WBAP, Fort Worth, Texas (475.9), 7 p. m.,** Sunday school lesson, Mrs. W. F. Barsam; 7-8 p. m., Greide hour; 8-15, popular program, Midwest dancers; orchestra; 8-1 a. m., Owl pasture.

**WGL, Northfield, Minn. (356.9), 12 midnight,** Ella Hietanen, contralto; Comfort Hiedrich, pianist; **WCCO, Minneapolis-St. Paul, Minn. (416.4), 2:30 p. m.,**



Adrian de Silva, tenor, is heard on the Tuesday programs of the Rivoli and Radio theaters at WNYC. Martha Bjorn, a talented pupil of Madame Young, sings regularly at WGN, Chicago. Iris Ruth Payne (right) is the leading lady of the KOA players. Bjorn Photo, Drake Studio.

## Headliners of the Week

**WIP** is planning another surprise program for Saturday, and these mysterious parties of **WIP** are always peppy, exciting affairs. The fresh young voices of the high school glee clubs of Florence, Kansas, will take the air tonight from **KSAC, Manhattan**.

An old folk song will entertain the fans Sunday at **KGO, Oakland**. This old song will be presented after the manner of celebrated composers and is called "A Humorous Transcription of an Old Folk Song." Arthur S. Garbett will describe its evolution. Even Radio programs show signs of spring. Garden talks are becoming more and more important. **KOB** is scheduling Monday "Flower Gardens in the Southwest," by Francis E. Lester. **KFWB, Hollywood**, will introduce this same evening over the microphone some more famous members of the silent drama. **Madame Georgette**, a famous dress designer of Paris is beginning his Tuesday her series of fashion talks

at **WGBS, New York**. She has just returned from France with many new and fetching style ideas. Tuesday is also popular because the Georgia Minstrel boys will make their first 1925 appearance at **WGY, Schenectady**. Such favorite tunes as "Flag That Train to Alabam," and "Roll Along, Old Georgia Moon," will be featured.

Wednesday North Dakota will have a chance to show what kind of entertainment this state can produce. **WCCO, the Gold Medal station**, announces a North Dakota night. The program will be a surprise.

Indian music is becoming more and more popular with Radiophans. The University Women's club of **WEO** will give an evening of this interesting music Thursday.

The Brunswick hour of music will not be the only music memory contest on the air. Prof. Bourland of Winthrop college will conduct such an hour Friday at **WSAC, the Clemson college station**.

7:30-7:35, health talk, Dr. Landis; 7:35-8, Hotel Carlton Terrace orchestra; 8:30-9, Strand Roof orchestra; **WIP, Philadelphia, Pa. (698.2), 2 p. m.,** Walter Schwartz's dance orchestra; 6:05, Hotel St. James dance orchestra; 7, Uncle Wip's bedtime stories; 8, Lenten meditations; 8:15, surrisa concert; 10:30, Harvey Marburger's dance orchestra; 11:05, Karl Dunwin, organist.

**WOO, Philadelphia, Pa. (508.2), 4:45 p. m.,** organ recital, Mary E. Vogt.

**WOP, Newark, N. J. (405.5), 6:15-7 p. m.,** Ernie Krickets orchestra; 7:30-8, The Commanders; 8-8:30, Somerville male chorus; 8:40-8:55, Mary Marshall, fashion expert; 8:55-9:10, Julius Koehl, pianist; 9:10-9:30, Roberta Curry and George Dudley; 10:45-11, Enoch and Jerome, popular duo; Dixon and Basket, songwriters; Theophilus Alban, tenor; 11-12, Ciro orchestra.

**WPA, Atlantic City, N. J. (299.9), 9 p. m.,** concert ensemble, Hotel Traymore orchestra; 10, Paul Whitman's Hotel Traymore dance orchestra.

**WRC, Washington, D. C. (468.3), 6:45 p. m.,** children's hour; Madge Tucker's, Irving Doronstein's

DKR River high school band, Charles W. Clark, leader; Bernard and Robinson; 6-7, community amusement association program; 8, Greide philosophic; 8:30, Ninth District Rotary club night; 10, Minneapolis Athletic club orchestra; Gold Medal string quartet; Bernard and Robinson.

**WCEE, Elgin, Ill. (275), 7-8 p. m.,** Boss' Own orchestra; Eddie Loftis, leader; 11-12, Boss' Own orchestra; Eddie Loftis, Fred Morris.

**WDAP, Kansas City, Mo. (365.6), 8:40-4:30 p. m.,** Sear's Radio orchestra; 4-7, piano tenor-in-musical on the Duo-Art; messager, Roger W. Hanson; Tell-me-a-Story Lady; Triton ensemble; 11:45-1, Merry Old Chief and the Plantation players; Eddie Kuhn's Kansas City Athletic club orchestra.

**WEH, Chicago, Ill. (370.2), 7-8 p. m.,** Oriole orchestra; 8-9, Dan Russ and Ted Florio; 9-10, Oriole orchestra; Marie Kelly, vocalist; Elmer Gilman, solo piano; Pat Barnes; 11-12, Oriole orchestra; Lou Brenner; Harry Kelly, reed; songs, Frank Stryzko, Ray Kohnke, James Knauske, Neil and Ches, Halih Snyder.

**WFAA, Dallas, Tex. (475.3), 6-7 p. m.,** vesper recital, Honey Boy orchestra; 8:30-9:30, Dallas alumni, Beta Theta Pi; 11-12, Adolphus hotel orchestra.

**WGN, Chicago, Ill. (370.2), 12:45-2:30 p. m.,** luncheon concert, Drake concert ensemble, Blackstone string quartet; 5:30, Steeplechase for the children; 6-9, jazz recital, Leon & Healy; 8:30-7, dinner concert, Drake concert ensemble, Blackstone string quartet; 8-9, Jazz WHAS; 10-11, Don Becker Dance club orchestra.

**WGBS, New York, N. Y. (315.6), 9-10 p. m.,** interview with Fay King by Teresa Rose Nagel; 3:10-3:20, music, Elizabeth Alexander Major studios, Lenora Herman, soprano; 3:30-3:40, interview talk, Lady Dolson; 3:50-3:55, Lenora Herman; 3:55-4:00, interview with Reverend J. L. McLaughlin; 3:50-4, Lenora Herman; 9-9:30, Uncle Geese; 9:30-7, Rolly Fisher's

**WLB, Stevens Point, Wis. (278), 12 midnight,** concert of sleep.

**WLV, Chicago, Ill. (344.6), 7 p. m.,** Hulley time, Ford and Glenn's trip; 7:30, Harmony girls; Walter Peterson, Sears-Reevey; Glenn's Cornubians; Grace Wilson, Ruby Allen, Fred and Glenn; 11:15, Statute theater midnight revue.

**WLW, Cincinnati, Ohio (422.3), 9 p. m.,** dance selection, Marie Moleky Boys, Fred Lindeman, director and manager; 6, dinner hour concert.

**WMAJ, Chicago, Ill. (444.7), 9 p. m.,** program, Post Office Athletic association; 5, Sunday school; Fred Davy; (Continued on page 10)











# A. B. C. Course in Radio Fundamentals

## Chapter I—Transmission of Sound Waves

By David Penn Moreton

**T**HE wonderful advances in the Radio art in the last few years have been instrumental in making Radio the servant of every individual who wishes to take advantage of this wonderful invention. Radio enables men to reach by means of his own spoken words thousands of persons at the same time in many distant places. We all appreciate the fact that intercommunication between persons is one of the most fundamental operations in human life, and the Radio is here to supplement the other older methods of communication, such as the telegraph and telephone, and not to replace them. The service rendered the public by the Radio can not reach its maximum efficiency unless it has the support of the majority of the people, and it is not entitled to their support unless it gives in return a service which really merits the support. For example, the telephone of today was developed to its present high standard because the people embraced it and made it a part of their daily life. Those who have followed the development of the Radio feel that its scope will become national and of real interest to everyone and that it will perform a service to mankind which no other method of communication can perform.

### Fundamentals of Radio

It is the purpose of this series of articles to tell in a simple way the fundamentals of Radio and it is the author's desire to help that great mass of individuals who are intensely interested in the subject to get a clear understanding of the fundamental principles.

To the majority of people, the operation of a Radio telephone transmitting and receiving system, seems to be very complex and it is hard for them to get a reasonably clear understanding of its operation. The author hopes that by the use of a few simple analogies, based on every-day experiences, to explain the function of each individual piece of equipment and the operation of these assembled units in the completed set.

When one speaks the vocal cords lo-

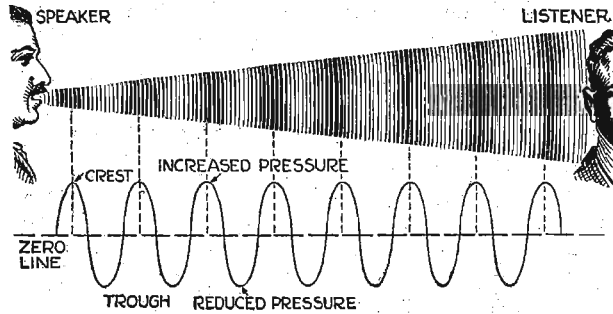


Figure 1

cated in the throat vibrate and set the column of air in the throat in vibration, and these vibrations are transmitted to the surrounding air. The air waves thus formed act upon the membrane of the ear and cause it to vibrate in an identical manner to the vocal cords which produced the air waves. The vibration of the membrane in the ear, or ear drum as it is more commonly called, affects the auditory wave centers located in the ear and the sensation is transmitted to the brain which results in the person hearing the sound.

### The Way Sound Waves Travel

The way in which sound waves travel

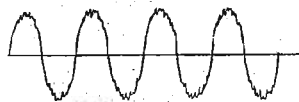


Figure 2

from the speaker to the listener is shown in figure 1. The air itself does not move

quite easily detectable. Just observe the steam escaping from a distant locomotive and note the time for the sound to reach you. Another good example of the comparative slowness with which sound travels is the delay of the sound of thunder after the flash of lightning.

### To-and-Fro Motion

The wave shown in figure 1 corresponds to a regular to-and-fro motion of the vibrating body. The vibration of sounding bodies, however, is generally quite complex and the wave representing such a vibration or sound is not a smooth regular wave, such as the one shown in figure 1, but it will be irregular in form as shown in figure 2. An irregular wave such as the one shown in figure 2 might be thought of as being a composition of a number of crests and troughs, or peaks and depressions, superimposed on the main wave or fundamental wave. A fundamental wave which has superimposed upon it extra waves is said to have harmonics or overtones. It is just these overtones or harmonics which give a sound its quality and enables one to distinguish the sound of a given musical note on the flute from the same note on the piano. These overtones really correspond to smaller zones of condensations and lessened pressure than the fundamental produces and they must be retained and transmitted in their true relation to the fundamental if the quality of the sound is to be preserved. Just as an object is recognized by its shape and size, so a sound can be identified by its wave form although this is done unconsciously by the listener. The problem of retaining these harmonics and properly transmitting them along with the fundamental is one of the most difficult problems in sound transmission.

The frequency of a sound is equal to the number of times the vibrating body producing the sound swings to-and-fro, or

(Continued on page 20)

## No Technical Knowledge Necessary



It's just good fun to build the Shamrock-Harkness

**MAKE** your own set in half-a-day! The Shamrock kit contains all parts necessary to build the sensational Shamrock-Harkness Two Tube Reflex. This set combines the best features of the leading circuits: five tube Volume and Distance—Reflex Clarity! Detailed directions, simply told, packed in each kit.

Also ask to see the improved SHAMROCK-HARKNESS THREE-TUBE COUNTERFLEX

The wonder set \$39<sup>50</sup>

For best results Buy only genuine Shamrock-Harkness Licensed Parts The Shamrock Kit contains only these genuine, guaranteed parts.

Price \$35

SHAMROCK MANUFACTURING CO. Dept. 27-C, Market St., Newark, N. J.

**SHAMROCK** (FOR SELECTIVE-TUNING)

These for the masses as well as the classes

SHAMROCK MFG. CO. Dept. 27-C, Market St., Newark, N. J.

I enclose 10 cents (U. S. stamps or coin) for copy of "Shamrock Radio Builder's Guide Book" containing diagrams and complete illustrations for building 10 sets at prices ranging from \$15 to \$50.

Name \_\_\_\_\_

Address \_\_\_\_\_

## A Perfect Antenna at Last

"Hear as You Have Never Heard Before"

Power Line Interferences Absolutely Eliminated, Making Broadcast Reception a Pleasure and Not a Pain

The Kane Antennae absolutely eliminates all power line interferences, eliminates over 50 per cent of static and squeals from radiating sets. No special poles required. Will hang in the same place as your present antenna. Can be erected in thirty minutes.

The Kane Antennae is sold on an absolute guarantee to do all the above, or your money refunded. You take no chance whatever.

You know that leaky power lines cause more interference with broadcast reception than all other sources of interference.

### Why Continue to Suffer from Power Interference?

Here are six reasons why every radio receiving set should be hooked on to a Kane Antennae

1. The strength of signals is increased because the Kane Antennae filters out all extraneous noises.
2. Weak signals can be heard which would never be received on any single-wire aerial.
3. All power noises are eliminated, making broadcast reception a pleasure and not a pain.
4. Static and reradiating squeals are cut in two.
5. The worst possible locality is changed into the finest kind of locality for broadcast reception.
6. Last, but not least, any radio receiving set, no matter what the make becomes a better receiving set when hooked on to a Kane Antennae.

Our new policy—only one profit instead of three—sold direct from factory to user.

The Special Kane Antennae for Radiola Super-Het's Price \$ 6.50

The Regular Kane Antennae for All Receiving Sets Other Than RCA Super-Het's and for Super-Het's Using a Booster, Price 13.00

Postpaid to Any Part of the U. S. Shipped C. O. D. when 25 per cent of price accompanies order.

### The Sensation of the Pacific Coast

You see them everywhere from British Columbia to the Mexican Boundary

Full Working Drawings of the Kane Antennae

Price \$1

(Stamps Not Accepted)

With Complete Instructions for Erecting

The Kane Antennae has linked the Atlantic and Pacific Coasts together by eliminating all power noises from broadcast reception.

**THE KANE ANTENNAE COMPANY, Aberdeen, Washington**

# Radio Digest

PROGRAMS  
Illustrated

Published by the Radio Digest Publishing Company, Inc.  
510 North Dearborn Street  
Chicago, Illinois  
Telephones: State 4372, 4373, 4374, 4375.

E. C. RAYNER, Publisher

Eastern Office, Park Lexington Building, 247 Park Ave.  
New York. Telephones: Murray Hill 0106, 0107, 0108.

Member of the Audit Bureau of Circulations

241  
PUBLISHED WEEKLY

SUBSCRIPTION RATES  
Yearly in U. S. and Possessions and Canada, \$5.00  
Foreign postage, \$1.00 additional. Single copies, 10 cents.

Vol. XII Saturday, March 28, 1925 No. 12

## New Use for Static

STATIC, universally condemned by Radio enthusiasts the world over, seems in a fair way to take the place as one of the blessings of humanity. Cursed since man became able to cast his voice through the ether as useless, worthless, mysterious and baffling static, experts believe, will ultimately tell us of the formation of storms even in the most distant places. Experiments looking to this end have been under way for some time and have met with an encouraging measure of success.

Amateur Radio operators have noticed that static and bad weather usually go together, although at times there is static when no bad weather is apparent. This static, some scientists now believe, was caused by a gathering storm in some distant and remote region of the earth.

While one set of scientists has been working to harness static for the benefit of mankind another has been working just as hard to eliminate it from Radio. Progress has been made in both directions, but experiments have not yet gone far enough to warrant a prediction as to the outcome. Both sets of experiments have the best wishes of the public and it is to be hoped that success will crown the efforts of those to whom the two tasks have been entrusted.

Static is a nuisance to the man listening in to a speech or a concert on the Radio, but to the mariner static telling of the approach of a storm long before it breaks will prove a blessing almost as great as the Radio.

## Correcting Speech

RADIO is destined to have a wholesome effect on our English language. Its advent into this field is quite timely, for many forces have been contributing to the degeneracy of our mother's tongue. The various sports have developed their own peculiar nomenclature; in the rush of business the dollar is placed above diction; and the increasing gregarious habits of expression.

Even the educated classes have shown a growing indifference to the generally recognized standard of speech, so that the use of good English scarcely is listed among the marks of education. Radio places a premium on accuracy in grammatical form, as well as in the choice and enunciation of words.

The man who broadcasts an address knows that his invisible audience will give more attention to the language of their invisible speaker than if he were speaking to them directly. He will take more pains to articulate every word in order to make himself understood. In speaking from a platform to an assembled audience, the speaker's personality will counteract many defects of his speech. He might scramble his English, slur letters and syllables, descend to stereotyped phrases and even slang, and make it all pass muster because he is there himself. It is quite different when he is heard and not seen, and no one is more conscious of that than the speaker. The ears of those who hear are greeted by a message that not only represents his best thought, but that is couched in correct language—"words fitly spoken" and properly joined together.

## Experimentation Needed

WE do not realize what it takes to make a change in a science or invention, for new things in kindred lines may develop at a time when they are most needed or when inventors or experimenters are at a loss to go farther in their investigations. For example, it is said that Edison discovered a way to record voice sound by experimenting with the telephone. A mere scratch of a diaphragm needle on a soft material at the time was again run through the scratch and sound was reproduced. This led to further experiments and was the starting point of the phonograph, an entirely new device from which the experiment was intended.

We talk about pictures Radioed, even the motion picture, and various other things that Radio is expected to do, but if developed to perfection it will be something different from what the great minds are thinking today. Perhaps something in the motion picture itself will be developed that can be used to Radio these pictures.

## RADIO INDI-GEST

### Walla Walla Expedition Arrives!



WALLA WALLA.—(Special via Radio)—The expedition headed by Indi Hissel and Capt. Oneoar aboard the good ship "Kanoofs" arrived at this port today.

The adventurers were greeted by a fleet of war canoes while three miles out at sea. Upon approaching, they were identified as belonging to the tribe residing on this island.

When they recognized Indi, a shout went up from the first canoe, and was quickly followed by outbursts of cheering while the ship was maneuvering to get into the lagoon.

The old aerial which was erected two years ago, still stands between the two tallest palms on the island. This aerial was erected by the famous aerial erectors of Station BLAH; Ike and Mike. They were seen scurrying into the jungle when the Kanoofs arrived.

A general overhauling of equipment will take place immediately, and the station will begin operating sometime in the near future. A big war dance is scheduled for the opening night of the station, and this will be broadcast. According to statistics, this will be the first time in history that such a dance has ever been broadcast. First in that such a dance has ever been broadcast. Next week we will begin a description of the history and geographical contours of the island. Indi will have as a collaborator on this series, Shaka Little, the chief's daughter, who knows all that there is to know about the island. We will try to take a picture of Shaka, so that you can see how fortunate Indi is to have this help.

## Those Super Radio Blues

Now Bill Jones bought a Radio,  
It sure was simply fine.  
A nifty set, a Super Get,  
It got them every time.  
It sure was working lovely  
But Bill's a sorta rube,  
He switched his batteries around  
And blew out every tube.  
Now he sits among the ruins  
And tears drop on his shoes;  
I hear him sing like everything  
These sad and mournful blues.

Oh I've got those super Radio blues.  
The world is off the air.  
I cry and shout and jump about  
And even tear my hair.  
But I shall mourn no longer  
The world will soon be mine.  
I'll buy a super-jo-dine,  
Inject it full of iodine  
And I'll hear London  
Almost every night.

FRANK L. METTLER.

## Criminals' New Terror

Risks of bad men now remind us  
We should shun a life of crime,  
Lest we, scooting, leave behind us  
Thumb prints that may lead to "time."

Finger prints by which another  
In Saskatchewan or Maine,  
Codes to get us in a bother  
In the Hebrides or Spain.

Trust no fortune evanescent  
Lest it making fatal proves,  
If you're bound to snatch a present,  
First purloin a pair of gloves.

Thus wrote a London newspaper poet on hearing the news that Detective-superintendent Collins, chief of the Central Finger Print Bureau at Scotland Yard and the world's greatest finger print expert, has furnished police chiefs all over the world with the key to a new telegraphic code perfected by him. Records of persons under suspicion may be obtained by Radio broadcasting their finger prints.

A. C. B.

## Truth Is Stranger Than Fiction

Dear Indi—Two old gents, than Radtophans, were loudly discussing their favorite hobby on a train journey from London to Liverpool the other day. Then an inoffensive looking person entered and was dragged into the conversation. The two fans seemed flabbergasted when he confessed he did not possess a set.

"Gosh!" exclaimed one, "who are you, anyway? What's your name?"

"Guglielmo Marconi," replied the man who wasn't a fan!

LONDON LIZZIE

## Sing, "I Wonder What's Become of Sally"

Indi—The other night, being disappointed in a date with my sweetie, I turned to the Radio for consolation and this is what I got:

"If It Wasn't for You I Wouldn't Be Sad Tonight,"  
"All Alone," "Honest and Truly," "It Had to Be You,"  
"Johnny My Boy."

Now I want to know what to do in a case of that kind?

M. G. FISHER

## Caught While Listening In



SEN. DUPLY, FRENCH PUBLISHER,  
SEES ADVANTAGES IN RADIO.

DR. FOURNIER D'ALBE  
PREDICTS INDIVIDUAL  
AIR PHONES; RADIO TELESCOPES  
IN ONE THOUSAND YEARS, WELL  
POSSIBLY THE FRENCH WILL BE ABLE  
TO

F. JENKINS,  
INVENTOR,  
PROMISES  
RADIO  
MOVIES.

CLIP 0325

## Condensed

By DIELECTRIC

It is pretty hard to find anything really unusual no matter where you set the dials, though at times parts of a program will differ from the ordinary run of features. We found this to be the case when WBAP, Fort Worth, Texas, was tuned in with a program arranged by the Artist's Colony. Even identic features seem different at times.

Few who listened to the cello playing of Miss Wessner at KDKA, Pittsburgh, would fail to appreciate the quality of her work. Certainly, the quartet of women voices which appeared on the same program deserved praise from their unseen audience. Generally speaking, this "pioneer" station presents concerts the equal of any.

If you are affiliated with that admirable organization the Rotary club, then you must have been listening to WEAR, Cleveland, as members of the club from Youngstown entertained with a minstrel program. Assuming some of the words of greeting to have come from a few of you readers, pass the word along so others will be ready for the next such Radiocast. Several organizations have Radio evenings.

Possibly this won't be of interest to those contented dwellers along the Pacific coast, but some of the finest musical concerts are radiating from the comparatively new station, WPG, "World's Play Ground," Atlantic City, N. J. Whenever the Traymore ensemble plays (which is often) you are assured a high-class performance. See if you agree with me.

And now for another bouquet! This one goes to the announcer at WCCO, Minneapolis. Complaints still come from discouraged fans all over the country against those stations failing to announce their call except at lengthy intervals. WCCO snatches a few moments between dance numbers to tell you to whom you are listening. Come on and get in line!

A very enjoyable evening was spent with KSD, at St. Louis, and left a taste for more. First came the songs by the St. Louis University Glee club. They were, most of them, well sung and represented careful choosing. Then we were pleased with an orchestral concert that left little to criticize adversely. One of the good entertainments.

What a sedate (?) gathering they have at WTAS, Elgin, Ill., after a certain hour in the evening. Not having been present on the evening in mind it is impossible to say how general was the indulgence in "Pep," but the announcer had filed up on it. "Kellogg's Pep" also influenced Fred Hamm and his musicians, especially the horns.

My set (wish I could tell you what it is) thrilled with the knowledge that it was one of millions first to receive the inaugural ceremony attendant upon the swearing into office of the Chief Magistrate of the United States. "Mac" surely felt the significance of the occasion and none could have better handled this important Radiocasting than the popular announcer at WEAF. What an epochal event in Radio.

WBCN, Chicago, needs no excuses for offering the music from the Midway orchestra to its listeners, for the dance numbers rendered were given with pep (not borrowed from the north country) and covered a large part of the modern repertoire.



# Four Filter Eight Tube Super-Heterodyne

## Part IV—Filter Connections and Front Panel Assembly

By Jacques Fournier

IN PART II of this series the construction of the filter transformers was gone into thoroughly and in Part III the layout and drilling of the filter cover was discussed. The filters now stand assembled, but unwired. In figure 12 we have a new picture of the filter box cover with the dimensions left off and the holes designated for reference. The four holes designated as TC are for the very small condensers used to tune the secondaries, while the holes labeled X are for the ends of the rods on which the transformers are mounted. The three transformers which were constructed with the primary and secondary separated by a 1/4-inch disc are to be mounted beneath holes X1, X2 and X3. The transformer in which the primary was separated by four of the 3/4-inch discs is to be mounted beneath hole X4.

As was stated in Part II, the starting or inside end of the primary is to be the B plus lead, so these inner ends can be connected to the four binding posts labeled B plus as shown in figure 12. The end which finishes the winding in the second primary slot on each transformer is to be the plate connection so these four ends can be connected to the terminals marked P1, P2, P3 and P4. The ends of the secondary windings must each go to two points. The starting or inside end of the secondary winding, which is in the slot nearest the primary on each transformer, is to be connected to the rotor plates of the corresponding condenser and also to the F terminal provided for each transformer. Thus, the starting end of the secondary of transformer X1 connects to the rotor plates of condenser TC1 and is also connected to the terminal marked F1. The finish connects to stator plates and G1. This procedure should be followed for the secondaries of transformers X2, X3 and X4. Great care should be taken with these connections as the wire used is rather fine, and as this box is to be sealed it will not be convenient to get inside of it again to correct errors made at this point.

Sealing Against Moisture. Assuming that this work has been done, we are now ready to take measures that

will prevent moisture from lowering the efficiency of the filters. The reader has his choice of three methods of doing this. The writer used beeswax to seal the edges where the bakelite cover rests on the copper flanges. Beeswax can be obtained at any drug store and should be warmed to the consistency of a thick paste. While this is being done the copper box, and the cover with the coils attached and wired, are to be set on a radiator or near the stove to get warm and dry. The beeswax is then smeared on the 1/4-inch flange all the way around and the cover is slipped over the sixteen machine screws projecting upward through the flange and pressed down onto the beeswax. The nuts are then tightened down on the sixteen screws while the beeswax is still warm. When this has been done and the beeswax has started to cool, close examination will reveal any places where an airtight seal has not been made. A small piece of beeswax can be placed over this spot and warmed with a soldering iron so that it will flow into the opening and complete the seal.

The second method would be to warm the box and apparatus as described, tightening the cover down to the copper box and melting sealing wax into the crack between cover and box. Here again, a soldering iron will be found of use when small holes are to be filled.

The third method does not involve sealing the box. The filter transformers are to be warm and dry and then Radio cement, of which there are several kinds on the market, is to be painted with a small brush over the cardboard and wire. If sufficient cement is available and a glass jar of sufficient diameter is also at hand, each coil may be dipped into this cement, which will give an even coating over the entire unit. The object of any one of these methods is, of course, to prevent moisture getting into the windings and being absorbed by the cardboard.

Having completed the construction of the filter we are now ready to take up the assembly of the front panel. The layout of the front panel is shown in figure 13. It will be noted that the condenser shaft holes are slightly above center as regards the height of the panel. This is to insure clearance of condensers from sub shelf no matter what condensers are used.

With the first article and figure 1 before him, the reader should have no difficulty in identifying the various holes shown in figure 13. Only one hole will not be clear and that is the hole just above the second jack from the left. This hole is for the shaft of a midget condenser of .00045 mfd. capacity which is condenser C2 in the wiring diagram and which controls

regeneration in either the loop antenna or the secondary L2. This was the fifth item of the list of parts. Figure 13 is to be enlarged to full size, and the individual drilling templates which accompany variable condensers, potentiometers and rheostats, pasted on it. The shaft hole of each template is to be centered on the proper hole shown in figure 13.

As was stated earlier in the series, the antenna coupler is that described by the writer in the issue of November 22, 1924, with one rotor omitted. The knob at the left above and between the two jacks is that on the shaft of the rotor primary of this coupler. The coupler is set vertically with the rotor at the bottom. The sub-panel is shown in dotted lines to be 1 1/2 inches from the bottom and bracket holes have not been shown in figure 13, since all brackets vary. The holes will come below the shaft holes of the variable condensers and the screw beads will thus be covered by the condenser dials. The only screw heads which show on this panel are those of the upper mounting screw for the antenna coupler, the screws which hold the rheostat in place, and the two screws at each end which hold the panel. The position of these holes will be determined by the width of the rabbet which is provided for mounting. Some cabinets, of course, are not rabbeted, but slots are provided at the ends of the cabinet into which the panel is slipped.

### Two Audio Stages

In Part III a slightly altered wiring diagram was promised in connection with the audio frequency amplification for use with 199 tubes. This is shown in figure 14, and it will be found that this diagram can be pasted to figure 2 so that the filament wires and B plus wires coincide above and below the second detector tube. Transformer T7 may have a ratio of 3 1/2 to 1, 4 to 1, or 5 to 1, and should be well shielded. Transformer T8 should preferably be 2 to 1, but may be 3 1/2 to 1 if the first transformer is also of that ratio. These transformers take the place of the push pull transformers and may be placed on the baseboard in the positions (Continued on page 18)

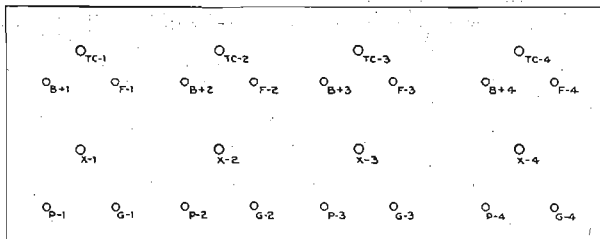
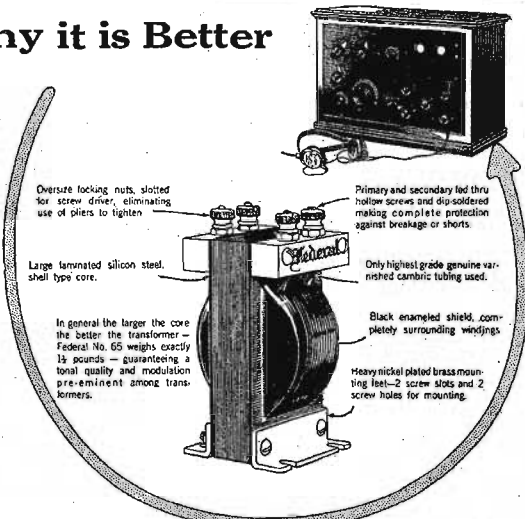


Figure 12

## Why it is Better



"MASTER of Every Note in the Orchestral Range" is the proven claim of the Federal No. 65 Audio Frequency Transformer! Volume without distortion is the basis for the beauty of Federal Tone.

From its oversize locking nuts to its heavy brass mounting feet the Federal No. 65 Transformer incorporates the

same engineering skill that has made Federal the recognized leader in electrical communication apparatus since 1890.

Insist upon Federal parts for your "pet" hook-up. There are over 130 standard parts bearing the Federal iron-clad performance guarantee.

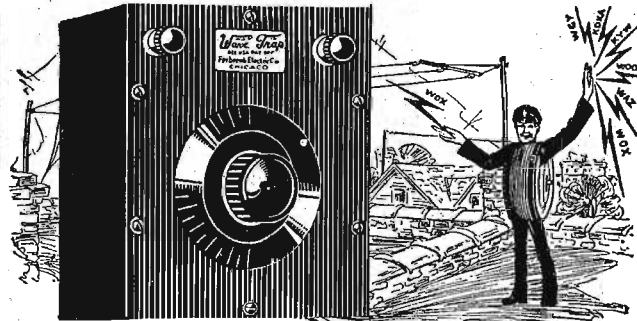
FEDERAL TELEPHONE MANUFACTURING CORP.  
Buffalo, N. Y.



**Federal**  
Standard RADIO Products

Boston  
New York  
Philadelphia  
Pittsburgh

Chicago  
San Francisco  
Bridgeport  
Canada



## "The Traffic Cop of the Air"

"KYW—stop! Enter not into the realm of Music and Fancies! Know ye not that WOX has the stage? Thou shalt not enter to interfere!"

... 'Tis the far-famed Traffic Cop speaking—and his word is law. The Ferbend Wave Trap is respected and the interfering station pleasantly bows out.

You, too, can make your set selective—separate the interfering station, by simply putting the Traffic Cop on guard.

The Ferbend Wave Trap will tune out interfering local stations, no matter how troublesome. Never reduces, but nearly always increases volume. By the addition of a new, improved circuit, the Ferbend Wave Trap now gives you several new hook-ups, and at the same time can be used to convert a single circuit regenerative set into a three-circuit regenerative receiver thereby practically eliminating all radiation from the set.

Designed and manufactured complete by us after years of careful experimenting. It is not to be confused with imitations, hastily assembled from ordinary parts. The price is \$35.00. Shipment is made Parcel Post C.O.D., plus a few cents postage. If you prefer, you can send cash in full with order, and we will ship postage prepaid. Clip and mail the COUPON today!

FERBEND ELECTRIC COMPANY  
17 E. South Water Street Chicago, Illinois



East Pittsburgh, Pa.  
December 31, 1924  
Ferbend Electric Co.  
Gentlemen: I live less than two miles from the antenna of KOKA, the powerful listening house station (1000 watts) at present, and while they were on I could get absolutely no other stations—even other locals a few miles away. You can imagine my amazement last night when I received Ferbend out to receive WOC, Davenport, Wis., Springfield, (only 11 miles from KOKA) and St. Louis, WYAN, Cleveland, WEAF, N.Y. City, WAT, N.Y. City, WAAV, Columbus, and eight or nine others without so much as a whisper from KOKA which was broadcasting full power. Very truly yours,  
Cliff HARBERT

FERBEND ELECTRIC CO., 17 E. So. Water St., Chicago, Ill.  
C. address: Please send me  
 WAVE TRAP. Send postpaid. I enclose check, M. O. or P. M. P. O. order.  
 WAVE TRAP. Send C. O. D. I will pay postman \$35.00, plus a few cents postage, who will return to me.  
 FREE BROOKLET on Interference.  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**DRILLING TEMPLATE FOR SUPER FRONT PANEL**

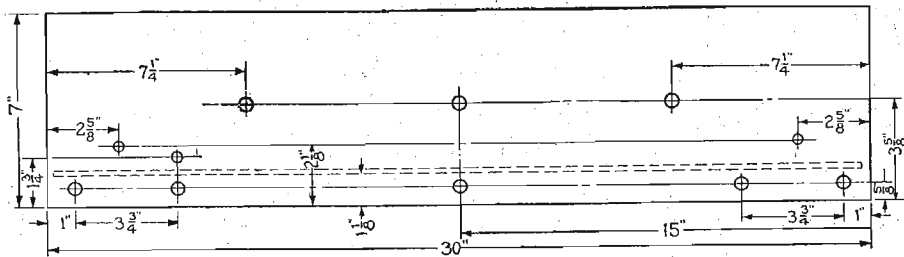


Figure 13

**FOUR FILTER SUPER**

(Continued from page 17)

shown for transformers. The writer now has a set using the UV 201-A tubes wired as shown in figure 2 and another using the 199's wired according to the combination of figure 2 and figure 14. The results in each case are practically the same;

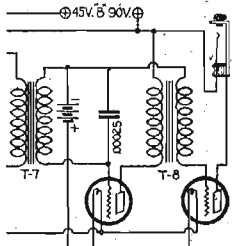


Figure 14

both local and distant stations are handled well. Reception of WEZ, WCAE, WFAF, WMC, WBAP and KOA is possible any night in the week in Chicago through the locals, while WFAA, WSB, WCAP and KFI are possible four nights out of seven. All tuning is done on the loud speaker and the writer does not even own a pair of head receivers. The writer's attention has been called

to an error which was made in the price of one pound of number 22 disc wire. This was listed at \$2.00, whereas it should have been about \$6.00. The writer has a large spool of this, and one pound was used in winding the filter transformers. In looking over old bills for materials the error occurred and the price of \$2.00 was given in Part I for this wire. The writer wishes that he could at this time also go into the wiring, but since all Radio Digest readers are not interested in the construction of sets, more space cannot be given in this issue to the construction of the four filter super. The wiring will therefore have to be another article, and printed next week.

(Now that the construction of all parts has been completed and the panel drilling diagrams have all been shown, Mr. Fourmier will show in next week's issue just how he has wired the set, so that the reader may lay his wires almost exactly as did Mr. Fourmier.—Editor's Note.)

**Do Not Change Set**

If your Radio set is a complete commercially built affair don't attempt to change it. The favorite occupation seems to be to try to add a C battery to such sets, and in many cases the outfit has been ruined and even tubes burned out. Don't take any chances with a set unless you know exactly what you are doing.

**The Reader's View**

**Not Innocent Offenders**

It is with great interest I note your comment in the readers' view column regarding "How to Stop Interferences." Obviously, Mr. Hazeltine did not go so far as to recommend a remedy, this I am sure he could not do, but right now is high time to put this matter up to some authority who can adjust it satisfactorily. We cannot consider them innocent offenders, not by any means. I dare say not one out of a hundred actually operate their regenerative sets without squealing. In fact, if they do know how, they will not do it. Innocent? No! They all know that their sets are howling out good programs for some other fellow, and in many instances where it is quite hard for some regenerative to get in, he simply sets his dials on the highest point of the carrier wave and lets it howl continually, thinking he will annoy the other fellow to such an extent that he must give up and let him in. Innocent? No! I should say not.

Why not publish a hook-up which can be built very cheaply, as a "howl eliminator"? Hook it somewhere between the set and aerial or ground. If this is found practical, force every regenerative owner to attach one to his set. This method I

am sure, would place Radio on the high pedestal where it belongs. I am sure the regenerative squeals are the greatest nuisance of today, even greater than static. We look forward to the super-power stations to break through static and give us good Radio reception for the entire year, and with the use of a good indoor loop, we certainly can enjoy Radio, but with the present bugaboo of regenerative squeals we must hang up with disgust.

We read further about money needed to police the air, probably this particular wording and money could be applied to the above case, rather than to try to keep broadcasting stations on a certain wave length. We certainly must admit that the broadcasting stations are doing their work nicely, and know of no reason why they are under such strict supervision. Certainly we did not have to build highways with digression for the Cadillac or Lincoln, or the millions of small cars called "Fords." They all found their place, with but very little congestion, and if the Radio traffic is congested today, it is because we haven't found a way to eliminate the regenerative squeal.

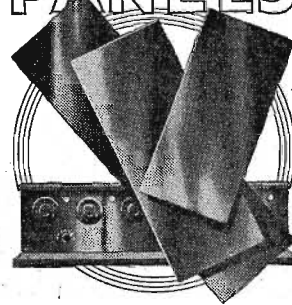
We also know that our greatest troubles in our transatlantic tests, were the squealers. It was not that Mexico City or California stations were permitted to transmit during that period. In no case did they interfere as one of them came in directly on the same wave length as of the European stations. Nevertheless, I feel rather proud of my transatlantic tests, which gave me from four to five foreign stations each night of the tests, with a super-heterodyne and loop aerial, and should it not have been for squealers, my reception would have been considered highly satisfactory.—A. J. Martin, Fond du Lac, Wisconsin.

To get more distance with a crystal set, use a tungsten lamp filament for a catwhisker. It is known that the sharper the point of a catwhisker the more sensitive the crystal becomes.

**The Panels That Produce Results**

A superior panel will increase the efficiency of your reception through reducing surface leakage. You can be certain of this if your set is built with—

**ELECTRASOTE PANELS**



These beautifully finished panels will neither warp nor change color. They are scientifically constructed to reduce surface leakage to a minimum, hence assure increased efficiency of the set.

One of the famous "sote" products introduced by The Pantasote Company, Inc., Electrasote Radio Panels are sold strictly on their merits—yet are

**Lower Priced than other standard panels**

Make your Set an "Electrasote Panel Set"—and get results! On Sale at good Radio Dealers. **M. M. FLERON & SON, Inc.** Sole Sales Agents Trenton - New Jersey

**The "Goode" Two-o-One**



Le Ton d'argent

Guaranteed

BY MAIL ONLY \$2.00

Postpaid

**QUARTER AMPERE AMPLIFIER-DETECTOR RADIO TUBE**

GUARANTEED SATISFACTORY

All "GOODE" Tubes Sold Direct to the Consumer—No Dealer Profits

ONE—"Goode" Detector-Amplifier..... \$2.00

THREE—"Goode" Detector-Amplifiers..... 5.50 (All postage prepaid)

The "Goode" Two-o-One A Tube amplifies or detects. It is a quarter ampere, 450 volts, standard base silvered tube. Send express or postal money order—New York draft—Personal check to—

**The Goode Tube Corporation** Owensboro (Dept. A) Kentucky

**No Sticking Contacts!**

**THE SILENT FRANCE MULTI-DUTY SUPER-CHARGER**

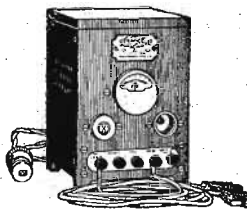
STICKING and sparking contacts are entirely eliminated in the France Supercharger by a new application of the well-known Push-Pull principle. No bulbs—no acids—this is truly a charger of superior merits.

Up to 120 volts of B battery can be charged in the series without fuss or trouble of wire changing. It also charges 2, 4 or 6 volt radio A- or automobile batteries at a 5 to 7 ampere rate, tapering as battery is charged.

Price of Supercharger, \$22.00. West of the Rockies, \$23.00. Canadian prices on request.

DEALERS AND JOBBERS Our sales and advertising plans will interest you. Write us today for complete details.

**The France Mfg. Company** 10321 Berea Road Cleveland, Ohio



**LEWIS KENNEDY**  
**Radiodyne**  
 THERMIODYNE  
 ULTRADYNE  
 MURDOCK  
 AZARKA  
 Pfanzstiel  
**MICHIGAN**  
 Deresnadyne  
 MALONE LEMON  
 MASTER RADIO  
**ROYAL**  
 Hoard  
**Pathe**  
**HARTMAN**  
**AUDIOLA**  
**EAGLE**  
**GLOBE AND**  
 MANY OTHERS

**They all use THORDARSON SUPER TRANSFORMERS Why don't you?**

Thordarsons run absolutely alike, absolutely uniform, always "match" perfectly; always amplify evenly over the entire musical scale. Satisfaction unconditionally guaranteed by the world's oldest and largest exclusive transformer makers (transformer specialists for 30 years). For the finest amplification obtainable at any cost, follow the lead of the leading set makers—build or replace with Thordarsons. Audio Frequency: 2-1, \$5, 34-1, \$4.6-1, \$4.50. Power Amplifying pair \$3. Interstate Power Amp. ea., \$2. Dealers everywhere. Hook-up bulletins free. Write THORDARSON ELECTRIC MFG. CO., CHICAGO.

# Broadcast Listener's Reference Library

## Part VIII—Suitable Antennas

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

ONE of the principal causes for dissatisfaction with Radio receivers, either manufactured or homemade lies in the antenna which is used. In general, it might be stated that the more sensitive a receiver the less antenna it requires. For example, a crystal receiver, while it has exceptional clarity, is not very sensitive and should have an outside wire from 100 to 200 feet long, while a super-heterodyne, which has the maximum sensitivity known, functions on a loop antenna that picks up only a very minute quantity of energy. It is on the sets between these extremes that the most trouble arises, as a compromise must be effected between volume and selectivity. The next set above a crystal receiver is the one tube three circuit regenerative and this receiver should be used with an outside wire from 80 to 120 feet in length. If a wire over 100 feet long is used there should be variable coupling between the primary and secondary of the three circuit tuner.

The next set up the scale is the two tube reflex on which a satisfactory aerial would be 50 to 90 feet long. There are two stages of R. F. amplification which are sufficiently sensitive to bring in signals over about the same range that the one tube regenerative did with the larger aerial. Such receivers as the superdyne and one stage R. F. or neutrodyne also should be used with an aerial of that size. The next step in sensitivity is found in the five tube tuned Radio frequency, and neutrodyne receivers and these will function well on either an outside aerial about 30 to 40 feet in length or on an inside aerial 30 to 50 feet in length, which may be run around the picture moulding or in the hall.

### Loop Receivers

A receiver of the untuned R. F. type in which iron core R. F. transformers are used is about the only set which, besides the super-heterodyne, may be used on a loop aerial. This may take the form of six tubes, the amplifiers of which are used for either pure Radio and straight audio frequency amplification, or may be a reflex or inverse duplex of three, four

and five tubes. Such sets can be used on a loop without difficulty, as the fields of the Radio frequency transformers are very small and do not couple into each other or feed back detrimentally into the loop. There are thousands of Radio set owners who are so located that they would like to be able to use their set without an outside antenna, and the question is frequently asked whether it is possible to obtain results with a loop. The answer can only be that sets other than the two types just mentioned are not sufficiently sensitive, as a loop aerial picks up only about 1/100 as much energy as the medium size outside antenna. This statement is not quite true with regard

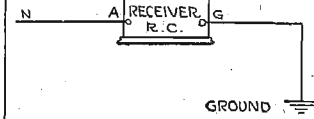


Figure 21

to tuned Radio frequency and neutrodyne sets, as they are sensitive enough to function on such an aerial, but it has been found impractical to operate them from a loop because of feedback from the air core transformers to the loop antenna, and oscillation cannot be controlled.

### Advantages of Loop

The loop antenna has two very distinct advantages over the outside aerial. The loop antenna has the property of receiving signals at maximum efficiency only when they come from a direction parallel to the plane of the loop and will pick up but very little energy when stations are at right angles to the plane of the loop. Thus, by turning the loop antenna, the user is frequently able to eliminate an interfering station because it is in a different direction from that in which a desired station is located. This, of course, cannot be done with an outside aerial and interfering stations must be

eliminated entirely in the receiver itself when an outside aerial is used.

The second advantage of a loop aerial is in the fact that it eliminates a great deal of interference produced by power lines and other receivers in the neighborhood. It also picks up far less static and good reception can usually be enjoyed on a receiver operating from a loop even while a severe storm is directly overhead. The prevailing tendency to lower losses has been carried even to antenna wire and since it is known that Radio frequency currents travel on the surface of wire it was decided that the corroded surface of the average antenna was not a very good conductor. As a result, antenna wire is now available which is

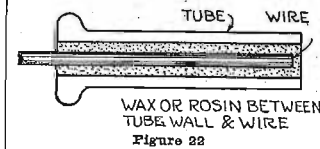


Figure 22

heavily enameled and which should prove the last word in low loss antenna material. This may seem to be carrying things to the extreme but it is only by reducing all losses, from the outermost tips of the antenna to the windings of the loud speaker, that great range, selectivity and clearness can be enjoyed.

### Underground Antennas

Very little has been told about the underground antenna systems employed by the United States government during the last world war. Very few broadcast listeners have ever heard of these systems. It is therefore very timely at this period of the year to bring them to the attention of the hundreds of thousands of listeners who will very soon be striving every night to pick up distant stations through what we all call "static."

The basic theory of the underground system makes it acceptable as the most favorable system for reception during the summer months. The theory is based on

the signal-static ratio and it has been proven to give the greatest ratio between signal and static, favorable to the former, of any known antenna system employed so far. This means, that in comparison with an overhead antenna system, the underground system will receive very nearly the same signal strength but very little static, the ratio being approximately 10 to 1 in favor of the underground system. This, of course, depends on the kind of soil the wires are buried in, the size of the wire used, as well as the insulating qualities of the wire. The length of the wire also plays an important part.

### One Practical System

It has been found (by the author) that one buried wire can be used for reception of all the powerful broadcast stations in this country as well as Cuba, Mexico and Canada. One wire is connected as shown in figure 21. Here an ordinary receiving set, a single-circuit three-tube, is shown with the underground wire connected to the antenna post and the usual water-works ground connection to the ground post. A system of this kind is non-directional. This was proven by the author because his home is so situated that it was only possible to run the wire in an east-west direction, and northern stations came in with the same volume that the eastern or western stations did.

The wire used in this installation was nothing more than the ordinary number 14 rubber covered wire which is used for wiring residences. The end of the wire was prepared as shown in figure 22 where a cross section of the tube is shown. It was buried but 1 foot under the soil in the lawn and one end was run into the Radio room. A very important point to remember is that whenever the wire leading from the buried wire to the Radio room is exposed, lead covered wire should be used for the lead-in and the lead casing of the wire should be grounded to the water works or a pipe driven into the ground.

### Shielding the Lead-in

If the lead-in is not properly shielded in the manner described above, it is possible (Continued on page 20)

### Apex Super 5

This highly efficient tuned radio frequency receiver is the most advanced in design and construction. It is an instrument that meets every critical expectation of the seasoned radio enthusiast.

**Buy the Apex Super 5.** You will have a radio receiver that brings in distant stations clear and distinct. Select the station you desire in your log book, turn the marvelous Apex Vernier Dial to that number, and there you are—perfect reception. No greater selectivity can be had than is easily obtained with the Apex Super Five.

Housed in a highly finished walnut cabinet, complete with Jones Multi-Plug Battery Cable. All settings highly gold plated. Sells for \$95 complete excepting accessories.

**At All Good Dealers**  
Apex Elec. Mfg. Co.  
1410 W. 59th St.  
Dept. 305-A  
Chicago

on the dot

### CROSLLEY TRIRDYNS

Special \$60  
Formerly \$75

Special \$50  
Formerly \$65

Three Tubes Do the work of Five Six Inside Trirdyn

THE recognized outstanding achievement in radio is the Crosley Trirdyn. An overburdening amount of evidence proves that it is excelled by none and superior to most receivers costing many times more. It is a three tube radio combining one stage of tuned radio frequency, regenerative detector and reflex amplification. This combination enables three tubes to do the work of five or six. Brings in every large station in the country on the loud speaker. Is very selective, easy to tune and economical to operate. The straight front Trirdyn Regular, formerly \$65; now \$50. The Trirdyn Special in inlaid cabinet houses dry cell batteries formerly \$75; now \$50. To these have been added the new Trirdyn Regular with slanting panel at \$55 and the new Trirdyn Special in a beautiful cabinet with slanting panel at \$65. Demand a Crosley Trirdyn at any good dealer. All Crosley radios are licensed under Armstrong Regenerative U. S. Patent 1,113,149. Prices quoted are without accessories.

Prices West of Rockies—Add 10%  
Write for Complete Catalog

**The Crosley Radio Corporation**  
Powel Crosley, Jr., President  
3494 Sassafras St. Cincinnati, Ohio  
Crosley owns and operates Broadcasting Station WLW

## The Maker's Name-- A Public Promise

"BRISTOL" on the new Bristol's Loud Speakers indicates established responsibility and safeguards the buyer who knows the name.

Technical engineers know that for 36 years The Bristol Company has made for the great plants of America, highly accurate and sensitive Recording Instruments, and that they are fully qualified to make loud speakers of great excellence. They know that Bristol experience, scientific knowledge and honest purpose, must be this loud speaker's full inheritance.

Cabinet Model, \$30.00

Model "S" Audiophone \$25.00  
Horn 14 1/2" diameter. Velox mat finish of bronze and gold. Classic base.

There are five loud speakers, but all alike in those essentials, which give true quality to the reproduction of voice or instrumental music. The "Voice" is not a mere phone unit, but an electromagnetic device, and the horns of non-metallic material with long sound chambers allow free and full vibration. Prices \$12.50 to \$30.00. If not at your dealer's, send for Bulletin AY-3022.

## BRISTOL AUDIOPHONE Loud Speaker

The BRISTOL COMPANY, Waterbury, Conn.

### SIMPLE FORM OF WIRE TELEPHONY

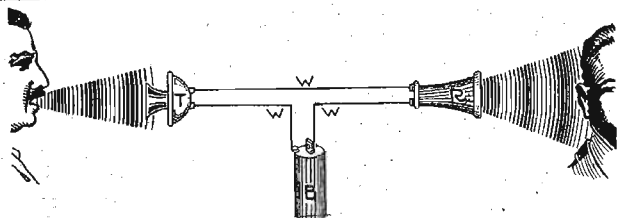


Figure 3

### A. B. C. RADIO COURSE

(Continued from page 15)  
the number of complete cycles of vibration per second. For example, a piano string that is making 256 complete vibrations per second will produce a sound whose fundamental wave has a frequency of 256 or 256 cycles. The above frequency of vibration corresponds to middle C on the piano. Very low frequency sounds, such as 20 complete vibrations per second or 20 cycles, are not audible. Also high frequency sounds, such as those above perhaps 10,000 cycles per second, are not audible. All sounds whose frequencies are below 10,000 cycles per second are arbitrarily called audio frequency sounds because they can be heard by the average individual. All sounds whose frequencies are above 10,000 cycles per second are arbitrarily called Radio frequency sounds because they are above the range of the average human ear. The production of Radio frequency waves will be discussed in detail in a later chapter. It will be clearly understood that this division of sound into audio and Radio frequencies is merely relative and there is no exact dividing frequency.

#### Speed of Sound Wave

It has been previously stated that sound travels at the rate of about one-fifth mile per second or approximately 1000 feet per second. Each fundamental wave of the sound will advance in the direction in which the sound is traveling a distance of approximately 1000 feet each second. Now if the fundamental wave of the sound has a frequency of 20 cycles per second, there will be 20 of these sound waves stretched over a distance of approximately 1000 feet and each cycle of the wave will be one-twentieth of 1,000 feet in length or approximately 50 feet. The wave length of a sound diminishes as the frequency increases. Thus for a 10,000 cycle fundamental wave the wave length would be approximately 100 feet. A simple demonstration of the relation between frequency and wave length is for one to observe the

ripples or waves produced in a rope with one end fastened and the other held in the hand and moved to-and-fro. The slower the hand moves the longer the wave lengths in the rope and the faster the hand moves the shorter the wave lengths in the rope.

The sound waves sent out from a vibrating body spread out in all directions and they are not directed to any particular point unless a megaphone or similar device is used. These sound waves are in reality broadcast and will reach everyone within the range of the vibrating body. The expanding sound waves become weaker as the distance between the source of the sound and the ear of the listener is increased and finally the wave becomes so feeble that it is impossible to detect it. Distance is not the only cause which may limit the distance between speaker and listener as other persons may be speaking in the same neighborhood or other sounds may be present such as the noise of the wind, street car, etc., all of which will cause interference with the efficient transmission of the original sound.

#### Audio Telephony

The ordinary process of one person talking to another through the air by means of sound waves is called "Audio Telephony." In this case there is energy delivered to the air by the speaker and a part of this energy reaches the ear drum of the listener, if the distance is not too great and there is not too much interference, and causes the ear drum to vibrate which acts upon the auditory nerves and produces the sensation of hearing. The

energy is transmitted by means of the air, and a very large percentage of the total energy given out by the source of the sound never reaches an ear drum.

Wire telephony enables two individuals to converse over greater distances than it is possible to talk over by audio telephony. In the case of the wire telephony the sound itself does not travel over the wires, but an electric current is the means by which the sound is produced at the receiving end of the circuit. A very simple form of wire telephony is shown in figure 3. In this case an electric current is produced by means of the dry cell in the circuit composed of the transmitter T, the connecting wires W, and the telephone receiver R. Under normal conditions, there will be a steady current produced in the circuit, but if the air is caused to vibrate in front of the diaphragm of the transmitter there will be a change in the electrical resistance of the transmitter which will cause variations in the value of the current in the circuit. These variations in the value of the current will follow the sound waves acting on the diaphragm. At the receiving end a diaphragm is made to vibrate under the action of a magnet whose strength is changed by a change in the value of the current through a winding about this magnet. The vibration of the diaphragm of the receiver will cause the air near it to be set in motion and sound waves will be transmitted through the air to the ear drum of the listener.

In the case of "Radio Telephony" the energy of the transmitter is carried to the receiver through the air and not by wire. The sound waves are transformed into an entirely different kind of a wave at the transmitting or sending station and these waves are converted back into sound waves at the receiving station. Special equipment is required at both the transmitting and receiving stations. This method will be discussed in detail later.

(A knowledge of the fundamental principles of the electrical circuit is essential to a clear understanding of the operation of the Radio telephone and these fundamental principles will be presented in the next chapters.—Editor's Note.)

### REFERENCE LIBRARY

(Continued from page 19)  
sible (whenever the lead-in is long) for the lead-in to pick up considerable static.

This is especially true when a very sensitive receiver is employed. Absolute shielding of the system is essential. This lead-in should be made as short as possible. The average broadcast station portion of the antenna should be buried, even though it is not buried at the same depth as the remainder of the wire. The lead-in can be covered by an average of 6 inches of dirt under the Radio shack to the point where it enters the room, thereby permitting of a very short lead to the receiving installation.

Results may be obtained on shorter wires than the one prescribed and used by the author. However, exhaustive tests conducted proved beyond a doubt that, for moist soil, a wire 75 feet in length is best for broadcast reception.

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

### Improved Copper Ribbon Aerial

While the copper ribbon has given great satisfaction, it has one very serious fault that has caused many fans to abandon its use entirely, namely—the wide flat surface catches too much wind and causes it to break.

I have four aerials in use, and under certain conditions, with certain sets, and especially the crystal set, I prefer the



REBBIION AERIAL WIRE

ribbon, and have solved the breaking problem.

The ribbon should be punched every two feet, then a signal corps, seven strand tinned copper aerial wire is run through these holes and soldered at the points between the holes. This does away with the breaking and adds to its efficiency.—W. H. Steele, Hastings, Neb.

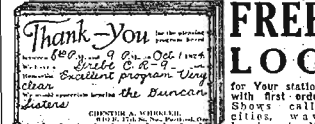
### Hear What YOU Like

#### SEND NO MONEY

Stations are glad to put on numbers at your request. We print special postal "Thank You" cards that get ATTENTION. All the RAGE. Good grade cards. Quality printing. Satisfaction guaranteed. You'll be delighted.

#### Applaud YOUR Favorites

Send stations and talent which entertain you. They appreciate applause. They deserve it. Help bring the best talent to radio. Send postal appreciation cards. Try to save. Save Time, Stationery, Telegrams and Postage Cards have post card backs. Require only 1¢ stamp. Cut it out in 2 minutes. Less time, less postage than a letter. So easy to send. So convenient. Order TODAY.



#### FREE LOG

for Your stations with first order. Shows call letters, wave length, etc.

YOUR OWN Name and Address printed FREE on each card. The individual, 100 only \$1.85; 200—\$1.95; 300—\$2.45; 500—\$3.45. Don't send one cent. Pay postman after cards arrive. If you prefer to pay your order, we are happy to oblige. Money RETURNED. DELIVERED TO YOU by printer. Order today—NOW. Postal will do. RADIO PRINTERS, Dept. 5413, MENDOTA, ILL.

Your Set Is Only As Good As Your Batteries!

**EUREKA BATTERY**

LONG LIFE

NOISELESS

Distributors Wanted

**EUREKA BATTERY CO., Inc.**  
101 Wooster St. New York City

**RADIO Storage "B" Battery**

32 Cells  
Lasts Indefinitely—Pays for Itself

WORLD BATTERY COMPANY

1219 So. Wabash Ave., Dept. 76, Chicago, Ill.

**World FOR RADIO STORAGE BATTERIES**

WORLD BATTERY COMPANY

1219 So. Wabash Ave., Dept. 76, Chicago, Ill.

**MAJOR SPEAKER**

Now Only \$5.75

Special Offer

GUARANTEE for the year.

SEND NO MONEY.

THE MAJOR SPEAKER CO.

32 Euclid Arcade Annex, Cleveland, Ohio

**MECO Announces**

Something NEW In Radio Receiving Sets

See This Paper Next Week

The Whole Story of GOOD Radio Reception

**MECO RADIO TUBES**

Send in Your Paralyzed Tubes to be Restored to Health in Our Laboratory

98% of your worn-out tubes can be put in first class condition.

It Costs You Only \$1.00

MAIL IN YOUR TUBES TO US FOR PROMPT RETURN, Parcel Post, C. O. D.

**A. O'CONNOR & COMPANY**  
9706 Euclid Ave. Cleveland, Ohio

**Our Discounts Talk!**

R. C. A. Crosley, Eric, Acme, Kellogg, Bradley, General Radio, B-T, Meico, Patent, DuBilier and other lines.

Write for it now, and note our prices

**FUETTERER RADIO SUPPLY CO.**  
2121 LOCUST ST. ST. LOUIS, MO.

# Experimental Static Drain System

## Removing Air Noises in Grounded Inductances

The system illustrated has been used on all types of receivers. When used on a regenerative receiver three steps of audio frequency amplification should be

### WORKSHOP KINKS EARN A DOLLAR—

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

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

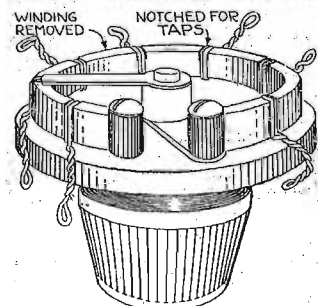
used, the extra tube making up for the loss of signal strength. It works best with a good super-heterodyne, although a good twin variometer receiver has given good results on DX. With a good super music can be brought in clear all summer from DX stations.

The principle involved is very similar to that of the Cohen drain coil and Rogers underground aerial, shock excitation being damped out. This system is the most convenient to make and operate of the three. Not less than three or more than six coils should be used in series as shown.

This system was originally designed to bring in baseball returns from Dallas, Texas, on a regenerative receiver. Where used with such a receiver the aerial should be as high as possible.—Jack Rogers, Eldorado, Ark.

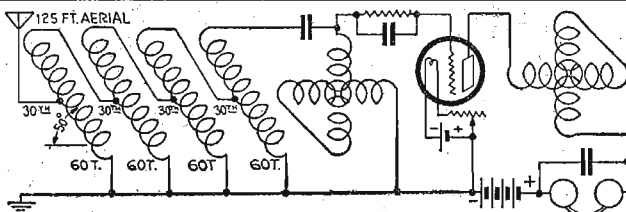
### Switch for Coil Taps

In making a crystal set I needed a switch for the taps on the coil. I had an old rheostat with the resistance wire broken and I removed the wire and cut



notches in the band that formerly held the wire. A lead from each coil was wound in the notches so that the wire

## FOUR COILS PLACED BEFORE SET

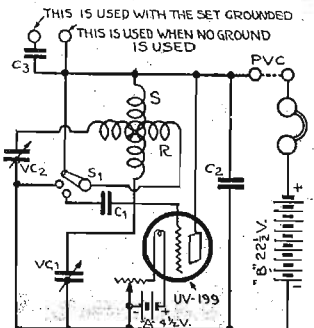


would be even with the top of the band. This gave contact with each tap when the arm passed over them. The illustration clearly shows the construction.—Leonard Childs, Speed, Mo.

### An Old Circuit

The circuit shown in the illustration is one that I have used and one that gives me the volume of a three tube set. If a set is built on these principles and wired right it will give satisfaction.

When buying a tube socket for this set



C1 is a .00025 mfd. fixed condenser, C2 is a .001 fixed condenser, C3 is a .002 mfd. fixed condenser, VC1 is a .0005 variable condenser, R is rotor of a split variometer and S is the stator, S1 is the switch lever assembly. PVC represents plate variometer location, but this is unnecessary, although its application helps in tuning and selectivity of the set.

be sure to get a good one of the low loss kind. The leak is connected across the negative A and the grid on the socket.

I use a 139 tube, which is not very critical as to filament adjustment or plate voltage. The split variometer is made as follows: The stator winding has 60 turns of number 24 dec. wire wound on a tube 4 inches in diameter and 5 inches long. The rotor has 60 turns of number 24 dec. wire wound on a wood form that

is 3 1/2 inches in diameter. The rotor is mounted in the exact center of the field of induction inside of the stator.

The panel should be shielded to prevent body capacity effects.—Harold Miller, Newark, Ohio.

### Regular Attention Needed

A factor of the ideal Radio set is reliability. Ruggedly designed elements prevent breakdown from ordinary use and wear. Careful maintenance assures constant supply of filament current and plate potential. The owner of a multi-tube set should provide himself with one or two spare tubes so that he is not placed in the unfortunate position of having the set out of commission due to tube breakdown just as the program which he is most anxious to hear comes along.

Double assurance of reliability is secured by a monthly inspection of the antenna, examination of all connections, testing of all batteries and a complete dusting and cleaning of the set.

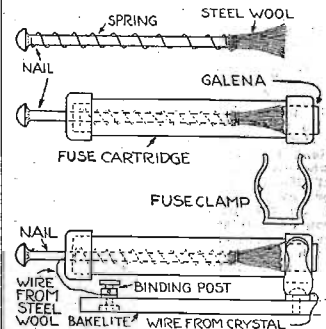
Design, which assures selectivity and simplicity of adjustment, depends upon a good selection of apparatus and the amount of the investment made, but neat installation and reliability are possible only if care is taken in the operation of the set.

### An Excellent Ground

Take an ordinary dry cell that has been used up. Connect ground wire to positive and negative. Take paper covering off and bury it in ground. It stays wet all the time and is good for fully a year. It can be renewed as often as necessary which is not often. I have found this a better ground than a pipe or similar appliance.—V. C. Lagwell, Talladega, Ala.

## Multiple Catwhisker in Cartridge for Crystals

Procure an old cartridge fuse and remove the ends. A finishing nail longer than the length of the fuse is fitted with a brush end made of steel wool. The nail is first run through one end of the fuse,



then a spiral compression spring placed on the body and the steel wool attached with fine wire wound around the wool and nail end. The crystal is fitted in the opposite cap end and all re-assembled. In operation the nail is pulled back and let down on the crystal by the spring.—W. Lancaster, Maisoneum, Canada.

Never connect an aerial to an electric light pole.

## STAR DETECTORS SATISFY



Dear Sirs: Received your detector O. K. It's all you say and then some. On smoke, crystal I received the following stations: WGL, WEAB, WEA, WBEA, WDKA, WOK and WTAM. Respectfully yours, A. W. Gale, Gloucester, N. Y., 9 Spring Street.

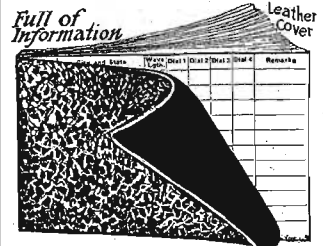
The above letter is typical of hundreds received during the past two years of our type G First Crystal Detector, which has been much improved this year and sells at \$1.00. Formerly \$1.25.

THE TYPE K STAR ADJUSTABLE DETECTOR is a very satisfactory crystal for Rebox and Crystal sets.

We make a complete line of crystals which includes every standard material and are in position to quote attractive prices on quantity orders. We can match the field on quality and price. Let us quote you this quality.

STAR CRYSTAL CO.  
14th Floor, 525 Woodward Ave. DETROIT, MICH.

## LOG for YOUR Radio



Full of Information  
Leather Cover

NEW 64 page log. This is the best log made and is chock full of VALUABLE information. Holds 400 stations. Shows calls (alphabetically), cities, wave lengths, 4 dial settings, remarks, etc. Stations by wave length Stations alphabetically by states and cities. VALUABLE TUNING SUGGESTIONS. Station owners, TROUBLE AIDS. Distance men. Other valuable information. So convenient. Get clearer programs. Eliminate your troubles. Worth many times small cost. With beautiful rippled cover. GENUINE De Luxe leather cover, only \$1.00. Order Now.

**MONEY REFUNDED if Not Delighted**

Don't send a cent. Pay postman after log arrives. If you pay with order we pay postage. You will enjoy this log. Just what you need. Order today—NOW. Postal will do. RADIO-PRINTERS, Dept. 7918, MENDOTA, ILL.

The Kit the Whole World's Been Waiting For



## FRESHMAN MASTERPIECE COMPLETE KNOCKDOWN SET \$39.50

Contains every single item necessary to build the Freshman Masterpiece five tube tuned radio frequency receiver.

A 24 page book of instructions, containing 7 full page illustrations and many smaller ones, explains every operation, step by step, in language that even the most inexperienced can easily understand.

At all good dealers

Chas. Freshman Co. Inc.  
Radio Receivers and Parts  
FRESHMAN BUILDING  
240-242 WEST 40TH ST.—NEW YORK, N.Y.



Two new stations yesterday—three today. Oh! how I like to reach new stations and put I over my neighbors.

Now I can make three more stations in my big beautiful LIBERTY BROADCASTING STAMP ALBUM and set down in the source provided under each stamp the time of reception, distance, dial reading and program—a most convenient and permanent record.

It's great fun watching the brilliant array of colorful stamps grow.

You too will enjoy keeping the LIBERTY BROADCASTING STAMP ALBUM as do thousands of other fans. It contains spaces for every station in the U. S. and the world. Also important data—logs, wave lengths, cities, times, etc. It is 8 1/2 inches, handsomely bound. Highest class of workmanship throughout.

600 beautifully engraved stamps in seven colors—each different—free with each Album. A gift royal to your boy or girl, yourself and family.

Introductory offer \$2.00, complete (actual value \$2.90). Money back if you are not more than pleased. (Reference: National Bank of the Republic, Chicago.)

Commonwealth Publishing Company  
508 So. Dearborn St. Chicago, Ill.  
Representatives Wanted Everywhere

**350**  
FOR A LIMITED TIME ONLY

**Rabat Senior Batteries**

You can purchase for \$3.50 a 24 cell 24 Rabat Senior battery saving 75c through direct purchase. The Jubber and Disher price over is \$4.25. 24 cell 24 volt size \$7.00.

**Rabat Junior Battery \$2.15 c. o. d.**

Unsurpassed in price and performance. Designed to satisfactorily operate any equipment with 1.5 volts or less. Constructed of the same high grade materials as used in our Senior Battery. Shipped dry, we checked. Order today and save 75c.

Rabat batteries can be recharged at home at a very low cost.

**Rabat Super-Charger \$3.00 c. o. d.**

It is specially designed to satisfactorily recharge any make of storage battery. Shipped complete ready to use, including lamp socket, attach same plus safe charge.

**SEND NO MONEY**

But with order, enclosing quantity and type wanted. After examining log and operators, these wonderful batteries then pay the Expresses and you are done.

The Rabat guarantee is back of all our products. DON'T WAIT ORDER TODAY and save the middleman's profit.

**THE RADIO RABAT COMPANY**  
1767  
616 Clark Avenue, Cleveland, Ohio

# Questions and Answers

**Wire Used in Reflex Set**  
(12465) FC, Rogers, N. Dak.

Will the reflex set described in the Radio Digest, February 7 of this year, have the same distance and volume with clarity and selectivity as a single circuit regeneration three tube set?

I am sending a sample of wire, which I would like your advice for use in coil L5.

Will a three plate condenser serve the same purpose as the midjet condenser?

Can I use number 24 or 26 wire for the other coils? Is there much difference in the methods of winding the coils?

Which crystal is supposed to be the most satisfactory in this set?

What is the record with receivers using this set?

A.—We have your letter regarding the Reflex in February 7 issue of Radio Digest. The sample of wire you sent us is O. K. if it is cotton covered. Do not use enameled wire. Number 24 or 28 is O. K. for the coils in this set. The coils are all wound in the same direction and it does not matter whether clockwise or anti-clockwise. You may use any crystal that you see advertised in Radio Digest in this set. With favorable conditions coast to coast reception should be had with this set.

### Transformer Windings

(12561) CG, Phillipsdale, R. I.

In regard to the homemade audio amplifier described in the February 7, 1925, issue of Radio Digest I would like to have information as to the size of wire and if single or double cotton or silk covered wire is used, and I would like to know the number of turns of wire instead of the diameter of the coil. How can it be made in high or low ratio?

A.—The wire to be used on this transformer is number 40 enameled. The primary should have 4,000 turns and the secondary with the number of turns wanted for the ratio. If it is desired to have a 4 to 1 ratio multiply the ratio wanted by the primary windings, or in this case, 16,000 turns for the secondary.

**ZELLERS RADIO LOG BOOK, 25 Cents.**  
Zellers Company, Hooper, Nebraska.

Before you buy a Radio, write me for "What Radio Experts Know, But Don't Tell You." Leon Lambert, 501 Kaufman Bldg., Wichita, Kans.

### PATENT ATTORNEYS

PATENTS. Booklet free. Highest references. Best results. WATSON E. COLEMAN, Patent Lawyer, 644 G Street, Washington, D. C.

**Rauf Radio Consoles.** The ideal radio cabinet, built in genuine mahogany or walnut. Send for descriptive circular. Rauf Manufacturing Company, 564 Vedder St., Chicago, Ill.

### PATENTS

Write for my free Guide Books "How to Obtain a Patent" and "Invention and Industry" and "Record of Invention" blank before disclosing inventions. Send model or sketch of your invention for instructions. Promptness assured. No charge for above information. Clarence A. O'Brien, Registered Patent Lawyer, 2005 Security Bank Building, directly across street from Patent Office, Washington, D. C.

**New Non-Metallic Speaker**

ONLY \$10.00

Postpaid

Here is exactly what you have been waiting for. A high grade loud speaker at a low price. Our discovery of a new non-metallic composition from which to build our horns and tone chambers makes it possible for us to manufacture and offer it to you direct from the factory at a ridiculously low price. A trial will convince you that the new Rice tone horns will sell 10% equal to most speakers costing three times as much. Our production is limited, so order now for prompt delivery. Send only \$10.00. Satisfaction guaranteed.

C. C. Rice Company  
351 W. Superior St., Chicago

**Make 100 Weekly—sell RADIO**

Demonstrate Once—Results Mean Sure Sale

Coast to coast, lowest prices, attractive four-tube instrument \$39.50. Big commission to you. Exclusive territory to proven salesmen. Territory going fast, write today for large illustrated book No. 100. Don't fail to name your county.

**WAZARKA, Inc.**  
825 Washington Blvd., Chicago, Ill.

Big Sale Big Profits

**Separating Stations of Same Meters**  
(12397) FB, Macon, Ga.

I have a neutrodyne set installed in my home and I would like for you to give me a little information through your magazine columns if possible. Station WFAA and WBAP have the same wave length and power, but I cannot get them with the same dial reading on my set. What is the cause?

A.—While the stations mentioned have been allotted the same wave length it is quite possible that one of them is just a little off in wave length. You then would not have the same dial setting.

### Book for Amateur Operators

(12372) RZ, Chillhothe, Ill.

I want a book dealing with the fundamentals, building and operating amateur CW and phone stations. The book must not be too complicated. Will you please inform me of a treatise on this subject?

A.—The book on amateur transmission which you desire is the Radio Telephony for Amateurs, written by S. Ballantine. This book retails at \$2 and can be bought at any leading book store. This book takes Radio transmission from the elementary part of CW to the very advanced and deeply technical items on the subject.

### Transformer Markings

(12886) HT, Decatur, Ill.

In building your simplest possible superhet, I am using all American parts, including coupler Type R-130. This coupler has six binding posts, four on one side, marked P, B+, 1, coupling 2, and on the other side G, F—. Can you send me a diagram or instructions for mounting this in the simplest possible het?

A.—The post marked P goes to the plate

**MOGG'S AERIALS**

Mogg's special radio aerials, inside or outside type; designed and perfected by our Radio Engineer. Send 25c for blue print of complete plan and details.

**INDIANAPOLIS REFLEX RADIO CO.**  
1502 Fletcher Trust Bldg. Indianapolis, Ind.

**RADIO CLUB PINS**

Pin shown designed especially for RADIO CLUBS. Words "Radio Club" cannot be changed. Other inscriptions can be changed. Exceeds 4 letters. Silver plate, 25c ea., \$2.00 doz. Sterling silver, 40c ea., \$4.00 doz.

SEND FOR FREE CATALOG

BASTIAN BRUS. CO. 608 Bastian Bldg., Rochester, N. Y.

**FOR UNFAILING LIGHTNING PROTECTION**

Insist upon a Low Loss

**KEYSTONE**

Approved ARRESTER #12

**Radio Dealers HEADQUARTERS**

if you want the finest products, fastest shipments and best discounts write on your letterhead for catalog AC1003.

**WAKEM & McLAUGHLIN**  
225 E. ILLINOIS ST. CHICAGO

**ALL SHOT**

That's the common expression of dry cell "B" batteries. Purchase the economy way and enjoy freedom from hissing and frying, clearer reception, and greater volume. Put together an everlasting "HAWLEY" rechargeable "E" storage battery. Nickel-iron alkaline type. No former experience or soldering necessary. Put up in both assembled and knock-down types. The knock-down units contain all actual material for building battery and are put up in 80 volts @ \$8.95; 100 volts, \$9.95; 120 volts, \$11.60; 135 volts, \$12.75; 150 volts, \$13.90; 200 volts, \$17.50. Guaranteed for 2 years with a 30-day trial offer of complete satisfaction or return of your money without any fee nor cost. Complete sample unit \$5.00 prepaid. 8-page illustrated folder of instructions showing simple putting together, making charger and charging, free with all orders. Complete material for "E" battery charger \$2.75. Order direct or write for my literature, guarantee, and testimonials. Same day shipments.

**B. D. SMITH**  
31 Washington Ave. Danbury, Conn.

of the oscillator tube. The post marked B+ goes to the positive of B battery. Post marked G goes to the grid of the oscillator tube. F— goes to the filament negative. The two posts marked coupling are the pickup coil terminals.

**Run Down B Batteries**  
(12883) GFS, Evansville, Ind.

Being a regular reader of Radio Digest, I am calling on you for some information and hope that you will be kind enough to forward it to me.

In regard to the B batteries: Provided that the Radio receiver requires 90 volts, is it absolutely necessary that an entire new outfit of batteries be used, or can batteries be used which are low in voltage, provided enough batteries are hooked up to bring the total voltage up to 90? For example, would six 22½-volt batteries, which were down to 15 volts each, give the 90 volts as required by the receiver, or must the batteries all be fully charged?

A.—Six 22½-volt batteries now reading 15 volts connected in series would give 90 volts. You may use them where this voltage is required with only fair results. It is not good to use 22½-volt blocks after they have dropped below 17 volts.

**FREE**

The very latest up-to-date radio wall map 28 by 34 inches. Shows call letters, locations, wave lengths, and frequencies of all radio broadcasting stations, U. S., Canada, and Mexico, relay divisions and radio districts. Also a scale for measuring distances. This wonderful map postage paid. ABSOLUTELY FREE. Merely send us a list of stores in your city which handle radio apparatus. Be sure and give the street address. If you know the manager's name, give it also. DO IT TODAY before this offer is withdrawn.

**UZARKA, Inc.** 808 Washington Blvd., Chicago, Ill.

**REFLEX SET for \$7.75**

Build a tube set that brings in stations, with Crystal clarity, over 1000 miles away by using Towner Radio Plans. Everything clearly explained. Satisfaction guaranteed or money refunded. Send \$1 for plans or self-addressed envelope for further information.

**Towner Radio Mfg. Co., Dept. 11**  
2620 Victor St. Kansas City, Mo.

**Radio Tube inventions for sale by the dozens**

Long pending applications in U. S. patent office. Virtual allowance secured on several applications, including basic claims on the SODIUM tube, and many chemicals to use in tubes. Tubes operate without A or B battery. Also covers on B battery only. Write the inventor of electro-chemical tubes and discoverer of the Electro-Chemical Law of Radio Tubes. Send 75 cents for copyright book, "Electro-Chemical Law of Radio".

**FRANK SUMMERS** Memphis, Mo.

**Fiber Horns**

for CABINETS

Let Us Figure On Your Needs

**HARDSOCC MFG. CO.**  
Ottumwa, Iowa  
ESTABLISHED 1880

**It isn't a genuine WD-11 unless it's a Radiotron**

**WD-11 Radiotron**

**Follow Instructions in Winding Coils**  
(11485) JM, Ottawa, Ont., Can.

I have made a set from the superdyne circuit published in the May 24, 1924, issue of Radio Digest and I am unable to get very good results. There is no volume and I cannot get distant stations.

I wound the coils from left to right and placed the left, or beginning end, up, over this I wound four turns of single lamp cord. The aerial was connected to the starting end of the wire and the ground to the other end. The plate coil was wound in the same direction and the beginning or left side placed near the stator and at right angles to it. A wire was run from the grid of the detector tube to the start of the plate coil, then to the stator blades of the condenser, thence to the plate lead of the Radio frequency tube.

A.—With this set we cannot over emphasize the importance of paying attention to details. If you have your hook-up right you must be sure that the reverse feedback coil is connected in the right direction. You may have wound it the wrong way. You had better investigate this coil and see that it is wound as given in the instructions.

### Prove Your Reception

New reception cards to send stations to verify programs. Spaces for station, wave length, owner, city, dial settings, YOUR name, YOUR address, date, time and description of program. Also space for verification of station. Convenient record to file alphabetically.

Good grade cards. Quality printing. 125 cards, \$1.00. MONEY REFUNDED if not **DIGESTED**.

By postman after cards arrive. Postpaid if pay with order. Send order today—NOW. Postal will do.

**OLAY RADIO CO.** 30 N. Michigan Ave. CHICAGO

**Send No Money**

**New CARTER Loop Aerial**

The new Compound Patent—non winding eliminates the frame work and possible loose connections. Gives maximum inductance without increasing the distributed capacity. Only 18" in diameter.

Go to your dealer and see this new Carter product.

Any dealer can show you

Pat. Pending Greater Volume, Longer Distance and Far More Selectivity

In Canada, Carter Radio Co., Limited—Toronto

**Carter Radio Co.**  
105 S. STATE STREET, CHICAGO

**THE Antennaphone**

REPLACES THE AERIAL

NO LOOP IMPROVES NO RECEPTION AERIAL INCREASES SELECTIVITY

The Antennaphone is not attached to, but merely placed under the telephone.

Easy to install. Works perfectly with any receiver.

Sold with a Money Back Guarantee.

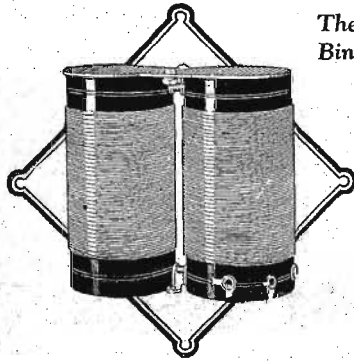
AT YOUR DEALER'S OR sent by mail upon receipt of \$1.00.

**ANTENNAPHONE CO.**  
90 West St. New York City

**Buy Tubes by Name**

**WD-11 Radiotron**





The Grebe  
Binocular Coil

## The Little Coil that Assures Isolation

**T**HE Synchronphase has three of these Binocular Coils—one of several exclusive Grebe features. They are truly fieldless coils and this absence of external magnetic field prevents strong nearby broadcasting waves from disturbing the selective tuning of the radio frequency stages. They insure perfect balance.

The isolation afforded by shutting out local stations gives this set its extremely *Selective Sensitivity*.

Other exclusive Grebe features are: *S-L-F* (straight line frequency) *Condensers*, on whose dials all stations are equally spaced; and *Grebe Volume Control* which affords six graduations of sound without in any way altering its true character.

Because every detail of the Synchronphase is designed and built in the Grebe factory we are able to control its quality and construction instead of being at the mercy of those who make parts for assembled sets. Consequently all Grebe parts co-ordinate perfectly.

The Grebe cabinet is a further symbol of this excellence in construction. Beautiful in design, it is built of solid mahogany, polished to a soft lustre and with delicately embossed gold escutcheons.

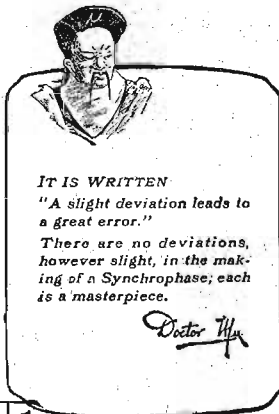
Compare all sets before you buy but be sure to have your dealer demonstrate the Synchronphase.

*Ask your dealer or write for full information*

**A. H. GREBE & CO., INC.**

Van Wyck Blvd., Richmond Hill, New York  
Western Branch: 443 So. San Pedro St., Los Angeles, Cal.

*This Company owns and operates station WAHG*



IT IS WRITTEN

"A slight deviation leads to a great error."

There are no deviations, however slight, in the making of a Synchronphase; each is a masterpiece.

*Doctor Hux*

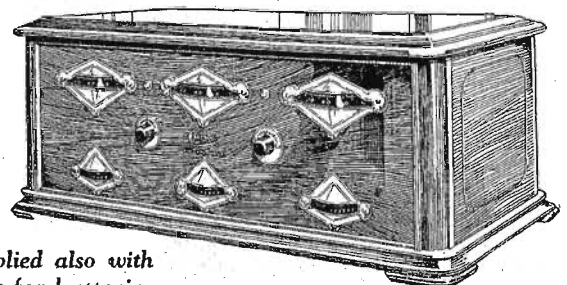
**GREBE**

**SYNCHROPHASE**  
TRADE MARK



TRADE MARK  
REG. U.S. PAT. OFF.

All Grebe apparatus is covered  
by patents granted and pending



Supplied also with  
base for batteries