

New Four Filter Super-Het Details; DSC. Wire Coil Calculation Charts; Operation of Multitube Receivers for Beginners; Page of WEEI Pictures

# Radio Digest

EVERY WEEK

## Illustrated PROGRAMS

TEN CENTS

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

Vol. XII

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By Radio Digest Publishing Co.

SATURDAY, MARCH 21, 1925

No. 11

## RADIO AIDS NEWSPAPERS



Left, Miss Eleanor Mims, frequently heard from Station KSAC. She is one of the station's stars, and well liked by thousands of fans throughout the country.

### 1,500 Visit Station WLW One Sunday Afternoon

CINCINNATI, Ohio.—So great is the interest in the new Crosley super-power broadcasting station at Harrison, Ohio, that 1,500 people visited there one Sunday afternoon. It was a fine day and gave the enthusiasts an opportunity to get away from their receivers long enough to inspect the recently opened station which is connected by wires with the studios in this city. Visitors are always welcome to either the station or studios.

## DUPUY SEES ADVANTAGES IN AIRPHONE

### Broadcasts Not Harmful

Owner of "Petit Parisien," with 1,600,000 Circulation Daily, Is Optimistic on Future

(Exclusive to the Delano Service)

PARIS, France.—That Radio will be an aid to the press, rather than a competitor, and serve to further expand the power of the printed word, both in advertising and in news columns, is the opinion that Senator Paul Dupuy, owner and publisher of "Le Petit Parisien," the biggest French daily, with a total circulation of 1,600,000, expressed to a reporter of the Delano Service in a special interview.

Senator Dupuy, who is known not only among his countrymen, but also in other lands, as being one of the most progressive publishers of the times, has been watching with keenest interest the development of broadcasting; and has recently added to his list of news disseminating organs one of the most popular and modern broadcasting stations in Paris.

### Phonograph Ruined Nothing

"Obviously," said the senator, continuing his discussion of the present all absorbing question as to what Radio will do to the publishers, "one cannot tell exactly what will happen in relation to

(Continued on page 2)

## NO WAR; INDIVIDUAL AIRPHONES TO COME

PREDICTS TEN CENTURIES WILL MAKE CHANGES

Dr. Fournier d'Albe, Famous Anglo-French Scientist, Gives Prophecy in New Book, "Quo Vadimus"

LONDON, England. — What will the world be like in a thousand years from now? And, more specifically, what development will have taken place in Radio by that time?

Dr. Fournier d'Albe, the famous Anglo-French scientist, sets out to answer these questions in his book "Quo Vadimus" just published here.

Everyone, according to Dr. d'Albe, will have his Radiophone, by which he can talk to a friend in any part of the whole world as easily as he calls up a neighbor nowadays—perhaps even more easily, for there will be no wrong numbers. Radio telescopes will bring before him the

(Continued on page 2)



Above, Sara Ann McCabe, coloratura soprano, who has created many friends by her wonderful singing from Station KYW. Right, Mrs. Homer DuBard, soprano, is one of the famous artists of WWJ.



## ENGINEER ACTS FAST DURING EMERGENCY

SCHENECTADY, N. Y.—So that Radiophans could hear a program broadcast from WJZ and WGY, A. B. Chamberlain, a WGY Radio engineer, sat on top of a telegraph pole at Poughkeepsie, N. Y., for three hours and "monitored" the wire carrying the program. When word was received here that the amplifier station at Poughkeepsie had burned to the ground, Mr. Chamberlain and his assistant hurried to the scene with temporary equipment and kept the line "in condition" until WJZ signed off.

# BRUNSWICK STAGES SECOND MUSIC TEST

## FIVE STATIONS BROADCAST CONTEST'S SELECTIONS

\$5,000 in Prizes Await Fans Who Can Name Artists and Selections Given

NEW YORK.—Complete success of the first Brunswick Music Memory contest, which ended with the broadcasting of the fourth and final February program February 24, has resulted in the second contest for the month of March. This second contest, in which listeners are competing for \$5,000 cash awards under similar conditions as in the first, consists of five one-hour broadcasts. March 3, 10, 17, 24 and 31, between the hours of 9 and 10, Eastern standard time, have been listed by Stations WJZ, New York; WGY, Schenectady; WRC, Washington; KDKA, Pittsburgh, and KYW, Chicago, for the Second Brunswick Music Memory contest broadcasts.

The music memory contest is unique in musical history. The broadcasting of unannounced programs by unnamed artists is a decided innovation in the broadcasting field. The February contest aroused national interest among Radio listeners, and it is expected that the number of the contestants in the March contests will reach far above that of its predecessor.

In the forthcoming contest programs the names of instrumentalists and orchestras will be announced, the listeners being required to name the selections played. In the case of vocalists, the Radio audience will be required to guess the names of the singers as well as of the compositions sung.

## RADIO NEWSPAPER AID

(Continued from page 1)

any particular case. But in the first place, consider the gloomy forecasts of the pessimists who saw in the phonograph a certain ruination of the opera and concert stage. Instead of keeping the people away from the theaters, it only brought a good knowledge of music to the homes of many more, and today new concert halls—new operas—new orchestras, are springing up all about us.

Nor did the motion picture ruin the theater, as was so violently and certainly predicted by many at the beginning of the former's popularity. Today the theaters are even more crowded, and others are being built. Yet the motion picture theaters also continue to increase in number. They are so entirely different that there is not the slightest interference.

### How Radio Helps; Not Hurts

"Later again, Radio came in, and was met by a storm of protest from all sides—the publishers, the theater managers, the phonograph manufacturers. They were all terrified at the thought of the public getting in their own homes what they had been accustomed to going out to see or hear. Yet today, rather than having killed the interest in the stage, in good phonograph records, or in interesting news items, Radio has brought a clearer knowledge of these things to the average man; and he is apt to go to see acted out something he has heard by Radio; he buys a phonograph record of a tune he has heard, so he can always have it; or he buys a newspaper in which he may find fuller reports of some event, such as a banquet, or prize fight, that he listened to the night before.

### Convinced Radio Is Newspaper Aid

"But perhaps most important of all," continued Senator Dupuy, shifting his position slightly, so that he faced his interviewer more squarely—"most important of all, are the recent experiments of the Vienna broadcasting station regarding the broadcasting of want ads. Here is a chance for the newspapers who own broadcasting stations to show the public the real value of want advertisements, to get what they need—either employees or jobs.

"Yes, I am convinced that Radio will in the end prove to work to the great advantage of the newspaper," concluded the senator, as he rose. "But it will be, in a good measure, an indirect effect that me may gain."

## DR. D'ALBE PREDICTION

(Continued from page 1)

features of the man or woman at the other end of the world.

Alibis will be very difficult. War will cease in a bare hundred years from now, Dr. d'Albe prophesies. If any tribe or nation makes itself utterly obnoxious to its neighbors, however, it will be painlessly sterilized with "X-rays" (or even the "death ray") and thus disappear from the face of the earth.

A nice thought for humanitarians to digest!

## PROF. D. P. MORETON WILL WRITE

THE securing of a series of twenty-six articles on Radio by Professor David Penn Moreton, B.Sc., E.E., is a feat of which Radio Digest feels duly proud. Professor Moreton has been connected with Armour Institute of Technology, Chicago, for twenty years and now holds the chair of associate professor of electrical engineering. While his name has not been heralded in the press of the country as the originator of anything "startling" or "revolutionary," those long in the Radio field know him as one of the soundest and most practical thinkers connected with the science.



David Penn Moreton

Many books, considered authoritative by the electrical industry, carry his name, among them being "Practical Applied Electricity," "Electrical Measurements and Meter Testing," "Armature Windings for AC and DC Machines" and "Electrical Equipment of the Motor Car."

The part of his work in which most of our readers will be interested and will most appreciate, is that of making exceedingly accurate laboratory tests on much of the Radio apparatus now available and, where necessary, advising manufacturers how to improve their products. The determining of losses, inductance and capacity are as routine with Professor Moreton as eating is to most of us, and, best of all, he has the knack of writing about the subject in terms that the veriest newcomer can follow.

His first articles will explain our present theories as to how Radio waves travel and why we have to use certain pieces of apparatus to receive them. Later articles take up circuits and, in detail, the various methods there are of securing desirable results.

This series, which amounts to a complete course in Radio, is to begin in the next issue.

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## Looking Ahead

Professor David Penn Moreton, Famous Scientific Authority, will begin a series of articles on Radio in the next issue of Radio Digest. Representing as they do the best information possible on the subject closest to the hearts of most readers, these articles should not be missed. Reserve your copy at the newsstand, or, to be sure of one, subscribe!

The World's Greatest Radio Announcer for 1925 will soon be picked by Radiophans. Read the details of Radio Digest's second annual Gold Cup Award. Full details will be given next week. George Dewey Hay of WLS was 1924 champion. Who will the winner be this year?

The Four Filter Super Reaches the Panel Assembly and wiring next week. There will also be a variation in circuit for those located far from stations and using dry cell tubes. Mr. Fournier is a believer in clear, faithful reproduction over moderate distances of 700 to 1,000 miles rather than distorted, wavering reception of 2,000 to 3,000 miles.

Broadcast Listener's Library Includes Antennas as the eighth chapter. Mr. Jones regards the proper antenna as very important to satisfactory reception and covers length, type and shape in such a way that readers may put up that which best fits the conditions of each installation.

## Newsstands Don't Always Have One Left

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# EARTHQUAKE FAILS TO STOP PROGRAMS

## CHIC MICROPHONE ROCKS BUT MUSIC GOES ON

CKAC'S Operator Shocked by Equipment—Jacques Cartier Broadcasts Call for Doctor

TORONTO, Canada.—Though an earthquake was shaking the studios of several Canadian broadcasters severely, the spirit of present-day Radio was well able to save the day recently, when at 9:22 p. m. Eastern time a heavy tremor rocked the northeastern section of the United States and Canada.

At CHIC, the station of the Northern Electric company at Toronto, the orchestra was just finishing a dance selection when things began to happen. The microphone on its tall stand showed signs of trying to keep time with the music.

Rudolph Weiss, CHIC director-announcer, realized immediately what had happened. One of the saxophone players started to lay down his instrument. "Rud" stepped to his side and whispered, "Remember the Titanic." The saxophonist picked up his instrument, the other players took an extra brace on their chairs and the orchestra music continued.

### CKAC Operator Shocked

In Montreal at Station CKAC, La Presse, Jacques Cartier also realized what was happening, and stepped to the microphone and informed the world that they were in the midst of an earthquake and that if they all lived through it they would be back on the air with their program immediately, but that they had to shut off then.

However, things did not work out so well at CKAC, as the station engineer received a very severe shock from the antenna switch when he went to cut the carrier off the air before shutting down the generator. A few moments later, however, Mr. Cartier put the set on the air himself and called a doctor by Radio as owing to the big demand on the telephone system he could not get central.

## WJY-Z Announcers Now Use Full Names

### R. C. A. Drops Old System of Using Key Letters

NEW YORK. — Listeners to Stations WJZ and WJY, Radio Corporation of America here, have not recently heard the familiar "AON announcing," or "AJN," "ALN" or "ATN," as the case may be. For the first time since WJZ opened the announcers are identifying themselves by their own names.

The change in policy, which took effect on the first of March, is the result of the increased attention to the art of announcing exercised by WJZ and WJY. From now on, a good announcer will win public approval under his own name, and a poor announcer will receive public condemnation as himself rather than as a group of three letters. "AJN" has become "Milton J. Cross." "ALN" is now "J Lewis Reid." "AON" addresses the Radio audience as "Norman E. Brokenshire." "ATN" is "Herbert B. Glover."

The history of the famous "A-N" announcing family is an interesting one. To avoid any misapprehension by the audience that the announcer was a performer, when WJZ first opened in Newark, the use of initials was decided upon. The "A" stood for "Announcer," the middle and distinguished initial was the key letter of each announcer, and the "N" stood for "Newark," and later "New York."

## Station Changes

WBAV has a new home—at least the studio is in a new location. Henceforth, all programs except those by remote control will be staged on the twelfth floor of the Deshler hotel, which stands on the busiest corner of downtown Columbus.

Reports reaching Station CKY (CNRW) indicate that the new wave length of 384.4 meters is carrying much better with less interference than did the old wave length of 450 meters.

Two new high power stations are scheduled for California in the near future. One will be located in Los Angeles, the other at Pasadena.

Eight new class A stations have been licensed recently. They are as follows: KFBE, San Luis Obispo, Calif.; KFWA, Ogden, Utah; KUOM, Missoula, Montana; WHBF, Rock Island, Ill.; WHBG, Harrisburg, Pa.; WHBH, Culver, Indiana; WHBI, Chesaning, Mich., and WKBE, Webster, Mass.

# GREATEST ANNOUNCER AGAIN TO BE PICKED BY LISTENERS

## Fans Seeking to Determine Who Will Win Coveted Honors for 1925—Full Details to be Given in These Columns Next Week

Radio listeners again clamor to know who is the world's most popular Radio announcer. Who will the invisible audience select this year to bear the coveted title and receive the solid gold cup in Radio Digest's second annual Gold Cup Award?

Last year, after several months of the most intense competition and enthusiastic balloting, George Dewey Hay, the "Solemn Old Judge" and announcer for Station WLS, Chicago, became known as the champion. Hundreds of thousands of broadcast listeners voted their choice. More than one million ballots were received at the offices of Radio Digest.

Now the invisible audience is again asking who will be the announcer king for 1925.

### Gold Cup Award Is Annual

And to gratify the wishes of the great invisible army of listeners in, Radio Digest will again undertake to aid them in making their selection.

As was announced last year, the Gold Cup Award is to be an annual Radio Digest feature—as long as broadcasting stations continue to exist. Each year a solid gold trophy will be awarded to the world's champion Radio announcer.

In this connection it is interesting to note that a scientific committee in New York is endeavoring to learn what qualifications enter into the makeup of the perfect announcer. The specifications have all been decided, with the exception of the most important factor, "personality." The committee admits that while the perfect announcer can be defined almost to the last detail, the personality factor is one that cannot be described.

### Popular Vote Best Judge

Radiophans can tell what announcers they like or dislike. They need not go into a study of scientific characteristics to make such a decision.

The popular vote will decide.

Watch Radio Digest for further announcements concerning the contest and how it will be decided this year. Full details will be given next week.

In the meantime members of the invisible audience are advised to listen carefully to the various styles of announcing

they hear nightly. What kind is the best? Who pleases the most? Do mother and father agree on their favorite, and have the children ideas of their own?

### Noted Engineer Talks to Fellows on Varied Subjects

CLEVELAND, Ohio.—Speaking before a large audience of electrical engineers here, Dr. E. F. W. Alexanderson, noted authority on Radio, told of a system of short Radio waves projecting high into the air which are not heard again until they begin to descend to the earth.

He also described the scrambling and unscrambling of Radio signals.

### Fort Worth Announcer Hero in Hotel Blaze

#### Crazy Wells Hotel Is Totally Destroyed by Fire

MINERAL WELLS, Texas.—The Crazy Wells hotel, one of the best known in the state, was recently destroyed by fire early in the morning. That there was no loss of life and no persons injured was due partly to the fact that WBAP, the Star-Telegram station, broadcast by remote control in the hotel lobby up to a half hour before.

Persons listening to the orchestra lingered in the lobby and when the fire was discovered in the drug store late retirers were used as messengers to rush throughout the hotel awakening occupants. Had the orchestra not been playing the lobby would have been practically deserted.

C. B. Locke, popular announcer of WBAP, proved himself hero of the hour in assisting persons from the flaming building to safety. Before the embers had cooled, decision was made by the management to rebuild the hotel.

The weekly Midnight frolic by Eddie Kerner's Crazy Hotel orchestra is now broadcasting from the Dameron hotel, Mineral Wells.

### 10,000 WORDS EVERY HOUR WITH MACHINE

PARIS, France.—By the use of a new machine, invented by M. Verdun here, and details of which are being kept secret, it is claimed that 10,000 words an hour can be transmitted and received by Radio. The apparatus is connected to the Baudot machine, now used for telegraphy.



## ANNOUNCERS START NEW ORGANIZATION

### "MERRY OLD CHIEF" HEAD OF ASSOCIATION

Name Is "Central Time Announcers' Club"—Body Has Seven Charter Members

KANSAS CITY, Mo.—Leo Fitzpatrick, the "Merry Old Chief" of WDAF, the Kansas City Star station, recently was unanimously elected to head the Central Time Announcers' club, an organization formed at a meeting of announcers at the Kansas City Athletic club in connection with the Radio show held in this city.

The club was formed with seven charter members, representing broadcasting station of Chicago, Omaha, Kansas City, Fort Worth and Atlanta.

Charter members besides Mr. Fitzpatrick were George Hay of WLS, Chicago, Sears Roebuck & Co., Gene Rouse of WOAW, Woodmen of the World, Omaha; Lambdin Kay of WSB, Atlanta Journal; W. G. "Bill" Hay of KFKX, Hastings, Nebr., Westinghouse station; Harold Hough of WBAP, Fort Worth Star-Telegram, and John Schilling of WHB, the Sweeney Automotive and Electrical school, Kansas City.

The purpose of the organization will be to sponsor a movement for a more hearty co-operation among announcers.

### Prince Albert, Sask., Hears Five U. S. Stations Best

PRINCE ALBERT, Sask. — Programs from broadcasting stations to the south of here are more easily received than those from the east, according to officials of the Prince Albert Radio club.

Five stations selected by them as being the easiest to pick up and which give the best results there, are: WCCO, Minneapolis; KOA, Denver; WEBB, Chicago; WOC, Davenport, Iowa, and WDAF, Kansas City.

### Club Plans Trouble Shooter

BARTLESVILLE, Okla. — The Radio club here has built a trouble shooting set and plans to provide funds to pay the salary of a man to hunt down causes of Radio interference.



Mr. Lindsay Coons, Station WTAS, Elgin, Ill., ballad singer, heard recently from Station WOC, Davenport, is shown on the left. Mr. Coons, who hails from Des Moines, has been a prominent entertainer at the Mississippi Valley fairs for several years. Above, Constance Talmadge, who was hostess at a recent Hollywood night at Station KNX. Right, Beniamino Gigli, famous opera star, made his Radio debut in the form of an interview with Terese Rose, recently from WGBS. He spoke in Italian, and it was interpreted on the air, so that both nationalities could understand.



### "Spring Time Week" Is WLW Innovation

Attractive Program Starts March 22 at Crosley Studios

CINCINNATI.—The week of March 22 will be "Spring Time Week" at Crosley WLW, Cincinnati. Every program will feature one of the famous melodies of spring time, such as Mendelsohn's "Spring Song," Grieg's "To Spring," "Message of the Violets," and many other selections of the ever popular spring time flavor.

The peak of the week's entertainment will be reached on Wednesday night, March 25, when the Shrine band, directed by Henry Fillmore, comes to WLW with

a magnificent organization, composed of a brass band; the famous trio—Eddie Ball, Howard Hafford and Billy Waterworth; monologues by Mum Platt; special stunts by Doc Betzner; Bob Alter and his wood saw; trumpet solos by August Schaefer; George Carr, clarinet; humorous duets on the clarinet by Jake Bohrer and Edwin Schath; and compositions of one of the members of the band, John Klohr, internationally-known composer.

### Jenkins Promises Radio Movies

WASHINGTON, D. C.—C. Francis Jenkins, one of the most prominent Radio inventors of Washington, stated in a recent address before the Washington Society of Engineers that he expects to send motion pictures by Radio within the next few weeks.

### SILOAM ORCHESTRA IS KFJF'S LATEST TREAT

Mayor of Oklahoma City Is Friday Night Announcer

OKLAHOMA CITY, Okla.—KFJF, the station of the National Radio Mfg. company here, announces a new treat for its listeners. The Siloam Philharmonic orchestra has been engaged to play a series of one and one-half hour concerts, starting at 8:30 Central time, each Monday.

Another popular and regular feature of the Oklahoma City station is the 7:30 to 9:30 p. m. Friday night program, conducted from the municipal building and announced by the mayor of the city.

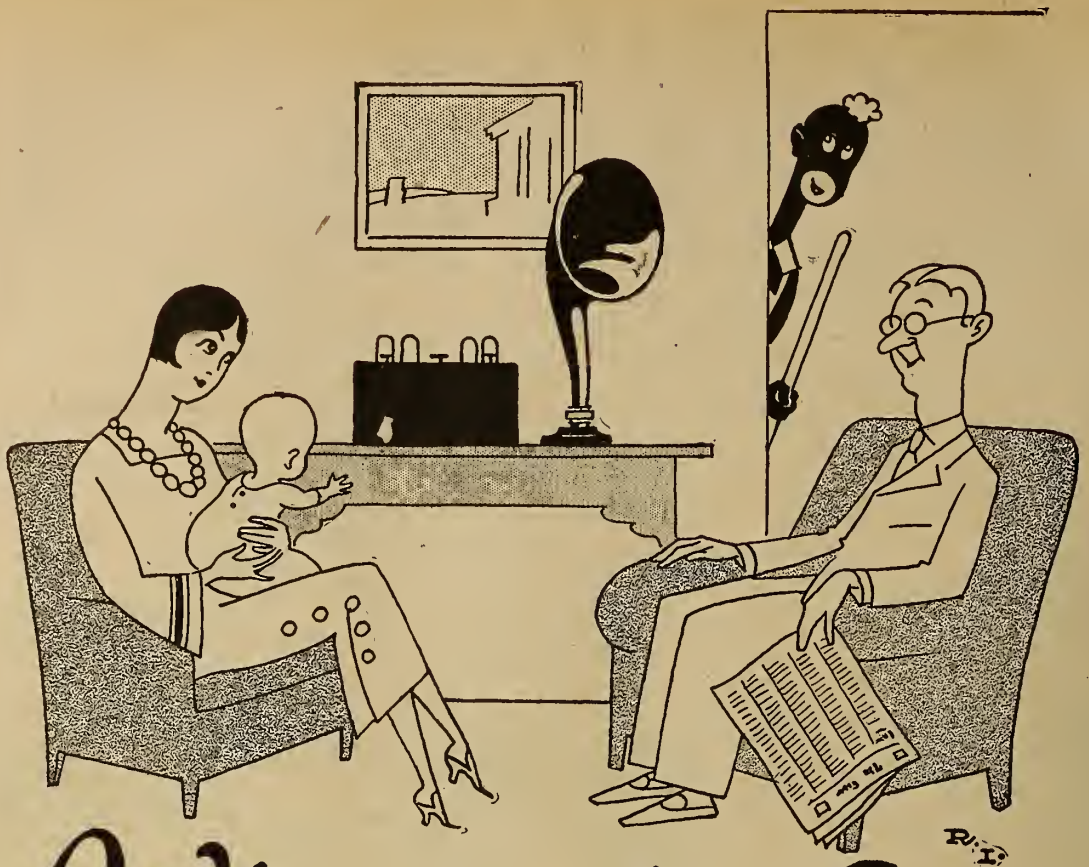


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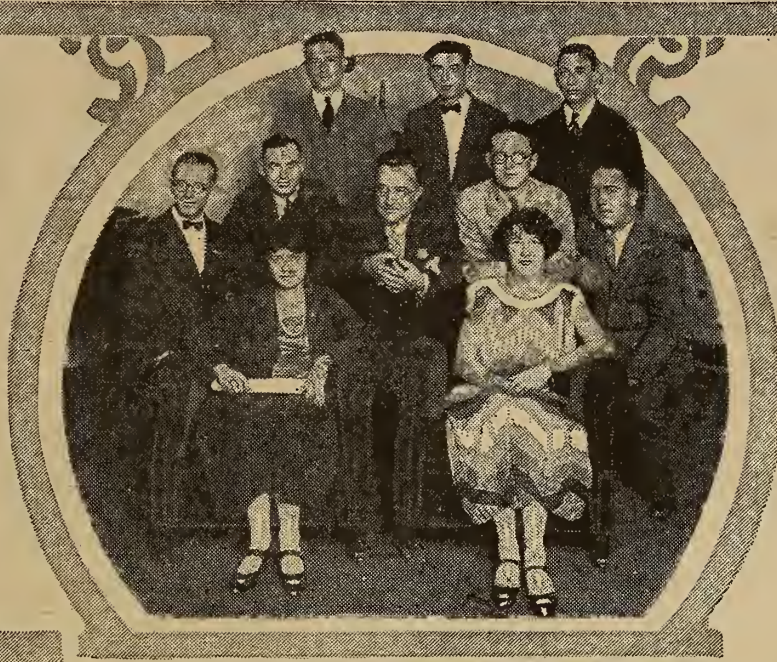
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# WEEI, "Big Brother" Emery's Own Station

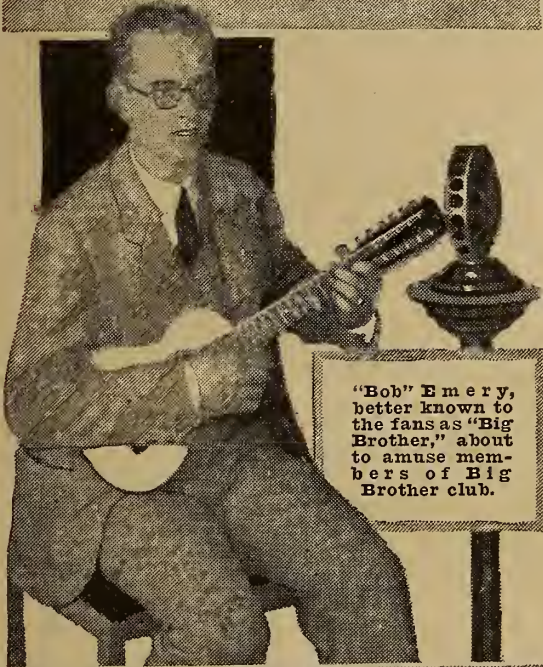
WHAT could be sweeter than music coming from a sugar-coated studio? Radiophans should hear nothing but sweet music from WEEI, the new Edison Light station, for the walls and ceiling of the studio are covered with dried, pressed sugar cane. Acoustic engineers have discovered that sugar cane is the best sound deadening material to be had. Hence the sweetness at WEEI, Boston, Mass.

One of the novel features at Station WEEI is the nightly meetings of the Boston Edison Big Brothers' club, an outgrowth of the Amrad Big Brothers' club, which Bob Emery founded while he was connected with WGI at Medford Hillside. Emery, who is perhaps better known as "Big Brother," is the program director at WEEI. To join the club, each child must write a letter to Big Brother. The dues are one letter a week to Big Brother. The members are given a signed membership card and a Big Brother club pin. Between 7 and 7:30 each evening there is broadcast a special program for the club members.

Bob Emery is a very versatile young man, and can play practically any musical instrument that has ever been made. He is



Left, here they are all together. Back row: P. W. Pratt, Ralph Mathewson and C. V. Pursell; middle row, E. Lewis Dunham, Lewis Whitcomb, C. W. Burton, "Bob" Emery and Leon Hentz; front row, Dorothy Blackwell and Marjorie Drew. Above, Lewis S. Whitcomb (left), assistant superintendent, and C. W. Burton, superintendent of WEEI.



"Bob" Emery, better known to the fans as "Big Brother," about to amuse members of Big Brother club.

especially adept at playing the Miami tiple. A tiple is like an overgrown "uke," except for the fact that it has ten strings instead of the usual five.

Direction of this station is in the hands of two former Radio editors. Charles Burton, superintendent of broadcasting, was Radio editor of the Boston Herald-Traveler. Lewis Whitcomb, assistant superintendent, was Radio news editor of the Boston Post.

Another new idea developed at WEEI is the Radio interview. Since this form of entertainment has been introduced, many business men, stage celebrities, federal, state and civil personages, have been interviewed before the microphone by "Whit," who is known in real life as Lewis S. Whitcomb. So great has been the demand for this feature that another newspaper man, "Hap" Myers, has been added to the staff at the Edison station.

The main studio is located on the fourth floor at 39 Boylston street, while the shack or operating room is on the roof of the same building. No expense or labor has been spared to make the model operating shack absolutely free from any mechanical noise or hum which mar the programs from some stations.

In the first place, the shack itself is completely shielded on the outside with layers of one-quarter inch copper sheathing. This is the only operating room in the country, so far as is known, to be so constructed. The action of the copper shielding eliminates the possibility of Radio frequency get-

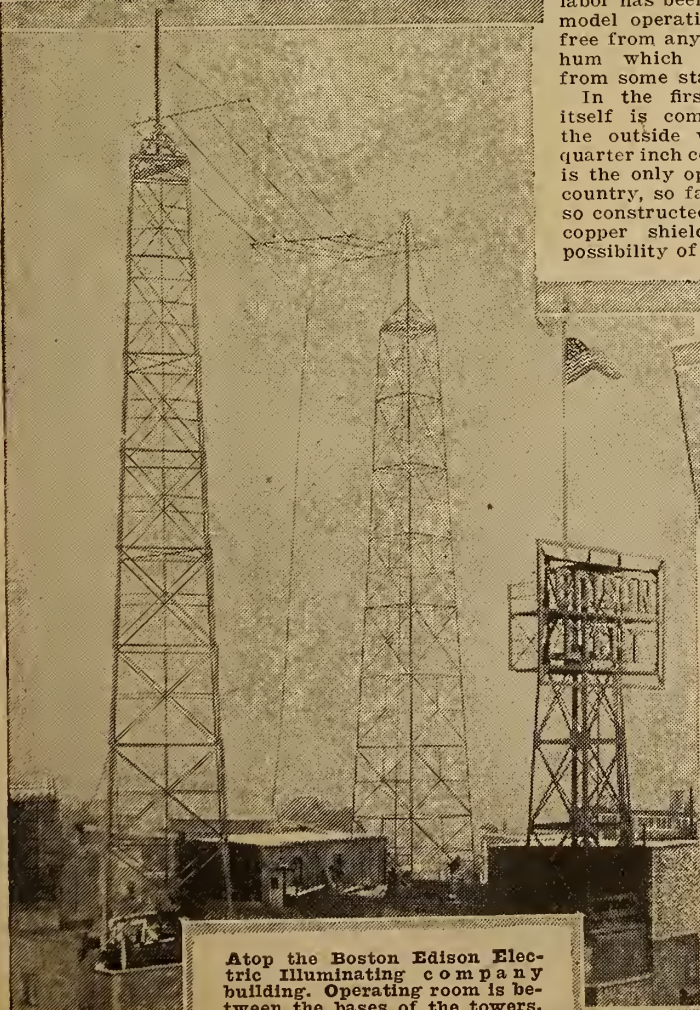
ting through the walls of the shack into the operating room and causing interference with the performance of the transmitter. Beneath this copper covering is a foot-thick wall of brick and cement.

There are three distinct compartments inside. The first is an acoustically treated emergency studio. WEEI is the only station hereabouts with an auxiliary studio adjoin-

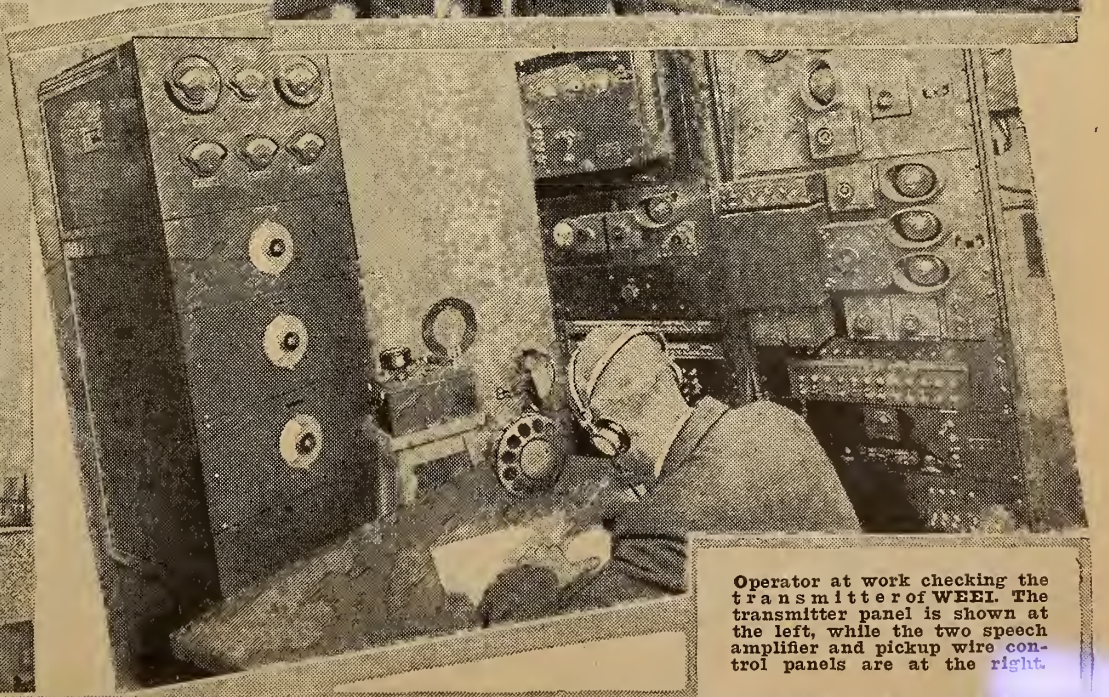
(Continued on page 8)



Portable Station WTAT, a 100-watt transmitter in a light delivery truck. It recently acquired the title of "The Only Seagoing Broadcast Station." It is here shown lashed on the revenue cutter at the time it earned its name.



Atop the Boston Edison Electric Illuminating company building. Operating room is between the bases of the towers.



Operator at work checking the transmitter of WEEI. The transmitter panel is shown at the left, while the two speech amplifier and pickup wire control panels are at the right.

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# STATION GLEANINGS AND NEWSY BRIEFS

## FORT GARRY TRIO AT CNRW MAKE MANY FRIENDS

## CFCF Have Star Performer, Miss Ruth Brotman, Who Sings in Nine Foreign Languages

The Fort Garry trio have again given the fans a treat from Station CNRW (CKY), Winnipeg, Can. The class of music provided and the manner in which the numbers were played, has drawn hundreds of applause letters.

Station CFCF, Montreal, Can., recently had a versatile young lady singing from that station. She is Miss Ruth Brotman, and as part of her repertoire, she sang songs in Norwegian, Latin, English, Jewish, Italian, German, Russian, Spanish and French. Rarely have fans the privilege of listening to the rendition of a song in as many languages, as at this time.

Wanda Menning Snyder, harpist, will be featured throughout the month of March in the afternoon programs from WGR, Buffalo, N. Y.

Joe Novak, professional golf instructor, will give lessons to embryo golfers from Station KGO, Oakland, Calif., every week. Charts showing the eight fundamental positions of the body and club will be sent to listeners on request.

"Pierre of the Plains," a wild and wooly story of the Canadian Northwest, will be broadcast by KGO, Oakland, Calif., Thursday evening, March 26. Wilda Wilson Church will direct ten players in the cast.

Playlets will be broadcast from Station WCCO, Minneapolis, every Wednesday afternoon at 4 o'clock. Arrangements have been made to have sketches given by various companies of Minneapolis and St. Paul players.

Harry Snodgrass, better known as "King of the Ivories," is now playing in "big time" vaudeville with the former announcer at WOS, J. M. Witten. During their engagement—which will last for two years—the "King" will be unable to play over the Radio.

According to statistics, Station WGY, Schenectady, N. Y., leads broadcast stations by being on the air 1630 hours during 1924. Station WOC, Davenport, Iowa, is second, with 1609 hours to their credit.

At a cost running into hundreds of dollars, Station WOAW, Omaha, Nebr., recently broadcast an unusual program from North Platte, Nebr. This cost was for the installation of a complete pickup system for only one program.

Mikail Lambert, far-famed concert cellist of the Symphony Society of New York, will appear every Friday night at Station WAHG, Richmond Hill, N. Y. Another star who appears with regularity at this station in Madelyn Marshall Simon, pianist. She was formerly accompanist for Leopold Auer, world-famous violin teacher. Her nom-de-mike at the Grebe studio is Maud Mason.

When the Victor company promised programs ranging from grand opera to jazz, fans listened in with a smile. Now that they have broadcast grand opera, jazz gets its turn. On March 12, fans throughout the country heard the first Victor jazz program, which brought the usual deluge of mail to the Victor company.

In honor of the Fanny Crosby Memorial campaign being conducted in New York city, Station WEMC, Berrien Springs, Mich., will broadcast a special program Sunday evening, March 22.

At the conclusion of a program recently, Station KFNF, Shenandoah, Iowa, surprised the fans and broadcast a wedding which had not been scheduled for that evening. Thousands of letters and telegrams poured into the studio congratulating the new couple.

The Southwest Exposition and Fat Stock show was broadcast from Station WBAP, Fort Worth, Texas. A microphone was installed in the arena so that the results could be broadcast direct. The Texas A. and M. Military band rendered selections during the afternoon.

Station WJAG, Norfolk, Nebr., has inaugurated a new feature. It has requested the superintendents of all the hospitals to inform the station the condition of the out-of-town patients who desire to have their condition broadcast to their friends. It met with instantaneous success.

## STATIONS IN ORDER OF WAVE LENGTHS USED

Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call
226	WBBM	275	WHAD	315.6	WAHG	361.2	WHN	405.2	WOR	468.5	WCAP
233	WBBJ	275	WORD	315.6	WGBS	365.6	WDAF	406	WBAR	468.5	WRC
240	KFAB	275.3	WJAS	319	WGR	365.6	WHB	416.4	WCCO	475.9	WBAP
240	WOAX	278	WCAU	322.4	KOA	370	CYB	420.3	KPO	475.9	WEEI
244	WABN	278	WLBL	325.9	WSAI	370.2	WEBB	421	KIAP	475.9	WFAA
248	WBBG	278	WRBC	330	CYX	370.2	WGN	422.3	WLW	480	CYL
250	WTAY	280.2	WNAC	333.3	WBZ	374.8	KTHS	422.3	WMH	483.6	WOC
261	KFPT	285.5	WKAR	336.9	KFMX	379.5	WGY	428.3	WSB	483.6	WSUI
265.5	WMAK	285.5	WREO	336.9	KNX	379.5	WHAZ	434.5	CKAC	491.5	KGW
266	KFNF	285.5	WEMC	336.9	WCAL	384.4	CKY	434.5	CNRO	491.5	WEAF
266	WBCN	288.3	KFKX	336.9	WSAC	384.4	KFOA	434.5	NAA	499.7	WMC
268	WEBW	293.9	KJS	340.7	KSAC	384.4	KJR	434.5	AT9	508.2	KLX
270	WGST	293.9	WBAV	340.7	WKAQ	384.4	WMBF	435	CFCN	508.2	WIP
270	WOI	293.9	WEAO	344.6	WCBP	389.4	WEAR	440	WDWF	516.9	WCX
272.6	WBBR	296.9	KFRU	344.6	WLS	389.4	WTAM	440.9	WOS	526	WHO
272.6	WFBH	299.8	KFMQ	348.6	KFAE	394.5	WLIT	440.9	WMAQ	526	WOAW
273	KFKB	299.8	WPG	348.6	KOB	394.5	WFI	447.5	WQJ	526	WNYC
273	WHK	302.8	WJJD	348.6	WTIC	394.5	WOAI	447.5	WJZ	535.4	WHA
273	WRW	302.8	WTAS	352.7	WWJ	399.8	WHAS	454.3	KTW	535.4	KYW
275	KFAU	305.9	WJAR	356.9	CFCA	400	PWX	455	WCAE	545.1	KFUO
275	KFKU	309.1	KDKA	356.9	CHNC	405.2	KHJ	461.3	KFI	545.1	KSD
275	WABL	315.6	KFDM	361.2	KGO	405.2	WJY	468.5			

### Reunites Old Friends

COLUMBUS, Ohio.—C. A. Entrek, local electrical dealer, was reunited to a pal of his boyhood days, 22 years ago,

when his applause note was read over WEAO here recently. Wm. D. Fryback, at La Junta, Col., heard Mr. Entrek's name and wrote his former chum.

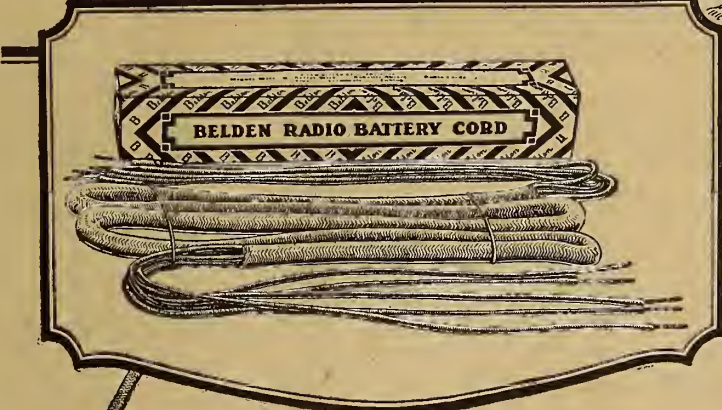
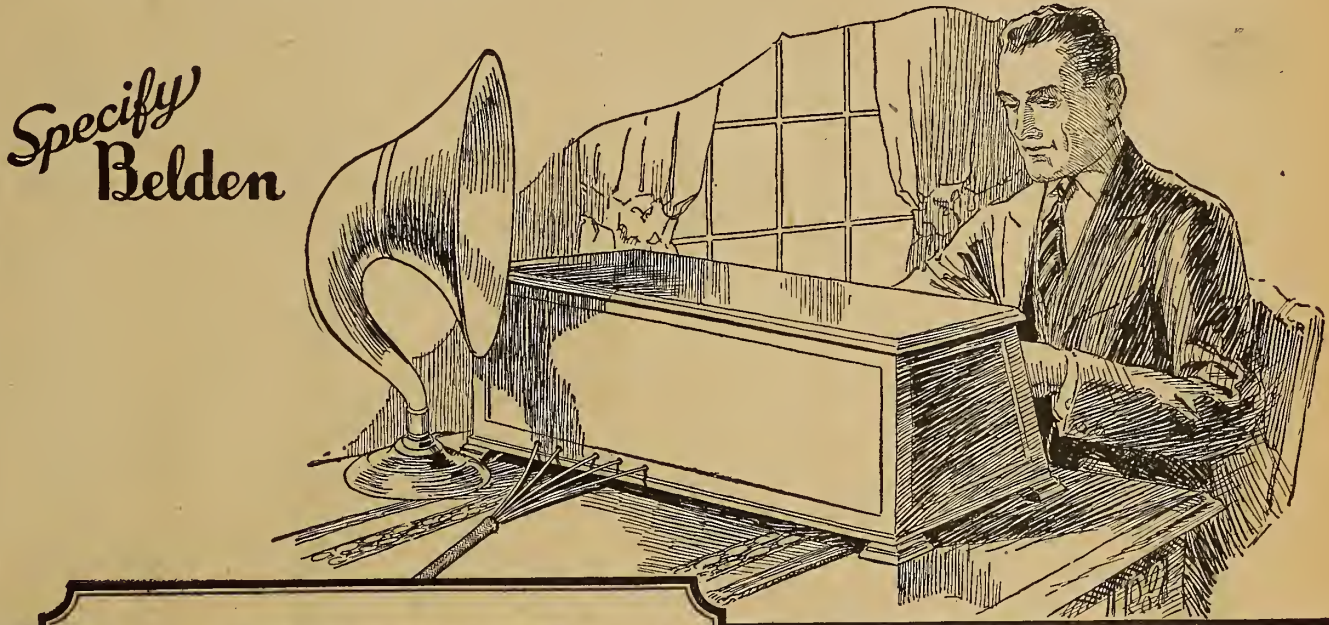
## INKLING CREATOR AT WIP WITH CARTOONS

HELLO UNCLE WIP! THE BOSS SENT ME TO STAY WITH YOU! WHERE DO I PARK?



MAX Fleischer, the creator of the "Out-of-the-Inkwell" comedy films, which are known all over the country, recently visited Station WIP, in Philadelphia. He was programmed as part of Uncle Wip's half hour, and he made a tremendous hit with the listeners in, telling them all how he made the clown and other characters come out of the inkwell, and disappear into the said inkwell when he was finished with them.

When Mr. Fleischer completed his talk he made little sketches of the clown for several persons in the personnel of the station. Here is one of them.



# Make Your Set Safe for Tubes and Batteries

Just one accidental short circuit among the battery wires, that lead to your set, can burn out all the tubes or ruin the batteries. That is why the experienced radio fan does not trust to a mess of connecting wires, between the set and the batteries, but uses a sturdy, neat battery cord in their place.

Loose connections and poor joints are responsible for much noise in the receiver, and a good battery cord eliminates much of this trouble. The circuits are easily traced and B-battery taps can be changed without danger of wrong connections. Try a Belden Radio Battery Cord before you burn out your tubes. It is inexpensive insurance against trouble. Get one, today!

### Improves Appearance of Set

The Belden Radio Battery Cord contains five flexible, rubber-covered conductors, each marked plainly with a colored tracer. Two conductors are No. 16, for the A-battery circuit, and three are No. 18 for the B-battery circuit. All conductors are enclosed in a glazed brown braid that resists wear and protects the conductors. The ends are soldered, and can be used with any type of terminal. Does away with all messy, dangerous battery wiring.

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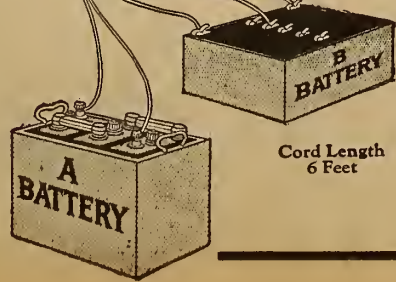
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AN EVENING AT HOME WITH THE LISTENER IN IN CENTRAL TIME (SEE INSTRUCTIONS FOR USE BELOW)

Table with columns for Station and City, Met., and days of the week (Saturday through Friday) showing broadcast times.

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

WEEI AT BOSTON

(Continued from page 5)

ing the operating room. The walls of this studio, like the walls of the main studio on the roof, are devoid of any hangings or drapes and are lined with a sound absorbing material made from dried, pressed sugar cane.

The transmitting equipment is of 500 watts output. The aerial equipment is composed of two 125-foot towers on the roof of the Edison building. The stretch between these towers is sixty feet and the aerial is of the four-wire T type. Between the two towers, the transmitting apparatus is housed.

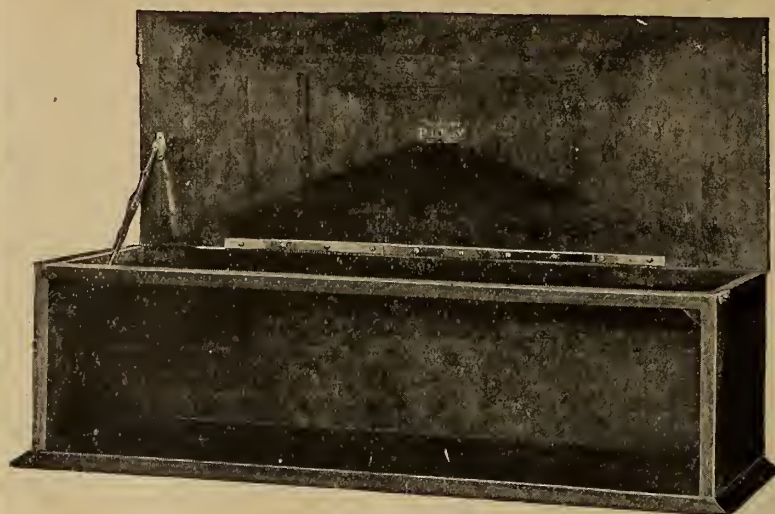
WTAT, the 100-watt original Edison station, is still on the air. This is a portable station installed on a motor

speed wagon and used for special broadcasts out of the city.

The little brother of WEEI recently acquired the title of "The Only Seagoing Broadcasting Station" when it was lashed to the deck of a ship and taken 100 miles out into the ocean for experimental broadcasting during the solar eclipse.

A direct line running to the studio of WEEI, is perhaps the greatest program feature. Regular programs broadcast from WEEI are transmitted from WEEI on Tuesday, Thursday, Friday and Saturday evenings.

Government license, regulations and inspection are required for all receiving and sending stations in Mexico. It is estimated that there are 20,000 receiving sets in Mexico City and 12,000 more in other parts of the country.



Good Looks

are, with most of your friends, the standard by which they judge your Radio set.

The Jewett Parkay is positively the handsomest and best built cabinet you have ever seen. Your set deserves it.



Built of the finest American mahogany—All standard sizes, from 7 x 9 x 18 to 8 x 8 x 40—Top of genuine parquetry—Nickel hardware throughout—A real cabinet worker job from our own factory in Western Michigan's world famous woodworking district—Special scratch-resisting finish. At all Jewett dealers.

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"THERE IS NO SUBSTITUTE FOR THE BEST"

The Jewett Parkay RADIO CABINET



# FLORENCE GALAJIKIAN PLAYS AT WGN

## Saturday, March 21

### 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, CHNC, CHIC, OKY, KFAB, KFAE, KFKU, KFKX, KFMQ, KFMX, KFOU, KLN, KOB, KSCA, WBAP, WBAV, WCAU, WGBD, WDFW, WEAD, WEAR, WEBJ, WEBW, WEEI, WGST, WHAD, WHAZ, WHB, WHO, WIY, WKAQ, WOAI, WOI, WOO, WOS, WSAC, WSUI.

### Western Time Stations

CFCA, Toronto, Can. (356), 11 p. m., dance program, National Yacht club symphonic orchestra, F. C. Beresford, director.  
CKAC, Montreal, Can. (410.7), 7:30 p. m., Harry Salter's trio; 8:30, variety program; 10:30, Harold Leonard's Red Jackets.  
CNRD, Ottawa, Can. (434.5), 8 p. m., James McIntyre and his Chateau Laurier concert orchestra; 8:30, Lila Somerville, soprano; B. Williams, pianist; M. I. McGlade, vocalist; "Dinosaurs, the Real Giants of the Past," C. M. Sternberg; youth organ contest, accordion and concertino contests; James McIntyre and his Chateau Laurier dance orchestra; Jack Grace.  
KOKA, Pittsburgh, Pa. (309.1), 8 p. m., dinner concert, Westinghouse band; 7:30, Wimple, the Wanderer; 8, Pittsburgh Sun Radio Sphinx club, Richard the Riddler, director; 8:15, "Florida from the Inside," F. L. Wood; 8:30, Westinghouse band, T. J. Vastine, director.  
PWX, Havana, Cuba (400), 8:30 p. m., Fausto Alvarez, tenor; Julie P. Yillette.  
WAHG Richmond Hill, N. Y. (315.6), 12-2 a. m., special program, Glen C. Smith's Paramount orchestra.  
WBAV, Columbus, Ohio (293.9), 8-10 p. m., WBAV orchestra.  
WBBR, New York, N. Y. (272.6), 8 p. m., Frank Wood,



Eddie Harkness (above) and his orchestra play the gay tunes to which Pacific coast fans trip each night. These are sent out over the ether by KFOA.

flutist; 8:10, Mrs. L. M. Brown, soprano; 8:15, Bible questions and answers, Judge J. P. Rutherford; 8:45, Mrs. L. M. Brown, soprano; 8:55, Frank Wood, flutist.  
WCAE, Pittsburgh, Pa. (461.3), 2:30 p. m., tea-dansant music, Nixon restaurant; 4:30, Ed. Lally's Rendezvous cabaret orchestra; 6:30, dinner concert, William Penn hotel; 7:30, Uncle Kaybee; 8:30, artists, Charles Le Sueur.  
WCX, Detroit, Mich. (516.9), 4:15 p. m., musical program; 6, dinner concert, Book-Cadillac hotel.  
WEAF, New York, N. Y. (491.5), 6-7 p. m., dinner music from Waldorf-Astoria hotel; 7-7:20, J. Derwin and William J. Smith, banjoists; 7:20-7:35, Nemo male quartet; 7:35-8, Martin Richardson, tenor; 8-8:20, Vee Lavinhurst, pianist; 8:20-8:35, Harry Hadley Schyde, bass; 9-9:45, Waldorf-Astoria concert orchestra; 10-10:30, Lyric club of New York; 10:30-11, Rudolph Jaskowitz, violinist; 11-12, Vincent Lopez Hotel Pennsylvania orchestra.  
WFI, Philadelphia, Pa. (394.5), 6 p. m., Rey Elray and his dance orchestra; 6:30, Meyer Davis' Bellevue Stratford concert orchestra; 8, "Diet in Health," Dr. Clifford E. Parr; play, "The Valiant."  
WGBS, New York, N. Y. (315.6), 6-6:30 p. m., Uncle Geehee; 6:30-7:30, Cameo Collections; 7:30-8:30, Armond Vecsey's orchestra; 9:15-9:30, Fred Schaeffer, zither; 9:45-11, Muscovite ensemble.  
WGR, Buffalo, N. Y. (319), 6-7:30 p. m., Hallpryd string trio.  
WGY, Schenectady, N. Y. (379.5), 9:30 p. m., Phil Tomano's orchestra.  
WHN, New York, N. Y. (361.2), 6:30-7 p. m., violin solos, Olcott Vall, accompanied by Stephen Balogh; 7:30-7:35, health talk, Dr. Landis; 7:35-8, Hotel Carlton Terrace orchestra; 8:30-9, Strand Roof orchestra; 9-10, Northminster Interdenominational church service; 11:30-12:30 a. m., Roseland dance orchestra.  
WIP, Philadelphia, Pa. (508.2), 6:05 p. m., songs,

Charles Higgins and Billy McKee; 6:15, Clarence Seamon's dance orchestra; 7, Uncle Wip's bedtime stories; Dorothy and Marion Tweed, pianists; 8, "What Shall We Eat," Dr. Horatio C. Wood; 8:15, Jules Lande and his Mayflower orchestra; 9, Lenten meditations, E. A. E. Palmquist; 9:10, Bristol M. E. choir and orchestra; 10:05, Howard Lanin's dance orchestra; 11:05, organ recital, Karl Bonawitz.  
WJAR, Providence, R. I. (305.9), 7:05 p. m., studio program.  
WJZ, New York, N. Y. (454.3), 4:30-5:30 p. m., Sherry's tea orchestra; 7-8, Freddie Rich, and his Hotel Astor

### 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.  
KFNF, Shenandoah, Ia. (266), 6:30 p. m., concert, Omaha Scottish trio; 8:30, old time music, Statesman Brothers.

KSO, St. Louis, Mo. (545.1), 7 p. m., musical program, Grand Central theater; 9, music specialties, Missouri theater.  
KTHS, Hot Springs National Park, Ark. (374.8), 8:30-9:45 p. m., Charles L. Fischer orchestra; 9:45-10:45, Meyer Davis-New Arlington hotel orchestra, Jacques Renard, director.  
KYW, Chicago, Ill. (535.4), 7-7:30 p. m., dinner concert, Congress hotel; 8-8:58, Lucille Comfort Oren, soprano; William Benson, tenor; Joel Lay, baritone; Thomas B. Stephenson; 9:05, health talk, Dr. John M. Dodson; 9:35-11:30, Congress classic; 12-1, Congress carnival; 1-2, insomnia club.  
WBCN, Chicago, Ill. (266), 6-6:45 p. m., Harold's orchestra; 7-8, fireside hour, George R. Cleveland; Dr. S. Wall, saxophonist; Southtown harmonizers; Lucas sisters; 8-12, Jack Parker, Cameo Record tenor; George Forsyth, boy tenor; Midway Gardens orchestra; George R. Cleveland, reader; Walter Felt, Harry Beierwaltes, pianists; adoption of white man by full-blooded chiefs of six Indian tribes; I. P. Delaney, tenor; Elizabeth Emmett Malone, soprano; L. V. Skow, tenor; Lucille O'Hara, soprano; Helma Tyler, soprano; Murphy sisters; Les Cameron, tenor; Marie Wright, soprano; 12-1 a. m., Owl matinee, Bobby Allen, tenor; Felt and Beierwaltes, pianist; Les Cameron, Jack Park, Cameo Record tenors; Big Boy Yagle, pianist.  
WCAL, Northfield, Minn. (336.9), 12 midnight, musicalo.  
WCCO, Minneapolis-St. Paul, Minn. (416.4), 2:30 p. m., Northern States Power program; 6, Minneapolis Athletic Club orchestra; 8, "Fireside Philosophies," Rev. Roy L. Smith; 8:30, minstrel show, I. O. O. F.; 10, St. Paul Athletic Club orchestra; Gold Medal Radio quartet.  
WCEE, Elgin, Ill. (275), 7-8 p. m., Boss' Own orchestra; Eddie Loftus; 11-12, Boss' Own orchestra; Eddie Loftus, Frank Morris.  
WOAF, Kansas City, Mo. (365.6), 3:30-4:30 p. m., Star's Radio orchestra; 6-7, piano tuning-in number on the Duo-Art; Camp Fire Girls' program; the Tell-Me-a-Story lady; Trianon ensemble; 11:45-1, Merry Old Chief and the Plantation players; Eddie Kuhn's Kansas City Athletic Club orchestra.  
WEBH, Chicago, Ill. (370.2), 7-8 p. m., Oriole orchestra; Dan Russo and Ted Fiorito; 9-10, Oriole orchestra; Marie Kelly, reader; Eleanor Gilmour, soprano; Pat Barnes, reader; 11-12, Oriole orchestra; Loos brothers; Marie Kelly, reader; Frank Sivano, Kay Romayne, Banks Kennedy, Ned and Ches; Ralph Snyders.  
WFAA, Dallas, Tex. (475.9), 6-7 p. m., Honey Boys' orchestra; 11-12, Adolphus hotel orchestra.  
WGN, Chicago, Ill. (370.2), 6 p. m., organ, Lyon & Healy; 6:30-7, drake concert ensemble, Blackstone string quintet; 8-9, Dwight Edward Cook, tenor; Florence Grandland Galajikian, pianist; 10-11, Don Bestor Drake dance orchestra.  
WHAS, Louisville, Ky. (399.8), 4-5 p. m., Louisville Conservatory of Music; 7:30-9, Ray Stark's Triangle Garden orchestra; four-minute talk, Mrs. Frances Carr; Katherine Hannan, reader.  
WLBL, Stevens Point, Wis. (278), 12 midnight, Enemies of Sleep.

(Continued on page 10)



Laurette Rietz (above) is a popular vaudeville entertainer of Minneapolis and St. Paul. She often entertains at WCCO, the Gold Medal station. J. W. F. Leman (right) is the conductor of the Women's Symphony orchestra of Philadelphia, which will be heard on March 24 at WFI. Mr. Leman is well known for his concert orchestra, which plays during the summer at Atlantic City.



### Headliners of the Week

FLORENCE Grandland Galajikian, a young pianist who has won professional recognition in both New York and Chicago, will appear for the first time Saturday before the microphone of WGN. Dwight E. Cook, tenor, will also take part in the program.  
A cantata by Bach, "God's Time Is Best," will be the headliner of the week at KDKA. The cantata class from the music department of the Carnegie Institute of Technology will give this composition Sunday. J. Vick O'Brien will direct the production.  
The Monday programs of WMBF, Miami Beach, are enhanced by the addition of the Nautilus Lucky Seven orchestra. This orchestra, together with the Rosebrook's Radio serenaders will make this station more than popular.  
Jimmy Clark and his White Way entertainers are back on the air again with many sparkling new song hits and radio surprises. You may hear these merry invaders of the ether Tuesday at WEBJ, and just so you

may not miss the first number, they begin at 7:15 p. m.  
WOC reminds you Wednesday that it is time to plan your vacation for this year. George A. Pickes, general secretary of the Missouri association, will talk on this subject. He will be able to give practical suggestions for long trips.  
Many of the stations are so old they prefer to forget their birthdays. Not so with WEMC. This sprightly young station will let the Radio world know about its first anniversary Wednesday with a special program.  
Fans have been puzzled lately by hearing talks in a foreign language. CKY can probably explain this easily. Every Thursday, Professor A. C. de la Lande gives a French lecture. These are very interesting for those who understand French. CKY is now using a wave length of 384.4 meters.  
Old-time songs played by a group of very young artists will be the Friday program at KOB. Clifford Coble, age 14; Ila Coble, age 13, and Dean Coble, age 11, are the members of this talented instrumental trio.



# JIMMY CLARK'S ARTISTS AT WEBJ

## Monday, March 23

(Continued from page 10)

anon ensemble; 8-10, Around the town with WDAF; 11:45-1, Merry Old Chief, Plantation players.

WEBW, Beloit, Wis. (268), 8-9 p. m., concert, Beloit college; Prof. Max Miranda, leader of music; short talk, Professor H. D. Densmore.

WEMC, Berrien Springs, Mich. (286), 8:15 p. m., commercial club of Dowagiac Round Oak band; male quartet; vocal solos, Mary Felkner; Wilma Bakeman, pianist; speech, Attorney Jack Pollack.

WFAA, Dallas, Texas (475.9), 6:30-7:30 p. m., Buddy's Blue Melody Boys' orchestra; 8:30-9:30, musical program from Bonham.

WGN, Chicago, Ill. (370.2), 6 p. m., organ recital, Lyon & Healy; 6:30-7, Drake concert ensemble, Blackstone string quintet.

WGST, Atlanta, Ga. (270), 9-10 p. m., Marionette orchestra.

WHA, Madison, Wis. (535.4), 7:45 p. m., Prof. Cecil Burleigh, violinist; "Food and Nutrition," Mrs. Nellie Kedzie Jones.

WHD, Milwaukee, Wis. (275), 7:30 p. m., Marquette university glee club and band program.

WHAS, Louisville, Ky. (399.8), 4-5 p. m., concert, Louisville Conservatory of Music; Jack Little, Paul Small.

WHB, Kansas City, Mo. (365.6), 2-3 p. m., ladies' hour; 7-8, special men's and boys' hour.

WHO, Des Moines, Iowa (526), 7:30-8 p. m., Stewart Watson, American baritone; Helen Birmingham, accompanist; Sciota MacAddow Herndon, soprano; 8-9, program, Dean Holmes Cowper, director; 11:15-12, L. Carlos Meier, organist.

WLW, Cincinnati, Ohio (422.3), 8 a. m., physical exercises, Central Y. M. C. A., William Stradman, instructor; 12:15, Lenten services, Rev. G. H. Case; 4, pupils of Helen Abecherle in recital; 6, dinner hour concert; 8, Times-Star orchestra, directed by William Kopp; Howard Haford, tenor; Ewald Haun, flutist.

WOAW, Omaha, Neb. (526), 6 p. m., Arthur Hays, organist; 6:30, music; 6:45, dinner program; 9, program, Council Bluffs Typographical union; 10:15, music.

WOL, Ames, Iowa, (270), 10 p. m., program of popular music.

WORD, Batavia, Ill. (275), 7-8 p. m., children's hour, Uncle Nick; 8-10:30, musical program, Humane society, Mrs. Groshans, director; scientific lecture, Dr. Golze; "Fall of Man," C. H. Swingle.

WOS, Jefferson City, Mo. (440.7), 8 p. m., "The Show-Me Spirit," John Boyd; Al Moore's orchestra; Howard-Payne colleges.

WQL, Chicago, Ill. (447.5), 3-4 p. m., "What Comes

KLX, Oakland, Calif. (508.2), 9:30-10 p. m., American Theater orchestra; 10, Lake Merritt Ducks.

KNX, Hollywood, Calif. (336.9), 6:15-7 p. m., program, John A. Evans corporation, Hacienda Park orchestra, Paul Feinstein, director; 7-8, program, West Coast theaters, Inc.; 8-10, KNX feature program; 10-11, Goodrich Silvertown cord orchestra, Chas. Lindsey, leader; Lilyan May Challenger, contra-contralto; 11-12, Abe Lyman's Coconut Grove dance orchestra from Ambassador hotel.

KPO, San Francisco, Calif. (420.3), 4:30-5:30 p. m., Rudy Seiger's Fairmont Hotel orchestra; 5:30-6:30, children's hour stories; 6:30-7:30, Rudy Seiger's Fairmont Hotel orchestra; 8-9, Theodore J. Irwin, organist; Mrs. Mark T. H. Shwartz, contralto; 9-10, program, auspices, J. Allec Clean company; 10-11, Gene James' Rose Room Bowl orchestra.

Jimmy Clark and his White Way entertainers; 8-8:15, Sara V. Turits; Eleanor Fasteneger; 8:15-9, Traub trio.

WEEI, Boston, Mass. (475.9), 4 p. m., Shawmut Juvenile Syncopters; 6:30, Big Brother club; 7:15, Alice Sampson, contralto; 7:30, Dok-Eisenhour and his Sinfonians; 8, musicale from New York; 8:30, Gold Dust Twins; 9, Eveready hour; 10, Goodrich Silvertown Cord orchestra.

WFI, Philadelphia, Pa. (394.5), 3 p. m., Women's Symphony orchestra, J. W. F. Lemay, conductor; 6:30, Meyer Davis' Bellevue Stratford concert orchestra; 7, Boy Scouts' period; 8, concert from WDAF; 9, Eveready hour; 10, Goodrich Silvertown cord dance orchestra.

WGSS, New York, N. Y. (315.6), 6-6:30 p. m., Uncle Geebee; 6:30-7, Jersey Collegians; 9-9:10, new astrology, Belle Bart; 9:10-9:30, Pasquall Ferrara, tenor;

WPG, Atlantic City, N. J. (299.8), 7 p. m., Hotel Ambassador dinner music; 9, double trio, Chalfonte-Haddon hall; 10, Amusement Publishing company, Arthur Walker, director; Ruby Cordery Warko, pianist; 11, Paul Whitman's Hotel Traymore dance music.

WRC, Washington, D. C. (468.5), 6:45 p. m., children's hour, Peggy Albion; 7, Meyer Davis' New Willard; 8, "Show Shopping," Leonard Hall; 8:10, Ruth Peter, soprano; 9, Brunswick Music memory contest, WJZ, WGY, WBZ, KDKA, KYW; 10:15, Elizabeth Winston, pianist; WJZ, WGY; 10:30, Meyer Davis' Le Paradis band.

WREO, Lansing, Mich. (285.5), 8:15-9:45 p. m., Reo Broadcasting band, Carl Hall Dewey, director; string quartet.

WTAM, Cleveland, Ohio (389.4), 6-7 p. m., Hotel Statler concert orchestra.

WVL, Detroit, Mich. (352.7), 6 p. m., dinner concert; 8, concert from WEAF.

### Central Time Stations

CKY, Winnipeg, Can. (384.4), 7:30 p. m., lecture, Prof. W. T. Allison; 8, Winnipeg Piano company; 9, musical program, Capitol theater, Earle Hill's orchestra.

KFMQ, Fayetteville, Ark. (299.8), 9 p. m., sacred choir, First Presbyterian church, Harry Shultz, director.

KSAC, Manhattan, Kan. (340.7), 7:20 p. m., college quartet; 7:30, "Time of Cutting Alfalfa," S. C. Salmon; 7:40, college quartet; 7:50, "Building the Poultry House," J. H. Meadams.

KSO, St. Louis, Mo. (545.1), 6 p. m., Benjamin Rader's orchestra; 9, Hugo Diedrichsen, baritone.

KTHS, Hot Springs National Park, Ark. (374.8), 8:30-9 p. m., Charles L. Fischer's Eastman hotel orchestra; 9-9:20, address; 9:20-10, Meyer Davis' New Arlington orchestra.

KYW, Chicago, Ill. (535.4), 7 p. m., Congress hotel concert; 7:33, "New Tractors from Old Ones," J. E. Hill; "Monthly Analysis of Farm Markets," E. W. Moorhouse; 8, Brunswick hour; 9, Helen Shaffer, soprano; Ray de St. Aubin, baritone; Harold O'Brien, violinist; Stephenson & Heather, vocal duos; 10-11:30, evening at home program; 1-2 a. m., insomnia club; Coon-Sanders Original nightawks.

WBAP, Fort Worth, Tex. (475.9), 7:30-8:30 p. m., Harmony club; 9:30-10:45, musical program, artists College of Industrial Arts, Denton.

WBBM, Chicago, Ill. (226), 8 p. m., Gray Dawn orchestra, Tell Taylor, Our Mr. Marthens, M. Silverman, Jack Perry, Cort Banks, Our Jerry.

WBCN, Chicago, Ill. (266), 7-8 p. m., Lillian Botensi, soprano; Robert Gauthier, pianist; 8-8:30, Marie Wright, soprano; Midway dancing gardens orchestra; Axel Christensen, pianist; Will Rossiter's Melody girls; Finney Briggs, humorist; Jack Little and Paul Small; Anna Flemming Kenney, soprano; Collette Flynn, pianist; Tony Prince; Larry Loser, tenor; 12-2 a. m., Pirate ship.

WCBZ, Zion, Ill. (344.6), 8 p. m., Zion orchestra; Daniel Masovec, trombonist; Mrs. J. D. Thomas, soprano; Mrs. Hulda Klammer, reader.



B. C. Bean, friend and official biographer of Luther Burbank, will talk March 24 at WLS. Helen Spring, leading woman of the Harry Bond players, gives stage style talks from WGY. She will give her next lecture March 31. Dorothy Lake (right) has a sweet lyric soprano voice often heard from Philadelphia stations. She sings most often at WFI.



Out of a Can of Baking Powder?" Helen Harrington Downing; book review, Rev. Fred Harrison.

WSB, Atlanta, Ga. (428.3), 8-9 p. m., Warners' Seven Aces; 10:45, Fiddlin' John Carson birthday.

WSUI, Iowa City, Ia. (493.6), 7:30 p. m., "Modern English," Prof. Thomas A. Knott; 7:45, "Current Social and Economic Problems," Dale Yoder; 8, Prof. C. L. Robbins, baritone; Mrs. Robbins, pianist.

WTAS, Elgin, Ill. (302.8), 8-11 p. m., Villa Olivia Monday night Radio concert.

### Mountain Time Stations

CJCA, Edmonton, Can. (516.9), 8:30-9:30 p. m., local talent and organ recital.

KOA, Denver, Colo. (322.4), 8 p. m., Fred Schmitt and his Rialto theater orchestra; 8:10, intercollegiate night, Robert L. Chambers, director, Colorado School of Mines, Colorado Agricultural college, University of Denver.

KQB, State College, N. M. (348.6), 7:30-8:30 p. m., "First Aid, Medical and Surgical," Dr. Troy C. Sexton; "Flower Gardens in the Southwest," Francis B. Lester.

### Pacific Time Stations

KFAE, Pullman, Wash. (348.6), 7:30-9 p. m., Vay Kerns, contralto; Neva Lois Thompson, pianist; "Modern Youth and Parental Control," Annie M. Fertig; "Money Values of Housework," Florence Harrison; "Home Demonstration Clubs," Maud Wilson; "Agriculture in Washington," W. W. Underwood.

KFI, Los Angeles, Calif. (467), 6:45-7 p. m., radio-torial talk; 7-8, Evening Herald Radollans, Charlie Melson, tenor; 8-9, program, Owl Drug company, "A trip around the world," Hollywood string quartet; 9-10, program, Walter M. Murphy Motors company, Virginia Flohr, soprano; 10-11, Examiner, Ray West and his Alexandria hotel dance orchestra.

KFOA, Seattle, Wash. (384.4), 8:45-8:15 p. m., Sherman, Clay & company program; 8:30-10, Seattle Times studio program.

KGO, Oakland, Calif. (361.2), 9 a. m., music and lectures, California State Department of Education; 10:40, classroom instruction, Oakland public schools; 11:30-1 p. m., luncheon concert; 3, studio musicale; 4-5:30, Henry Halstead's dance orchestra; 8, Arlo trio; "Figs, Facts and Figures," Prof. I. J. Condit; "A Lesson in English," Wilda Wilson Church; "Learning to Concentrate," Althea Richards; "Introductions," Edith Storens Giles; book chat, Joseph Henry Jackson; 10-11, Henry Halstead's orchestra.

KGW, Portland, Ore. (491.5), 5 p. m., children's program; 8, Frederick W. Goodrich.

## Tuesday, March 24

Tuesday, silent night for: AT9, CHNC, CHIC, KFAB, KFAE, KFKU, KFKX, KFMX, KFNF, KFUO, KLX, KOA, KOB, PWX, WAHG, WBAV, WBRR, WCAL, WCBZ, WEAD, WEMG, WFI, WHAO, WHAZ, WHO, WOI, WOO, WOS, WSAC.

### Eastern Time Stations

CKAC, Montreal, Can. (410.7), 7 p. m., kiddies' stories; 7:30, Windsor hotel dinner concert; 8:30, studio concert; 10:30, Windsor hotel dance program.

GNRA, Moncton, Can. (312.3), 7:30 p. m., artists from North Kingston, John M. Hurlley; John Hurlley, tenor; Eleanor Nelson, pianist; Ida Hurlley, elocutionist; Rainbow Melody Boys.

KOKA, Pittsburgh, Pa. (309.1), 6:15 p. m., dinner concert, Pittsburgh Athletic association orchestra; 7:30, Radio Godmother; 7:45, "Overcoming Patriotic Prejudice," Dr. John Ray Ewers; 8:30, program, Pittsburgh Advertising club; 9, Brunswick hour of music; 11, concert, Pittsburgh Post studio; 11:30, concert, Grand theater.

WCAE, Pittsburgh, Pa. (461.3), 6:30 p. m., dinner concert, William Penn hotel; 7:30, Uncle Kaybee; 8:30, Gold Dust Twins; 9, Eveready hour; 10, Goodrich Silvertown cord orchestra.

WCAU, Philadelphia, Pa. (278), 6 p. m., dance orchestra; 7, Paul Specht's dance orchestra; 7:30, B. Snellenburg concert; 8, Cleve-Chandler trio; 8:15, electrical talk, G. Bertram Regar; 10:20, Paul Specht's dance orchestra.

WCCX, Detroit, Mich. (516.9), 4:15 p. m., musical program; 6, dinner concert, Book-Cadillac hotel; 8:30, musical program; 10, The Red Apple club.

WOWF, Providence, R. I. (440.9), 8:30-9:30 p. m., Vincent Lopez Arcadia dance orchestra.

WEAF, New York, N. Y. (491.5), 6-7 p. m., dinner music from Waldorf-Astoria hotel; 7:15-7:20, "Art in Advertising," Heyworth Campbell; 7:20-7:30, Indian songs, Klutus Tecumseh; 7:30-8, Royal Eastern Electrical Supply company; 8-8:15, talk, Bank of America; 8:15-8:30, Victor Larsen, baritone; 8:30-9, Gold Dust Twins; 9-10, Eveready hour; 10-11, Goodrich Rubber company.

WEAR, Cleveland, Ohio (389.4), 7-8 p. m., Metcalf Memorial organ recital, Vincent H. Percy; 8-10, concert, WEAF.

WEBJ, New York, N. Y. (233), 7-7:15 p. m., Kay Macrae, accompanied by Viola Milner; 7:15-7:45,

9:45-10, Margaret Bovard, soprano; 10-10:30, recital, Alede Rankin; 11-12, Hotel Vanderbilt dance orchestra.

WBR, Buffalo, N. Y. (319), 6-7:30 p. m., Hallpyrd string trio; 8-11, musical programs jointly with WEAF including the Gold Dust Twins, Eveready hours and variety entertainment.

WGY, Schenectady, N. Y. (379.5), 7:30 p. m., "Ancient Athletic Sports," Dr. Harrison C. Coffin; Edna Mereness, pianist; Emeline Bates, soprano; 9, Brunswick hour of music; 10:30, Meyer Davis' orchestra; 11:30, Stephen S. Boisclair, organist.

WNN, New York, N. Y. (361.2), 6:30-7 p. m., Strand Roof orchestra; 7:30-7:35, health talk, Dr. Landis; 8:30-9, Dave Harman and his Cinderella orchestra; 9-9:15, popular songs, Bob Miller and Jimmy Flynn; 10:30-11, the New Rockwell Terrace revue; 11-11:30, Everglades revue; 11:30-12, Club Alabam orchestra; 12-12:30 a. m., Parody club revue and orchestra.

WIP, Philadelphia, Pa. (508.2), 6:05 p. m., baseball talk, Monte Cross; 6:15, Harvey Marburger dance orchestra; 7, Uncle Wip's bedtime stories; 8, automobile talk, Eugene Hoyle; Philadelphia Police band; 9, "Mikado" West Philadelphia high school students; 10:05, "Emo's Weekly Movie Broadcast," 10:30, Harvey Marburger's dance orchestra.

WJAR, Providence, R. I. (305.9), 8 p. m., studio program; 9, Eveready hour; 10, Goodrich Silvertown cord orchestra.

WJY, New York, N. Y. (405.2), 8:15-8:30 p. m., Fairfield quartet; 8:30-8:45, Mathilda Zimber, cellist; 9:15-10:15, Japan Society annual dinner, Hotel Astor; 10:45-11, Radio Franks, Wright and Bessinger.

WJZ, New York, N. Y. (454.3), 7-7:15 p. m., dog talk, Frank Dole; 7:15-8, Joseph Strissoff's Hotel Vanderbilt orchestra; 8-8:10, Wall Street Journal review; 8:10-8:20, N. Y. U. air college; 9, Brunswick Music memory contest; 10:15-10:30, Elizabeth, pianist; from WRC, Washington.

WKAQ, San Juan, P. R. (340.7), 8-9:30 p. m., WKAQ orchestra.

WLIH, Philadelphia, Pa. (394.5), 7:30 p. m., Dream Daddy's bedtime stories.

WMBF, Miami Beach, Fla. (384.4), 10-2 a. m., Nautilus hotel orchestra; Rosebrook's Radio serenaders.

WNYC, New York, N. Y. (526), 7:20-7:30 p. m., sports analysis, Thornton Fisher; 7:35-8:45, Risenfeld's Rialto program; 8:45-9:45, dance program; 9:45-10, song recital; 10-10:20, lecture service, Board of Education.

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

WOR, New York, N. Y. (405.2), 9-9:10 p. m., "Craig Kennedy," Arthur B. Reeve; 9:30-10:30, Chickering artists; 10:30-11, Manhattan serenaders; 11-11:45, Ciro orchestra.

WCCO, Minneapolis-St. Paul, Minn. (416.4), 6:15 p. m., dinner concert, Dick Long's Nankin cafe orchestra; Bernard & Robinson; 8-10, national program from New York.

WCEE, Elgin, Ill. (275), 7-8 p. m., Boss' own orchestra, Fred Hamm, director; Eddie Loftus, Frank Morris; 11-12, Boss' own orchestra; Frank Morris.

WDAF, Kansas City, Mo. (365.6), 3:30-4:30 p. m., the Star's Radio trio; 5-5:30, weekly child talent program; 6-7, Tell-Me-a-Story Lady; Radio Piano Lessons, Maudellen Littlefield; Trianon ensemble; 11:45-1, Newman Nighthawk night.

WEBH, Chicago, Ill. (370.2), 7-8 p. m., Oriole orchestra; Dean Remick, pianist; Riviera theater; 9-10, Oriole orchestra; Dennis sisters, Frank Magini, Ted Florio, Frank Papile; 11-12, Oriole orchestra; Frank Magini, Ted Florio, Dennis sisters, Jack Penwell, Banks Kennedy, feature acts, Riviera theater.

WEBW, Beloit, Wis. (268), 8-9 p. m., band concert, Fairbanks, Morse company.

WFAA, Dallas, Texas (475.9), 6:30-7:30 p. m., Hauulea School of Hawaiian music; J. B. Stevenson; 8:30-9:30, music, K. J. U. class, Tyne Street Methodist church; 11-12, Palace theater organ, Dwight Brown.

WGN, Chicago, Ill. (370.2), 6 p. m., organ recital, Lyon & Healy; 6:30-7, Drake concert ensemble, Blackstone string quintet; 8-9, Vivian McCarthy, soprano; Sluoco band; 10-11, Don Bestor Drake dance orchestra.

WHAS, Louisville, Ky. (399.8), 4-5 p. m., concert, Louisville Conservatory of Music; Jack Little, Paul Small; 7:30-9, Eddie Rossion and his orchestra.

WHB, Kansas City, Mo. (365.6), 8-10 p. m., orchestra; Ralph Walleck, baritone; Mrs. John McKenzie, soprano; song, Rev. Wallace Bacon; Frank Gilmore, violinist; Miss Armstrong, soprano.

WLB, Stevens Point, Wis. (278), 8 p. m., program, Souders Stevens Point Chamber of Commerce.

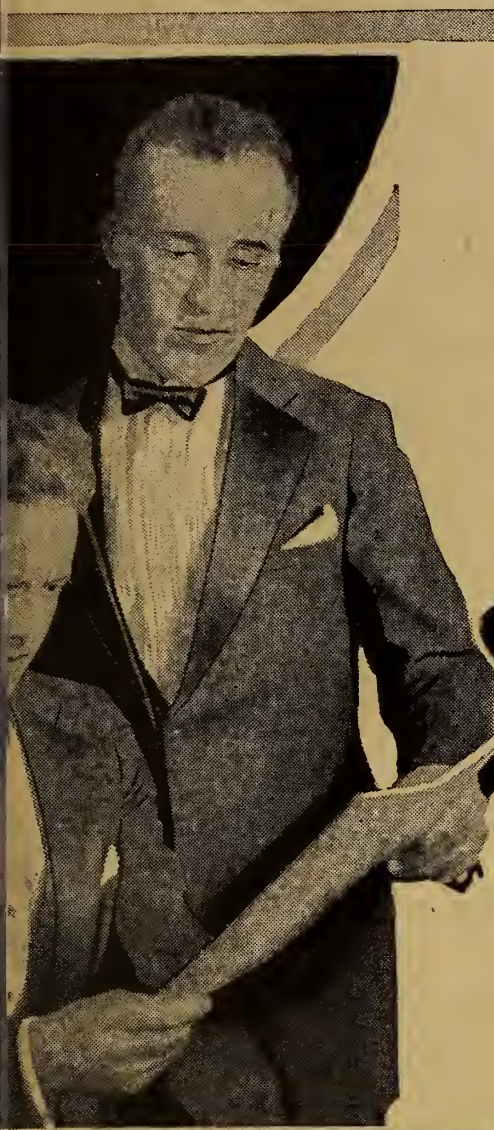
WLS, Chicago, Ill. (344.6), 6:25 p. m., Ralph Emerson, organist; 6:50, Senate theater; 7, lullaby time, Ford and Glenn; 7:15, WLS Harmony trio; 7:45, Anthony Wons feature; 8, R. F. D. program; Ford and Glenn; Glenn's Cornhuskers, Kenneth Clark; 9, Nubs Allan; 9:10, Anthony Wons, Shakespearean drama; 9:30, Glenn's Cornhuskers; 9:40, Senate Syncopters; 10, Evanston Men's string quintet; 10:30, Glenn's Cornhuskers; 10:40, Ford and Glenn time; 11, Carroll's vaudeville night; 12, revue, Ralph Emerson, Ford and Glenn.

WLW, Cincinnati, Ohio (422.3), 8 a. m., musical exercises, Central Y. M. C. A., William Stradman, instructor; 12:15 p. m., program, Delta Omega society; Clifford Lanx, pianist; 4, pupils of Leo...

(Continued on page 12)



# NECESSARY WITH SPECIAL PROGRAM



WGBS, New York, N. Y. (315.6), 6-6:30 p. m., Uncle Geebee; 6:30-6:40, Pearl Smith, animal imitator; 6:40-7:10, Dave Harman's Cindarella orchestra; 8:30-9, "Footlights and Lamplights," Oliver Saylor; 11-11:30, Chris. Meehan, Irish tenor.

WGR, Buffalo, N. Y. (319), 6-7:30 p. m., Hallpryd string trio; 8-11, musical program jointly with WEAF, including a variety hour, Victor hour, and the Goodrich Silvertown cord orchestra.

WGY, Schenectady, N. Y. (379.5), 6:30 p. m., dinner music, Hotel Ten Eyck orchestra; 7:30, review of new books, L. L. Hopkins; 7:45, WGY orchestra; 8:15, Vanamaker program; 9:15, "Caste," WGY players; 11:30, Stephen E. Boleclair, organist.

WJL, New York, N. Y. (361.2), 6:30-7 p. m., violin solos, Olcott Vail; 7-7:30, Silver Slipper revue; 7:30-7:35, health talk, Dr. Landis; 8-8:30, Chateau Shanley entertainers; 9:30-10, O'Meara Gardens ballroom orchestra; 10-10:30, Hotel St. George orchestra; 12-12:30 a. m., Parody club revue; 12:30-1 a. m., George Olson's music with Warner Gault and Marion Morgans.

WIP, Philadelphia, Pa. (508.2), 6:05 p. m., Benjamin Franklin concert orchestra; 7, Uncle Wip's bedtime stories; 8:15, Melody club of Ardmore; John Ouran, boy soprano; 10:04, Howard Lanin's dance orchestra.

WJAR, Providence, R. I. (395.9), 8 p. m., program from New York studio; 9, Victor presentation; 10, Goodrich Silvertown cord orchestra.

WJY, New York, N. Y. (405.2), 7:30-8:15 p. m., Philadelphia Benjamin Franklin dinner concert orchestra; 8:15-8:25, "Babes of the Zoo," Dr. W. Reid Blair; 9:30-9:45, Harry Lowes, baritone; 9:45-10, "Saving Money," Automatonically; 10:15-10:30, Hanna Van Vollenhoven, pianist; 10:30-11:30, Waldorf-Astoria orchestra.

WKAQ, San Juan, P. R. (394.7), 7-9 p. m., La Cafetera.

WLIT, Philadelphia, Pa. (394.5), 7:30 p. m., Dream Daddy's bedtime stories.

WMAK, Lockport, N. Y. (265.5), 12 midnight, Murray Whitman's midnight serenaders.

WMBF, Miami Beach, Fla. (384.4), 10-2 a. m., Nautilus hotel orchestra; Rosebrook's Radio serenaders.

WNYC, New York, N. Y. (526), 7:20-7:30 p. m., sports analysis, Thornton Fisher; 7:35-8, dance program; 8:15-8:25, "Timely Topics," F. P. Bent; 8:30-9:30, concert program; 9:30-10, instrumental novelties; 10-10:15, violin recital.

WONK, Tonodi, N. Y. (449), special program.

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

WOR, New York, N. Y. (405.2), 6:15-6:30 p. m., Hotel Lorraine orchestra; 6:30-7, man in moon stories; 7-7:30, Hotel Lorraine orchestra.

WPG, Atlantic City, N. J. (299.8), 10 p. m., Jean Weiner, organist; Howard Clemmons, tenor; Paul Whitman's Hotel Traymore dance orchestra.

WRC, Washington, D. C. (468.5), 6:45 p. m., children's hour, Peggy Albion; 7, Women's City club dinner; 8:15, talk, auspices, Smithsonian Institution; 8:30, American orchestral society concert; 10, Vincent Lopez and his Hotel Mayflower orchestra.

WREO, Lansing, Mich. (285.5), 8:15-9:45 p. m., Reo broadcasting orchestra, Carl Hall Dewey, director, Reo male quartet.

WTAM, Cleveland, Ohio (389.4), 6-7 p. m., Hotel Statler concert orchestra.

WVJ, Detroit, Mich. (352.7), 3 p. m., Detroit News orchestra; 6, dinner concert; 8, concert from WEAF.

## Index to Popular and Classical Concerts

TABULATED below is a time table of the stations giving popular and classical concerts this week. The concerts are divided into two classes, popular and classical. Stations are likewise divided into the four different standard times in use. The hours are given in the kind of time in use at each listed station. By using this table as an index and referring to the complete programs below, full information will be obtained.

### Popular

**Eastern Time Stations**

**Saturday, March 21:** 6, WGR; 6:05, WIP; 6:30, WGBS, WNYC; 7, WEAF, WJZ; 7:20, WEAF; 7:30, CKAC; 7:35, WNYC; 8:30, WNYC; 12, WAHG.

**Sunday, March 22:** 7:20, WEEL, WWJ; 8:15, WEAF; 10, WHN.

**Monday, March 23:** 6:30, WGR; 6:40, WGY; 7:15, WEAF; 7:30, WEEL; 7:45, WNYC; 8, WWJ; 8:15, WAHG; 8:30, WAHG; 9, KIAF, WEAF; 9:15, WAHG; 9:30, WNYC; 10, WEAF, WGR; 10:30, WHAZ.

**Tuesday, March 24:** 6, WGR; 6:30, WGBS; 7:15, WEBJ; 7:30, WEAF, WEBE; 8, WCAU, WGR; 8:15, WEBJ, WJY; 8:30, WCAE, WEAF, WEEL; 8:45, WNYC; 9, WCAE, WEAF, WEEL, WFI, WGR, WHN; 10, WEAF; 10:45, WJY.

**Wednesday, March 25:** 7, WHN; 7:55, WGR; 8, WAR, WCAU, WEEL; 8:15, WSAC; 9, WEAF, WJZ, WGR; 9:10, WCAU; 10, WGR.

**Thursday, March 26:** 6, WGR; 6:30, WGBS, WGY; 7, WGY; 8, WBBR, WGR, WHN; 8:15, WGY, WIP; 8:50, WBBR; 9, CJCA; 9:15, WGY; 9:30, WNYC.

**Friday, March 27:** 6:05, WIP; 6:30, WGR; 7, WHN; 7:35, WHN; 8, WEAF, WWJ; 8:15, WGR; 11, WLIT.

**Mountain Time Stations**

**Monday, March 23:** 8, KOA; 8:10, KOA.

**Wednesday, March 25:** 8:10, KOA.

**Friday, March 26:** 8, KOA.

**Pacific Time Stations**

**Saturday, March 21:** 8, KHJ, KNX; 11, KHJ, KNX; 12, KHJ, KNX; 1, KHJ, KNX.

**Monday, March 23:** 8, KNX; 8:30, KFOA.

**Tuesday, March 24:** 8, KHJ, KNX; 10, KNX; 11, KNX.

**Wednesday, March 25:** 8:30, KFOA; 9, KNX; 9:30, KHJ.

**Thursday, March 26:** 8, KHJ; 11, KNX.

**Friday, March 27:** 10:30, KGW.

### Classical

**Eastern Time Stations**

**Saturday, March 21:** 6, WEAF, WTAM; 6:30, WFI, WHN; 7, WLIT, WRC; 8, WBBR, WEAF; 8:15, WJZ; 8:30, CKAC, KDKA, WCAE; 8:45, WBBR; 9, WEAF; 9:10, WIP; 9:15, WGBS; 9:45, WGBS; 10, WEAF; 10:30, WEAF; 11:05, WIP.

**Sunday, March 22:** 6, WCAU; 6:30, KDKA, WCAE; 7, WCAU, WREO; 8, WEAR, WJZ, WLIT; 8:15, WJY; 9, WBBR, WEAR, WNYC; 9:10, KDKA; 9:15, WEEL; 9:20, WEAF; 9:45, WJY; 10, WJZ; 10:05, WBBR.

**Monday, March 23:** 6, WEAF, WWJ; 6:15, KDKA; 6:30, WCAE, WFI, WHN; 7, WEAF, WEAR, WJZ, WOO; 7:30, WGY, WOO; 8, WBBR, WEEL, WGR, WOO, WTAM; 8:30, CHNC, CJCA, KDKA, WCAE; 8:40, WEEL; 9, WAHG, WCAE, WGR, WHAZ, WLIT, WWJ; 10, WAHG, WEEL; 11, WCAE, WTAM; 12, WAHG.

**Tuesday, March 24:** 6, WEAF, WTAM, WWJ; 6:30, WCAE, WFI, WGY; 7, WEBJ, WEAR, WRC; 7:15, WEEL; 7:20, WEAF; 7:30, CKAC, WCAU; 7:35, WNYC; 7:40, WGY; 8, WCAE, WEAR, WEBJ, WEEL, WFI, WKAQ, WWJ; 8:15, WREO; 8:30, CKAC, KDKA, WJY, WRC; 9, KDKA, WGY, WJZ, WIP, WRC; 9:10, WGBS; 9:45, WNYC; 10, WCAE, WGBS; 10:15, WJZ, WRC; 11, KDKA; 11:30, KDKA, WGY.

**Wednesday, March 25:** 6, CJCA, WCAU, WEAF, WWJ; 6:05, WIP; 6:30, WCAE, WFI, WHN; 7, WEAR, WEBJ, WGY, WKAQ; 7:15, WEEL; 7:30, WAHG, WEAF, WOO; 8, WCAE, WTAM, WWJ; 8:30, KDKA, PWX, WEAF, WEEL; 9, WCAE, WOO; 9:15, WJZ; 9:30, WGBS; 9:45, WNYC; 10, WEAF; 10:30, WCAE.

**Thursday, March 26:** 6, WEAF, WTAM, WWJ; 6:05, WIP; 6:30, WCAE, WFI, WHN; 7, WEAR, WKAQ; 7:30, WCAU, WJY; 7:45, WGY; 8, AT9, KDKA, WCAE, WEAF, WEAR, WEEL, WFI, WONK, WWJ; 8:10, WBBR; 8:15, WREO; 8:30, CKAC, KDKA, WJZ, WNYC; 9, CHIC, WCAE, WEAF, WEAR, WEEL, WFI; 9:30, WJY; 10, CHIC, WCAE, WNYC; 10:15, WJZ; 11, KDKA, WGBS; 11:30, WGY.

**Friday, March 27:** 6, WCAU, WEAF, WTAM, WWJ; 6:30, WCAE, WFI, WHN; 7, WEAR, WJZ; 7:15, WEEL; 7:30, WEEL, WOO; 7:40, WGY; 7:45, WEAF; 8, WAHG, WDWE, WEBJ, WEEL, WLIT, WOO; 8:30, KDKA, PWX, WAHG, WCAE, WEAF, WEEL; 8:40, WJZ; 9, WNYC; 9:15, WAHG; 9:25, WJZ; 9:30, WEAF, WEEL, WJY; 9:45, WAHG; 10, WJZ, WLIT; 10:30, WGY.

**Central Time Stations**

**Saturday, March 21:** 6, WBCN, WCCO, WFAA, WGN, WLW; 6:30, KFNF; 7, KSD, KYW, WQJ; 7:30, KFNF; 7:45, KLX; 8, KHJ, KPO; 8:30, KFOA; 9, KNX; 9:30, KHJ, KPO; 10, KGW, KLG; 11, KXJ, KXJ, KXJ, KXJ, KXJ.

KHJ, Los Angeles, Calif. (404.1), 6-6:30 p. m., Art Hlickman's Biltmore hotel concert orchestra, Edw. Fitzpatrick, director; 6:30-7:30, little stories American history, Prof. Walter Sylvester Hertzog; Dick Winslow, juvenile reporter; Baby Muriel MacCormac, Mickey McKim, screen starlets; Uncle John; 7:30-8, University of Southern California glee club; 8, Dr. Mars Bumgardt, scientific lecturer; 8-9:30, program, Desmonds, arranged by G. Allison Phelps; 9:30-10, Piggly Wiggly girls' trio; 10-11, Art Hlickman's Biltmore hotel dance orchestra, Earl Burnette, leader.

KLX, Oakland, Calif. (508.2), 6-7 p. m., organ recital; 8-10, studio program, American Theater orchestra; 10-11:30, Sweet's ballroom.

KNX, Hollywood, Calif. (336.9), 6:30-7 p. m., dinner concert orchestra; 7-8, Ambassador hotel concert orchestra, Josef Rosenfeld, leader; 8-9, program, Security Trust and Savings bank, Los Angeles string quartet; 9-10, KNX feature program; 10-12, Hollywoodland dance orchestra.

KPO, San Francisco, Calif. (420.3), 1-2 p. m., Rudy Selzer's Fairmont Hotel orchestra; 2:30-3:30, matinee program, Johnny Buick's Amphians; 4:30-5:30, Rudy Selzer's Fairmont Hotel orchestra; 5:30-6:30, children's hour stories, Big Brother; 7-7:30, Rudy Selzer's Fairmont Hotel orchestra; 7:30-8, Conn. Band Instrumental company; 8-10, Ruth Ludwigsen, pianist; Althea Burns Pienn, soprano; A. C. Clefan, baritone.

## Thursday, March 26

Thursday, silent night for: CHNC, CHIC, KFAB, KFAE, KFMC, KFOA, KFUD, KLX, KOA, KOB, KWG, WAHG, WBAV, WDFW, WEAO, WEBJ, WEBW, WEMC, WHAD, WHAZ, WLBL, WOO, WOS, WSAC, WSUI.

**Eastern Time Stations**

CHIC, Toronto, Can. (356.9), 10-11:30 p. m., classical studio concert.

CKAC, Montreal, Can. (410.7), 8:30 p. m., special concert, Frontenac Breweries.

KDKA, Pittsburgh, Pa. (309.1), 6:15 p. m., Brudy's orchestra; 8, program, National Stockman and Farmer studio; 8:30, concert; 11, concert, studio Pittsburgh Post.

WBBR, New York, N. Y. (272.6), 8 p. m., Hawaiian quintet; 8:10, Kay Macrae, coloratura soprano; 8:20, International Sunday school lesson, S. M. Van Sipma; 8:40, Kay Macrae, soprano; 8:50, Hawaiian quintet.

WCAE, Pittsburgh, Pa. (461.3), 6:30 p. m., dinner concert, William Penn hotel; 8, concert from New York; 9, program, Victor artists; 10, Goodrich Silvertown orchestra.

WCAU, Philadelphia, Pa. (278), 7:30 p. m., Snellenburg concert; 8:15, Bonwit-Teller orchestra; 10, talk, Rev. Dr. John W. Stockwell; 10:15, Paul Specht's dance orchestra.

WCX, Detroit, Mich. (516.9), 4:15 p. m., musical program; 6, dinner concert, Book-Cadillac hotel.

WEAF, New York, N. Y. (491.5), 7-7:30 p. m., services, Federation of churches; 7:30-7:40, Scott Blakeley, Scotch tenor; 7:40-8, Columbia University American history lecture; 8-8:20, Ashley Pettis, pianist; 9-10, Victor Talking Machine company; 10-11, Silvertown Cord orchestra; 11-12, Vincent Lopez and his Hotel Pennsylvania orchestra.

WEAR, Cleveland, Ohio (389.4), 7-8 p. m., Vincent H. Percy, organist; 8-9, concert from WEAF; 9-10, Victor artists from WEAF.

WEEL, Boston, Mass. (475.9), 3:15 p. m., Noah's Arkadians, J. A. Rines, director; 6:30, Big Brother club; 7:25, program, Greater Boston Federation of Churches; 7:55, Pathe News flashes; 8, musicale from New York; 9, Victor Concert program; 10, Goodrich Silvertown Cord orchestra.

WFI, Philadelphia, Pa. (394.5), 3 p. m., Housewives' Radio exchange, direction Mabel Swint Ewer; 3:10, concert, Century club of Norwood; 6:30, Meyer Davis' Bellevue Stratford concert orchestra; 7, bedtime stories; 8, concert from WEAF; 9, Victor concert.



8:40, Kay Maerae, soprano; 8:50, Hawaiian quintet.  
**WCAE**, Pittsburgh, Pa. (461.3), 6:30 p. m., dinner concert, William Penn hotel; 8, concert from New York; 9, program, Victor artists; 10, Goodrich Silvertown cord orchestra.  
**WCAU**, Philadelphia, Pa. (278), 7:30 p. m., Snellenburg concert; 8:45, Bonwit-Teller orchestra; 10, talk, Rev. Dr. John W. Stockwell; 10:15, Paul Specht's dance orchestra.  
**WCX**, Detroit, Mich. (516.9), 4:15 p. m., musical program; 6, dinner concert, Book-Cadillac hotel.  
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lying Choice of a Life Work," Dean John K. Dyer; 7:45, educational psychology, Dean R. A. Schwegler.  
**KFKX**, Hastings, Nebr. (288.3), 9:30-11:30 p. m., dance program, Peerless Six orchestra.  
**KFMQ**, Fayetteville, Ark. (299.8), 7:30 p. m., "The Man in the Moon," A. M. Harding; "The University and the Teacher," J. R. Jewell; "How to Use the County Agent," T. Roy Reid; "How Pines Produce Their Seeds," J. T. Buchholz.  
**KFNF**, Shenandoah, Ia. (266), 6:30 p. m., program from Humboldt, Frank J. Hest, director.  
**KSAC**, Manhattan, Kan. (340.7), 7:20 p. m., music, J. R. Putnam; 7:30, "Floors, Coverings and Their Care," Harriet W. Allard; 7:40, music, L. R. Putnam; 7:50, "Have You Had Your Iron Today?" Martha Kramer; 8-9, springtime program, Prof. P. P. Brainard.  
**KSD**, St. Louis, Mo. (545.1), 8 p. m., Y. M. H. A. orchestra.  
**KTHS**, Hot Springs National Park, Ark. (374.8), 8:30-9:30 p. m., Charles L. Fischer's Eastman hotel orchestra; 9:30-10, Meyer Davis' New Arlington hotel orchestra; 12:15-1:15, Owl frolic with Phil Baxter and his ailing orchestra.  
**KYW**, Chicago, Ill. (535.4), 7 p. m., Congress hotel concert; 7:33, "Among Baby Beef Clubs," Frank W. Harding; "Something We Are Going to Do This Season," D. C. Waterman; 8, reading, Rev. C. J. Perrin; 8:20, Minotta Smith, soprano; musical program, Henry B. Roncy; 9:05, safety talk, Bert Vanderwarf; 10, evening at home; 1-2 a. m., Insomnia club; Coon-Sanders Original nightbirds.

**WGYY**, 8, AT9, KDKA, WCAE, WEAF, WEAR, WEEI, WFI, WONK, WWJ; 8:10, WBBR; 8:15, WREO; 8:30, CKAC, KDKA, WJZ, WNYC; 9, CHIC, WCAE, WEAF, WEAR, WEEI, WFI; 9:30, WJY; 10, CHIC, WCAE, WNYC; 10:15, WJZ; 11, KDKA, WGBS; 11:30, WGY.  
**Friday, March 27:** 6, WCAU, WEAF, WTAM, WWJ; 6:30, WCAE, WFI, WHN; 7, WBAV, WEBJ, WEAR, WJZ; 7:15, WEEI; 7:30, WEBJ, WOO; 7:40, WGY; 7:45, WEAF; 8, WAHG, WDWI, WEBJ, WEEI, WLIT, WOO; 8:30, KDKA, PWX, WAHG, WCAE, WEAF, WEEI; 8:40, WJZ; 9, WNYC; 9:15, WAHG; 9:25, WJZ; 9:30, WEAF, WEEI, WJY; 9:45, WAHG; 10, WJZ, WLIT; 10:30, WGY.  
**Central Time Stations**  
**Saturday, March 21:** 6, WBCN, WCCO, WFAA, WGN, WLW; 6:30, KPNE; 7, KSD, KYW, WQJ; 7:30, WHAS; 8, KYW, WGN; 8:30, KTHS;

**Thursday, March 26:** 9, CNRC.  
**Friday, March 27:** 8:10, KOA; 8:30, CNRE.  
**Pacific Time Stations**  
**Saturday, March 21:** 6, KHJ; 6:15, KNX; 6:45, KFOA; 7, KNX; 8, KGO.  
**Sunday, March 22:** 6, KHJ; 7, KGW, KHJ; 8, KHJ, KNX; 8:30, KPO; 9, KNX.  
**Monday, March 23:** 6, KGW, KLX; 6:15, KNX; 6:30, KPO; 6:45, KFOA; 7:30, KFAB; 8, KPO; 9, KPO.  
**Tuesday, March 24:** 6, KHJ; 6:15, KNX; 6:45, KFOA; 7, KPO; 8, KGO, KPO; 8:30, KGW; 9, KNX.  
**Wednesday, March 25:** 6, KHJ, KLX; 6:45, KFOA; 7, KNX; 7:30, KFAB, KHJ, KPO; 8, KHJ, KLX, KNX, KPO.  
**Thursday, March 26:** 6, KHJ; 8, KGO, KGW, KNX, KPO; 9, KPO.  
**Friday, March 27:** 6, KGW, KLX, KHJ; 6:30, KNX; 6:45, KFOA; 7:30, KFAB; 7:45, KLX; 8, KHJ, KNX, KPO.

11:45, VQJ; 1, WBAP, WOI; 9:30, WLW; WQJ; WEBH, WQJ; PAA; 7, WHAD; BH; 10, 10:45, 11:45, KYW, is 8:10, KOA, KNX; NX; 1, C; 8:30, KNX; KFOA; HJ; 11, W, C; 9:35, AL, VLS; 7, LS; 8, WEMC; WHE; WCCO; WLW, WGN, WBAP, WEBW, WOS; V; 9:30, W; 11, WGN, VOAW; 7:30, WCCO, WOC; KFMQ, VOAW; WGN, KYW, WHO, WGN, 8:30, KFMX, WGN, VGN; 7, WQJ, KSD, 8:30, WOAW; V; 10:45, N; 6:15, KPNE, J; 7:30, WHO, WSE; WFAA, AW; 10,





# How Many Turns of DSC. Wire Required?

## Charts Eliminate Calculation

By David B. Arnold

CHART No 1						
WAVE LENGTH RANGE 190 TO 600 METERS						
C = 250 mmfd. = .00025 mfd.			L = 400 microhenries			
DIA. OF TUBING	3 INCHES		3 1/2 INCHES		4 INCHES	
GAUGE OF WIRE B&S D.S.C.	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS
20	3.4	92	2.8	76	2.4	65
22	2.5	83	2.1	69	1.8	59
24	1.8	74	1.5	67	1.4	57
26	1.4	70	1.2	60	1.05	52
28	1.1	66	0.95	57	0.85	51
30	0.9	64	0.75	54	0.65	46

CHART No 2						
WAVE LENGTH RANGE 190 TO 600 METERS						
C = 350 mmfd. = .00035 mfd.			L = 290 microhenries			
DIA. OF TUBING	3 INCHES		3 1/2 INCHES		4 INCHES	
GAUGE OF WIRE B&S D.S.C.	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS
20	2.55	69	2.15	58	1.85	50
22	2.0	66	1.65	54	1.5	49
24	1.5	61	1.25	51	1.1	45
26	1.05	53	1.0	49	0.85	42
28	0.85	51	0.8	47	0.67	40
30	0.65	46	0.6	43	0.54	38

IN THE previous article by the writer on this subject, published some weeks ago, it was stated that the frequency or wave length of an oscillating circuit was computed by the use of formulas, the factors of which were the wave length desired, the inductive value of the coil and the capacity of the condenser. The following article will give a more complete explanation together with examples. The fundamental formula for determining the wave length of a given inductance and capacity is as follows:

$$\lambda = \frac{2 \pi V}{\sqrt{\frac{1}{LC} - \frac{R^2}{4L^2}}}$$

in which  $\lambda$  = wave length in meters,  $\pi$  = (pi) 3.1416,  $V$  = velocity of light,  $3 \times 10^8$  = 300,000,000 meters per second,  $L$  = inductance of coil,  $C$  = capacity of condenser,  $R$  = high frequency resistance of the circuit. This formula can be used

with different systems of units, one of which was shown in the previous article.

In most cases the factor  $\frac{R^2}{4L^2}$  is so small compared to  $\frac{1}{LC}$  that it can be ignored thus simplifying the formula to,  $\lambda = 2\pi V \sqrt{LC}$ . With the use of this formula we find

$$\lambda = 2 \times 3.1416 \times 300,000,000 = 1,884,960,000 \times \sqrt{LC}$$

but as this was derived from the fundamental units of inductance and capacity in which  $L$  = henries and  $C$  = farads, changing  $L$  to microhenries and  $C$  to microfarads gives us 1884.9 which for practical purposes can be read 1885  $\times \sqrt{LC}$  = wave length.

With a known capacity and wave length the formula to determine the inductance becomes,

$$L = \frac{\lambda^2}{1885^2 \times C} = L \text{ in microhenries}$$

and with known inductance and wave length,

$$C = \frac{\lambda^2}{1885^2 \times L} = C \text{ in microfarads}$$

Then, with a capacity of .0005 microfarads and a maximum wave length of 600 meters, the inductance required is found by,

$$L = \frac{600 \times 600}{1885 \times 1885 \times .0005} = \frac{360,000}{1776.6} = 202 \text{ microhenries (approx.)}$$

and by referring to chart number 3 we find this value is within 1% which for all purposes, excepting precision laboratory measurements, is allowable. It must be understood that in calculating the inductance value of a coil absolute accuracy

is impossible unless the experimenter has a thorough knowledge of mathematics. For those experimenters who desire greater accuracy, circular 74, a U. S. Bureau of Standard's publication, obtainable from the Supt. of Documents, Washington, D. C., will be found of great value.

The following simplified formula will be found to give sufficient accuracy for the designing of coils to be used in the reception of Radio broadcast:

$$L = \frac{(5 d n)^2}{1000} = L \text{ in microhenries}$$

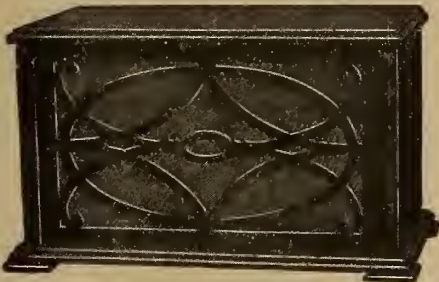
Where  $L$  = inductance in microhenries,  $d$  = diameter of coil in inches,  $n$  = number of turns,  $b$  = length of coil in inches. By referring to chart number 1 we find that it takes 83 turns of number 22 dsc. wire, occupying 2.5 inches on a three inch

(Continued on page 20)

### 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.



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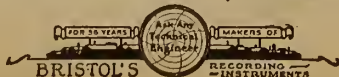


Model "S" Audiphone \$25.00

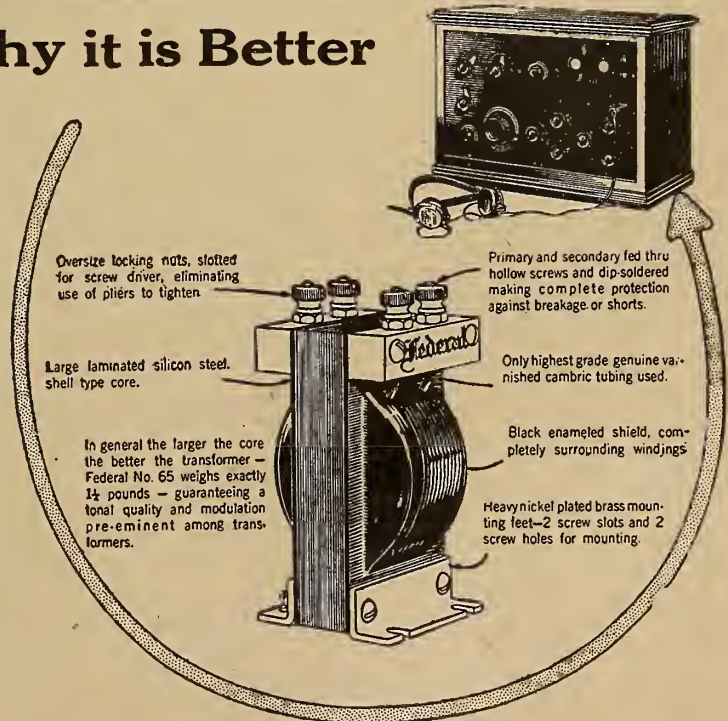
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# Radio Digest

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Illustrated

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## Better Broadcasting Wanted

A GREAT deal of comment has been made on our recent editorial "Less Stations and Better Broadcasting." It seemed to strike the keynote of most fans. All have had the same trouble since our high officials began to tinker with the wave lengths. Thousands of listeners have been keeping a log of the different Class B stations for several years. This log is now of no use to them. Almost all the good program stations have had to change their wave lengths to suit the whim of some understudy in the official offices. One of the pioneer stations has been run for years on 326 meters and now it is changed to 309 meters. This inconsistency prevails everywhere. If a business manager should handle his business in a like manner it would be called a business suicide.

A letter from one of our readers says, "I have two sets now, one a five tube which worked fine before they began to monkey with the wave lengths, but when they began to broadcast on half meters they put the machine out of business. A five tube neutrodyne was purchased and it worked fine up to two or three weeks ago when they again began to monkey with the air and now it is difficult to tune in on many stations without getting the cross-fire of some other station. Many of the stations should be stopped or else the wave lengths should be placed farther apart. A lot of stations should be cut out anyway for they only spoil the fun."

The secretary of commerce seems to have specified a certain wave length for a broadcasting station and then forgot about it, as a great many of the stations run on almost any wave length that suits their convenience, and why not? There is no person holding any official position for checking them up. The old broadcasters appear to be disgusted and they let things run along haphazard.

Another reader says, "Have you any suggestions to make or can you enlighten us as to the cause of all this tomfoolery?" The whole science has been an experiment and there seems to be no end to it, as controlling heads do not know where to stop, or what to do for the fear of offending somebody. What we need is more of the old time "big stick," and that, too, swung by a fearless commander.

## Inauguration by Radio

FORMERLY all notables began their quadrennial trip to Washington to attend the inaugural ceremonies on March 4th. In the early days news traveled slowly and at one time it took weeks for those in remote districts that could not attend in person to learn about what was said and done. Very few pictures came from the capital that would convey to the eye just how things looked down at Washington where these notables took the oath of office, the military parade and the society events following the day's ceremonies.

Time changed things and each inaugural had something new to boast about of which science gave to the world. The new president could be seen in still pictures, his speech could be sent by the press and letters, then actions in motion pictures and the address by telegraph and by telephone became possible.

This year was the first inauguration that speech from the new president could be heard anywhere in the land to all who owned a Radio set. Science has caused all this to happen within the four intervening years. What will happen in the next four years remains to be seen and no person is able to prophesy what will be accomplished. If the same rate of speed in invention is carried on as it has been in the past few years then we can expect much. Perhaps we will be able to see the new president and hear him talk while sitting at our fireside at the other end of the continent.

The average citizen is becoming better acquainted with his government and with the men who administer it, even the highest officials. The humble citizen used to hear, to see, perhaps once in a lifetime, a president or other high officials. Now it is possible to listen in almost daily to some government executive of first rank.

## RADIO INDI-GEST

### Latest Report from the "Kanoofis"



Word has been received here that the expedition will arrive next week at the beautiful little island of Walla Walla. Be sure to get your copy of Indi-Gest, and read the beginning of the history of this island. It will be told by Chief Kokomo, famous for his ability to hunt heads.

The Chief boasts of owning and possessing at least three hundred dried heads, representing years of hard work and dodging of spears. His daughter, Shaka Little, will head the reception committee which will welcome the interpid adventurers when they arrive at the island.

Shaka is an oscillatory dancer, and the belle of the tribe. She is known from one end of the Pacific to the other. Her ability to dance is the topic of conversation at all the clubs in Pago Pago, Papette, Tahiti, Samoa and Fiji. She will be one of the star performers at our station when it is opened, and we will endeavor to obtain a photograph of this young lady so that you may have it for your albums.

Dear Indi: Good news, maybe. I believe I have heard from the now famous Walla Walla expedition on board the S. S. "Kanoofis." Last night while I was tuning my super Radiofotoscope set I heard a series of very damp waves and then got a glimpse of the enclosed foto. Because of static it is very dim. It seems they had a very large wash out but we will probably hear from them again as soon as things dry out. Yours,  
HI AMPER.

### The Dutchman and His Radio

As we travel to and fro  
From WEEI to KGO  
It vos bully gud fun  
Tuning in mit dot Radio.

Ting-a-ling ling!  
Coming in loudt and clear  
Broadcast by vun gud hired man  
Mit dot old cow's lavalier.

Tooty-toot toot! Ve are off!  
Youse get not vun guess  
It's a Tudoor Fordson  
Down by WLS.

Dundervetter! Dot vos Blueyed Sally  
Mit a googly eye.  
She youst land in California  
By dot Station KFI.

In dot leddle round uv miking  
Near the end of dot day,  
It vos dose Vestinghouse Band  
By KDKA.

Und in dot journey southward  
Vay down by dot sea  
It fun mit dose Pickanins  
Sure! It vos WSB.

Now—if dot spine is oudt of kilter  
You will surely attend  
Where dose great Vest begin  
Und dot sidvalk he ends.

HANS.

### But This Is Their Last First Appearance

Dear Indi: This "first appearance" evil has gotta be stopped. We learn, as the latest offense, that Mary Pickford, Douglas Fairbanks and Charles Chaplin again made their microphone debut at the opening of Warner Brothers' Hollywood station, KFWB.

Charlie, Mary and Doug may have forgotten, but all three have made broadcast appearances (plural) before.

These notables seem to be gluttons for first appearances. If Charlie doesn't hurry up his first appearance record will surpass his number of matrimonial ventures and wrecks.

The proverbial society Miss who made a debut every year till she passed forty, is nonplussed and mad as a wet hen. The silver-sheet stars have her skinned a mile.

Let us provide each movie actor with a correspondence memory course every time they make a "first appearance."

GLOOM OOZER.

### Radio Reactions

(Continued from last week)

Then that song, "Sweet Little You."  
Makes self-conscious, Sister Sue;  
Guess she's heard that verse before,  
Also closer home I bet,  
'Cause I noticed in her ring  
There's a little crystal set.

When I tune for distance, Dad  
Waxes super-het and mad;  
So I have to give it up  
Just to please the folks, you know.  
What's my fav'rite piece, you ask?  
"This is Station 2LO!"

HORACE GRADY MOORE.

## Our Next Door Neighbor



## Condensed

By DIELECTRIC

I am not sure of the spelling of a certain lady violinist's name who played most agreeably from the studio of WSAI, Cincinnati, though it sounded like Miss Edith Tolken. Her playing sounded like one with musical devotion intelligently cultured and would please her unseen audience with more of it. Mediocre performers will soon find their audiences demanding the best—as they do outside Radio concerts.

Groups of popular songs came from out the cordial atmosphere of the studio of WEBH, Chicago. If I start to comment on this station, it will simply lead to a eulogy on Mr. Boniel's manner before Mike. No unnecessary waits for the listeners, always an agreeable voice and intonation and, to the deaf especially, clear announcing of WEBH. Both songs and singers, the other evening, were well chosen.

Whenever you feel a little blue from whatever cause—domestic, atmospheric, B+ to A, etc.—take a swing around to WCX, the Detroit Free Press station, and introduce yourself to the Red Apple Club. No more melancholia for you for awhile! The other night Robert Bruce sang the "Big Bass Viol" with a voice suited to the song. Fun all the time.

For variety in programs you will find no station to excel WOAW, at Omaha, Neb., although some nights present more of it than others. Talks, all sorts of musical entertainment, sermons of distinction, form some of the features to be heard. I happened in when a lady was "following the swallow" (whether back home or not, I don't know) with the usual orchestral accompaniment. The piece may be familiar!

Much of the chilly atmosphere of the Eastern Penitentiary was absent the other evening when a concert was given through WIP, Gimbel's Philadelphia station, to us listeners in. In fact, the only drab note in the entertainment was the introductory announcements: "Numbers 2311 and 2312 will dance for your approval." And those feet surely did rhythmically tap the prison floor! Then No. 510 sang "Sunrise and You."

Very soon the whole of the United States will be privileged to listen to the concerts by Victor artists emanating from the studio of WEA, New York city. Most vocal students would find in the singing of both Miss Dal Monte and Mr. De Luca, much to observe. Certainly the rest of us appreciated so generous a display of rare artistry.

Perhaps someone can explain to me the psychology behind Radio broadcasting enough so that I can understand why so many stations broadcast new and untried brass bands. Station managers generally require a rehearsal or tryout before allowing any performer to appear before their microphones but they seemingly toss all caution to the winds when a band is offered them. Los Angeles suffered for months while the Silver Band of KFSG was being organized and the blue notes of several other amateur bands have been heard since in spite of the experience. In fact, announcements from two other Los Angeles stations seemed to take pride in the fact that they were presenting musical organizations less than a month old and made comments upon the fine progress made in that time. Personally I am inclined to believe the public would rather have such bands stay off the air until the time when they can render at least one selection correctly.

# Four Filter Eight Tube Super-Heterodyne

## Part III—Filter Cover and Oscillator Coil

By Jacques Fournier

IN THE second article, printed last week, we presented instructions for winding the filter transformers and gave the detailed layout for the filter box. The builder now has his choice of two types of oscillator coils; the oscillator can be either a low loss, basket weave type which was used by the writer or can be the closely wound variety on a bakelite or hard rubber tube. The construction of the low loss type will be taken up first.

### The Winding Form

The form for winding this coupler is shown clearly in figure 7. As will be seen in that figure, a square block of wood, bakelite, hard rubber, or metal is necessary, 4 inches on a side and from 3/8 to 1 inch thick. A circle is drawn in the center of this, 2 3/4 inches in diameter and

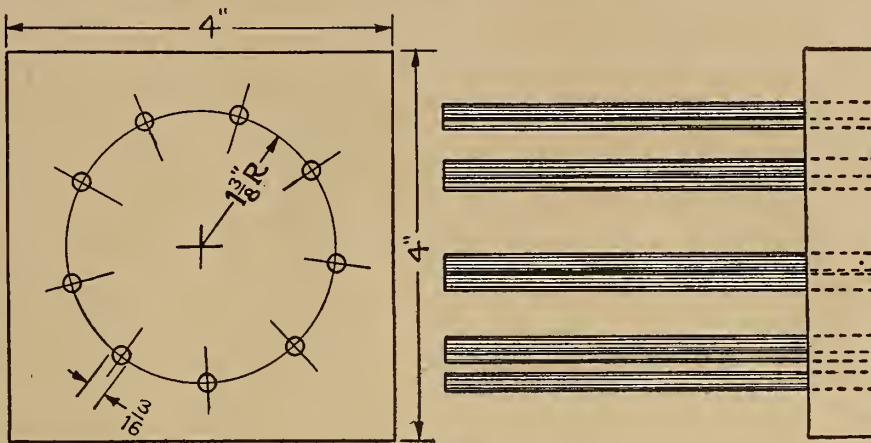


Figure 7

and should be 3/8 inch in diameter and 5 inches long. If metal pins are used they can be soldered to the metal block which forms the base; if wood pins are used they can be glued to the wooden base; or if metal pins are used with a bakelite or hard rubber base, they can be put in by making the holes a little smaller and driving the pins through.

### One-Over, One-Under

The method of winding is shown in figure 8. As will be seen, the wire passes inside of pin 1, outside of 2, inside of 3 and outside of 4. Since there are an odd number of pins, the second turn will go over the outside of the pins on which the first turn runs inside. Seventeen turns are wound in this way and these form the pick-up coil of our oscillator. At the seventeenth turn make a large loop in the wire about 6 inches long and twist this loop so it will not loosen. Resume winding and add 29 more turns, which will be the plate or feedback winding. Twist another 6-inch loop and add 68 turns, for the grid coil. The wire used is to be number 20 double cotton covered. Using this number 20 wire, wound as shown,

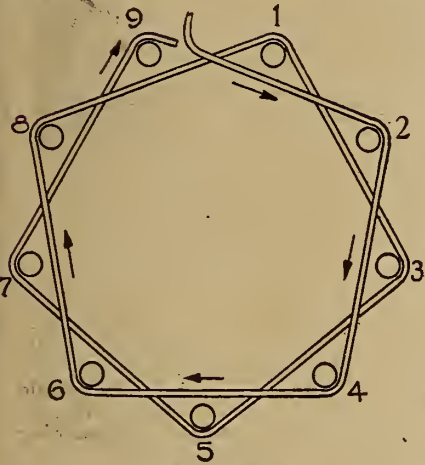


Figure 8

divided into nine parts so that the holes will be drilled 40 degrees apart around the circle. In the inductance which we are going to build, the one-over, one-under method of winding is used. The rods on which the wire is wound may be either large nails or wood dowel pins as shown,

the length of the pick-up coil will be 5/8 inch, the plate coil will be 1 1/2 inch and the grid coil 2 1/8 inches. Each coil is to be held together with heavy thread, preferably waxed, and the method of holding the wires in place on each coil with one continuous piece of thread is shown in figure 9.

### Securing with Thread

The alternate turns cross each other diagonally at 9 points around the coils and it is at these 9 points that the thread holds the turns together. Following the thread in figure 9, it will be noted that it runs across to the left under the odd turns, around the end of the wires, and then under the even turns and over the odd turns to the opposite end of the coil where it passes around the last turn and comes back under the odd turns and over the even turns. Thus the thread forms one complete loop and is carried across, as denoted by arrows, 9, 10, 11, 12 and 13. When the thread has been carried entirely around a coil in this way and the ends tied together the coil can

be slipped from the form by slightly squeezing the pins together at the free ends and slowly sliding the coils from the pins. The 6-inch loops connecting coils should, of course, be cut.

A strip of bakelite or hard rubber is now cut as shown in figure 9 and measures 5 1/2 inches long, 1/2 inch wide and 3/8 inch thick. Holes are drilled 3/8 inch from each end. Before slipping this piece of bakelite through one of the points on each of our 9-pointed star coils, it would be well to smooth off the corners with a file so that the insulation on the coils will not be injured.

### Another Type of Oscillator

The home builder who does not care to go to the work of constructing a low

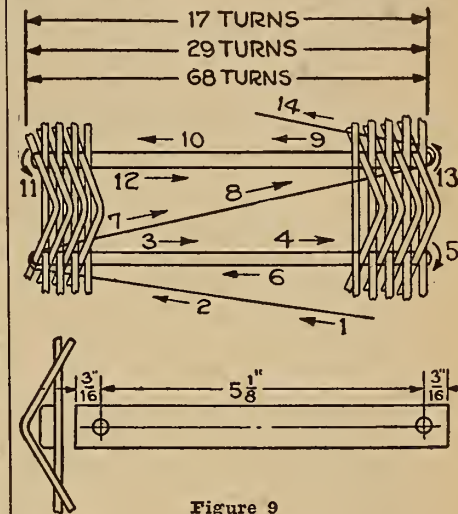


Figure 9

loss winding form and the tying together of the coils can construct one on a solid tube and the results will be practically the same as if the low loss coil

(Continued on page 18)

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(Signed) H. E. Atherton

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Dear Sirs: I set my radio where Havana, Cuba, should come in but received only a jumble of K.F.N.F., W.O.R. and W.L.A.G. I then tuned in with the Trap and had Havana for two hours. I have several times taken a jumble like this and separated five and six stations. I find it a great help in cleaning up stations that can not be brought in distinct. I am using a Crosley X.J.  
(Signed) W. T. Coe.

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Gentlemen: Well to say I am pleased with the Trap is putting it mildly. It is simply a wonderful instrument. I have had it more or less trouble in getting K.D.K.A., W.D.Z., W.D.R. and W.L.W. with my Freed-Eismann Set as they are only a few degrees apart on my dial. Your Trap lets me through with the clearest possible reception. In my candid opinion there is no Radio Receiving Set complete without the addition of the Ferbend Wave Trap.  
(Signed) E. W. Stevenson

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SUB-BASE LAYOUT OF FOURNIER SUPER MAKES WIRING EASY

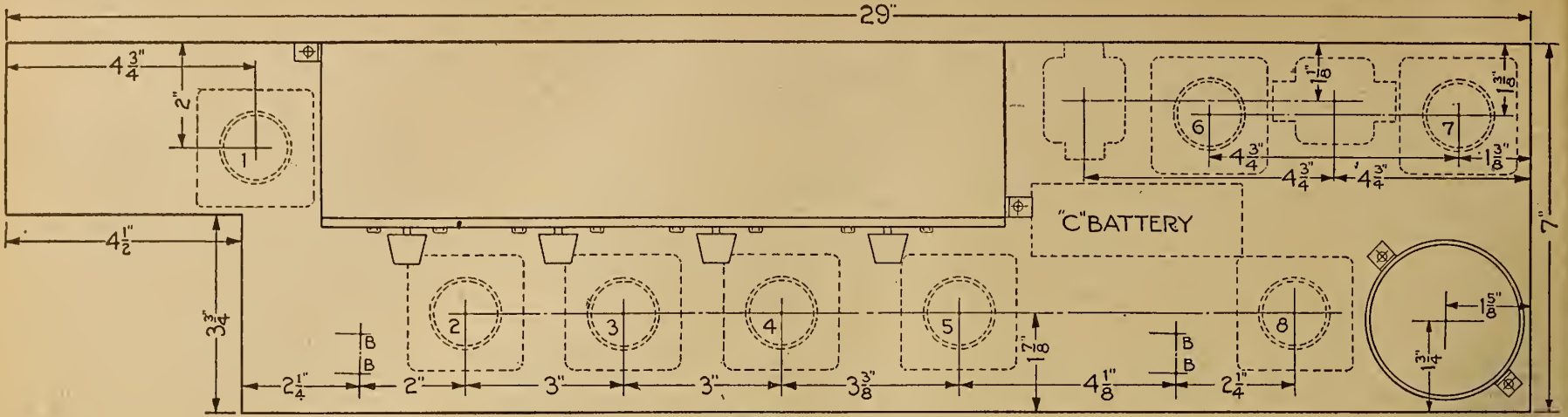


Figure 11

FOUR FILTER SUPER

(Continued from page 17)

were used. The difference between the two types of oscillator is interesting to the engineer, but the improvement in the low loss type would probably be imperceptible to the fan. The tube used should be 3 inches in diameter and 5 inches long with a 1/16 or 3/32-inch wall. The three windings are to be wound in the same direction using number 22 double cotton covered wire. The pick-up coil is put on first and should be started 1/2 inch from the end of the tube and 14 turns are put on. A space of 1/2 inch is left

cover is made from a piece of 1/8-inch bakelite or hard rubber measuring 5 by 13 inches. The four holes on a horizontal line just below center are for the threaded brass rods on which the filter transformers were assembled. In constructing these transformers it was pointed out that 1/2 inch was to be left for mounting to the cover and this short length is inserted up through the holes, one of which is marked A. Near the top of the illustration are four more holes on a horizontal line, one of which is marked B. These are for the shafts of midget condensers or to pass a screw driver when adjusting microcondensers. The

through the holes in the cover for the location of the holes on the flange. When these have been drilled, short machine screws with round heads are to be inserted upwards through the flange and soldered in position. The cover can then be set in place and the 16 machine screws will project upwards through the holes in the cover and nuts may be placed on these screws.

The layout for the baseboard shown in figure 11 will now be taken up. Center points only are indicated for the tube sockets and audio transformers as the exact location for the mounting holes will vary with different makes of apparatus. This layout is to be enlarged to full size and pasted or clamped to the panel used as a sub-base. The various units can then be placed in position and mounting holes marked. Socket 1 at the left end of the sub-base is the first detector, sockets 2, 3 and 4 are the intermediate amplifiers, socket 5 is the second detector, 6 and 7 are the push pull amplifier, while socket 8 is the oscillator. The variable condenser which tunes the loop will, when it is mounted on the panel, project over the spaces in front of socket 1 and to the left of socket 2. The variable condenser which tunes the oscillator will project over the blank space to the left of socket 8.

The bracket holes are indicated by the

letter B and no dimensions have been given for them as they will vary with the brackets used. These brackets should be unusually heavy and preferably of 1/8-inch brass about 1 inch wide, with about 2 inches to project upward on the panel and 3 inches underneath the sub-base.

Here the writer wishes to mention an interesting point that has come up since this series started. Two of these receivers were shipped to a point at which conditions were the opposite of those found in Chicago. A town was chosen where there were no stations within several hundred miles. Both sets were built exactly according to the layout and circuit shown, but one used five-volt tubes while the other required three-volt tubes.

The set utilizing the 201-A tubes had everything desired in range, clearness and volume, but the set using tubes of the 199 class did not have quite the volume desired. Range and clearness were there, but the step up ratio of push pull transformers and the lesser amplification of the smaller tubes were insufficient. This set was accordingly altered by putting in 4 to 1 and 3 to 1 transformers, making two stages of audio; volume was then all that could be desired. The ratio of push pull transformers is usually but 2 to 1. In the next article the writer will give the

(Continued on page 20)

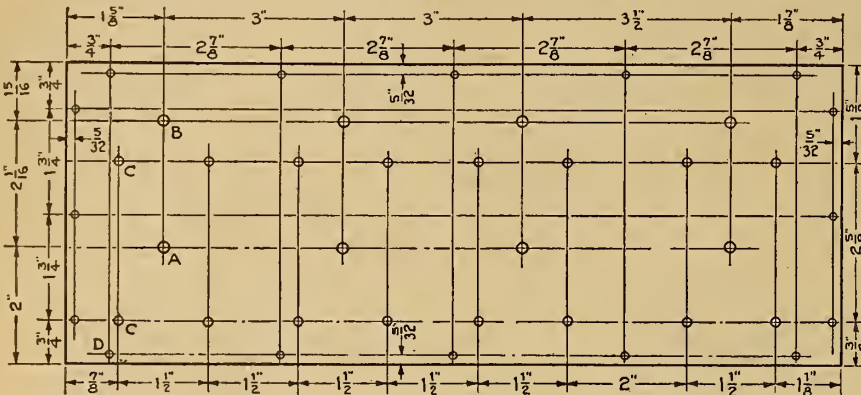


Figure 10

and then 25 turns are put on for a plate coil. The third is to be started 3/8 inch from this plate coil and consists of 55 turns. This will leave about 3/4 of an inch at the upper end of the tube. This coil is shown in the lower right hand corner of figure 11, which is the layout for the sub-base. If the low loss type of coil is used it is to be mounted on the back of the panel at the right end in a manner to be detailed in the next article.

The layout for the drilling of the filter box cover is shown in figure 10. This

two horizontal rows of holes marked C are to accommodate binding posts or machine screws to which the connections are made. It will be noted that there are four of these holes around each of the A holes and that there are sixteen altogether. Around the edge of the cover are 16 holes 5/32 inch from the edge by which this cover may be fastened to the filter box. When the filter box has been soldered as detailed last week, this cover may be laid on the 1/8-inch flange which was provided, and a pencil used to mark



Fred W. Stein

**Steinite** Low Loss Interference Eliminator

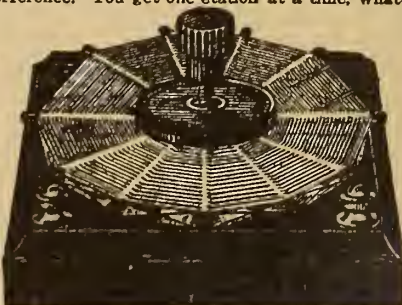
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# Broadcast Listener's Reference Library

## Part VII—Operating Multitube Receivers

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

There are so many types of multi-tube receivers and so many variations of the various types that it is somewhat difficult for one to write an article around their operation which will meet with the needs of everyone. Therefore, the writer will try to cover only those things which in his opinion will benefit the greatest number. When a newly created fan sets down to a 5, 6 or 7-tube receiver he feels very much like a sailor who has been asked to operate a heavy tank. Though the instructions may seem clear there are so many things to be done and the sounds that come out of the horn are so varied that the newcomer is much perplexed and often wonders whether he will ever get the contrivance to work.

In order to eliminate difficulties which may arise outside of the receiver itself a few points should be carefully inspected. If an outside aerial is used be sure that all connections are either soldered or carefully made and taped. The ground should be a good electrical connection and not just a piece of corroded wire wrapped on a badly corroded pipe. The A battery should be tested with a hydrometer to be sure it is fully charged and the B battery should be tested. A voltmeter with a scale covering 0 to 50 should be used to determine the voltage available on the B batteries.

In connecting the batteries if an error is made with a small set it means blowing out but one or two tubes while if an error is made in a larger set it means \$18 to \$24 will be absolutely wasted in a single bright flash. Have no tubes in the set when making connections and turn the rheostat to the "off" position. When you have made the connections and feel fairly certain that they are correct, insert one tube and turn the filament switch to the "on" position. The rheostat can then be slowly turned and if connections are correct the tube will gradually come to a red glow. Now disconnect the A and B batteries and connect the A battery to the terminals intended for the minus B and plus B 90-volt wires. The tube should not light up and if it does it is an indication that there is something wrong within the set. Assuming that the tube does not light up you can connect the A wires to their proper terminals and the B wires where they should go. The rheostat should be turned to the "off" position and the remaining tubes inserted in their sockets. It will be noticed that a red thread has been woven into one cord of the loud speaker cord and this cord tip should be so connected to the plug that, when the plug is inserted in the jack, the red wire will connect to the B plus side of the receiver jack. This will insure maximum volume and clearness and will not injure the speaker.

### Super-heterodynes

The super-heterodyne receiver, while supposed to be the best set as yet developed, is among the easiest to operate. There are but two tuning controls one of which tunes the loop antenna circuit while the other tunes the oscillator. These two dials will usually tune very closely together and any station will be heard at two points on the oscillator dial. This is inherent in super-heterodynes.

The potentiometer is the only critical adjustment on this type of set and once adjusted will only have to be changed once in a great while. It will be found when turning the potentiometer that a point is reached at which a slight hissing sound is heard and possibly a low whistle.

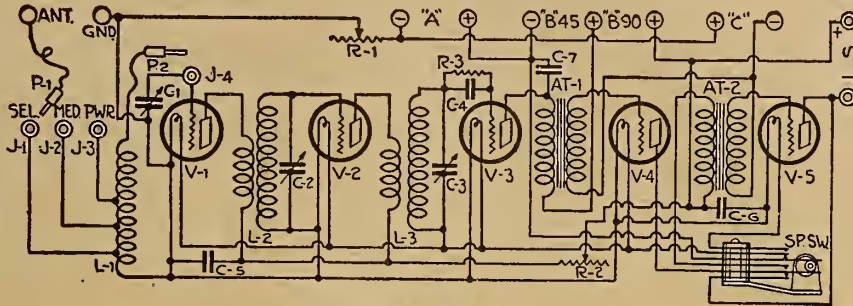


Figure 19

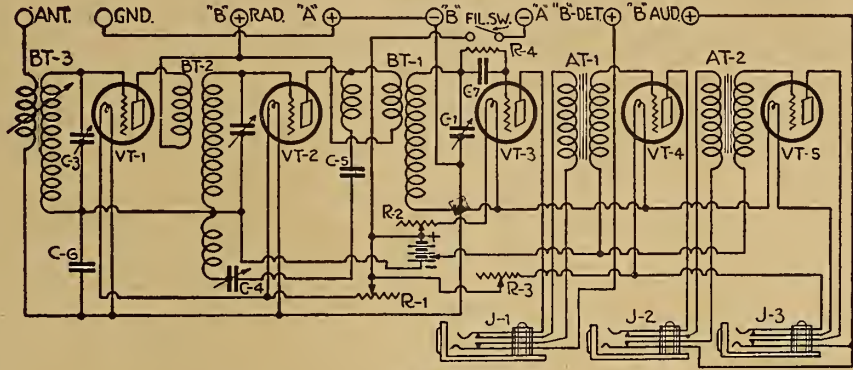


Figure 20

The potentiometer should be turned back to the point just below where the whistle or hissing noise is heard. With it in this position the tuning controls may be operated and a station brought in. Once the maximum adjustment of tuning controls for that station has been found the position of the potentiometer may be varied until volume is at maximum and the clearness has not yet begun to be affected by regeneration. When tuning to a very distant station it will usually be found that the potentiometer can be advanced slightly beyond the point used for reception of local and medium strength stations.

If all hard tubes are used, the setting of the rheostat will not be found critical once the proper grid leak adjustment of both detectors has been determined. Tubes such as the UV-201A and the UV-199 may require as high as 7 to 9 megohm leaks for best results.

### Tuned Radio Frequency

Receivers of this type are all alike in one respect in that large diameter air core Radio frequency transformers are used. The chief difference between them consists in the method of preventing oscillation on the lower wave lengths. Many sets accomplish this by decreasing the number of turns on the primaries to the point where oscillation through feedback through the tube cannot occur but this has certain disadvantages that many manufacturers do not like to incorporate in their sets. If the reader has built his own tuned Radio frequency receiver and has difficulty with oscillation he may be interested in the method employed by some of the manufacturers to prevent it. There is of course the well-known neutrodyne method of utilizing very small condensers called neutrodons in connection with tapped secondaries. Another method is shown in figure 19 which may be called the deresonating system. A resistance of about 1800 ohms, R-2, is inserted

in the untuned plate leads and increasing this resistance will lower the voltage in the plate circuits which will have the effect of decreasing the tendency to oscillate at lower wave lengths. When tuning to the higher wave length stations this resistance may be decreased which will bring the plate circuits up to a point where regeneration is introduced but kept under control and the sensitivity of the entire set thus increased.

Another method is shown in figure 20 which might be called the reverse feedback method in which system a small coil is wound on the primary of the third transformer and another small coil in close relation to the secondary of the second transformer. These are connected by a small variable condenser in series with a fixed protective condenser, and energy which is out of phase with that in the second grid circuit is introduced to oppose, and neutralize, the feedback in the second tube.

There are many receivers on the market utilizing tuned Radio frequency in which oscillation on the lower wave lengths cannot be controlled with 96 volts on the plates of the R. F. tubes. If the owner is sufficiently familiar with Radio and cares to remove the set from the cabinet he can readily determine which are the Radio frequency plate leads and can disconnect these from the B plus terminal and provide another binding post for them. The B 90-plus terminal will then only connect to the audio frequency amplifiers and the Radio frequency plate return leads will connect to a binding post of their own. Various voltages from 67 to 90 can be tried on these R. F. tubes until one is found that does not permit oscillation on lower wave lengths yet is not so reduced that the volume is materially affected.

### Tube Pointers

In a six tube set there are 24 socket springs any one of which may have become dirty or which may have been bent down so that contact is not made with one of the 24 tube pins. These should be examined when trouble occurs. A super-heterodyne with 8 tubes has 32 such possible causes of trouble. While the standards of construction in jacks have been considerably improved of late they are still not absolutely trouble proof and when signals are not heard in one of the audio

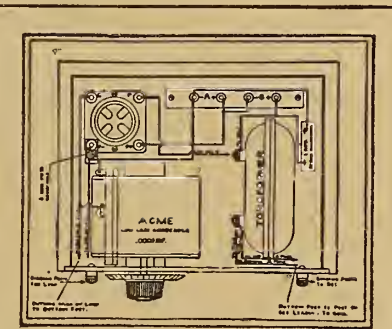
(Continued on page 20)

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DIA. OF TUBING	3 INCHES		3½ INCHES		4 INCHES	
GAUGE OF WIRE B&S D.S.C.	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS	LENGTH OF WINDING IN INCHES	NUMBER OF TURNS
20	2.05	55	1.7	46	1.5	41
22	1.55	51	1.3	43	1.15	38
24	1.15	47	1.0	41	0.87	36
26	0.9	45	0.75	38	0.67	34
28	0.7	42	0.62	37	0.55	33
30	0.57	40	0.5	35	0.45	32

**HOW MANY WIRE TURNS**

(Continued from page 15)

form to give the required value of inductance in microhenries, which can be proved by use of the formula:

$$L = \frac{(5 \times 3 \times 83)^2}{1000 \times 2.5 \times 3 \times .44} = \frac{1550025}{3.82} = 405 \text{ microhenries.}$$

In chart number 2 we find a 4-inch tube wound for 1.5 inches with 49 turns of number 22 dsc. wire equals 290 microhenries:

$$L = \frac{(5 \times 4 \times 49)^2}{1000 \times 1.5 \times 4 \times .44} = \frac{960400}{3.26} = 294 \text{ microhenries.}$$

In chart number 3 we will assume the use of a 3.5 inch tube wound with 41 turns of number 24 dsc. wire occupying one inch of space:

$$L = \frac{(5 \times 3.5 \times 41)^2}{1000 \times 1 + 3.5 \times .44} = \frac{457642.25}{2.54} = 180 \text{ microhenries}$$

and referring to our first formula  $\lambda = 1885 \sqrt{LC}$  we find that

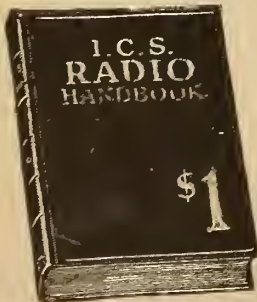
$$1885 \times \sqrt{180 \times .0005} = 1885 \times .3 = 565.5 \text{ meters}$$

which is within the broadcast range. The gauge of wire, number of turns and size of tubing, given in this and in the previous article, have been calculated from the formulas shown in the two articles. While the inductance values are not exact they will be found adequate

B. & S. gauge	single	double	single	double
	cotton	cotton	silk	silk
20	29	25	23	27
22	36	31	28	34
24	45	37	33	42
26	56	45	39	52
28	71	54	45	63
30	88	64	56	77

to cover the present broadcast band. If it is desired to use wire with insulation other than shown, the accompanying table

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will show the number of turns per linear inch with various insulations.

**The Reader's View**

**Less Stations**

Your article, "Less Stations and Better Radio," is appreciated. There sure is no need for so many stations. The hook-up of WEAJ is wonderful and we surely can listen to any one program from there. Why so many? I never could understand what good people get out of Radio by simply getting station announcements. Keep up publishing these kind of articles.—Myron S. Landis, Coopersburg, Pa.

**Closing with National Anthem**

I have noticed that all Canadian broadcasting stations close their programs with their national anthem and that the only time an American station closes with the Star Spangled Banner is when a military band is playing. Why is it so? Are the Canadians more patriotic than we?—E. H. Fuller, Fort Hayes, Columbus, Ohio.

**Tin Can Type Set**

I want to bring to your attention, and the attention of many thousands of Radiophans, a matter of vital importance to Radio broadcasting and reception.

Today we have in these United States many thousands of Radio receiving sets, there are in the homes of America sets costing up to at least five hundred dollars, this money has been spent that the ones at home might enjoy the programs of the artists of our country, and yet it is impossible for them to do so.

I am making this statement for the reason that I have a most wonderful Radio set, one without the unpleasant

whoops and howls that we had with the first sets built. But with the small one tube regenerative sets which are scattered all around this city, it is next to impossible to receive a program without so much distortion that it is very unpleasant and when one has a friend in his home he is ashamed to have him listen to the set.

If the factory building these little sets, or the user who builds his own, "rolls his own," perhaps I should say, for the looks of the one is about like the other, got any satisfaction out of the product it would be a different story, but when one sits down to tune into a broadcasting station and has to listen to all the whoops and howls of a thomas cat, no, I don't believe there is a cat on the earth who may or will make a class of noises equal to the "tin can type" regenerative Radio set, I can't see where he comes in. Then his neighbor catches "what Patty gave the drum," his program is ruined, he has to listen to all the unpleasant noises the regenerative set is making, his friends and listeners are disgusted.

Regardless of who owns one of these sets, I feel that no man should be allowed to ruin the program of another. If I had one and I knew that a few doors away I was injuring the program of my neighbor, certainly I would tear the thing up. If I could not own one that did not cause my neighbor unhappiness I would not give him a dime for it. I haven't the disposition to want to spoil an evening for anyone, from the poorest to the richest family in our city.

I have sold Radio sets for several years and I am ashamed to say that when we only had the little three tube regenerative sets I sold them and no doubt they are still annoying someone. Today I sell only sets of the non-regenerative type, and if I had the old style to sell someone else would have to sell the goods. I have noticed that Mr. Hoover has stated "that 'jazz' will not build up the Radio world," or words to that effect. Please allow me to add that the unpleasant whoops and howls of the "tin can type" of Radio sets will do more to tear it down than jazz.

I believe the government should pass a law requiring that all sets installed would have to pass a laboratory test and be approved before being used, that sets which radiate and are of the regenerative type should not be allowed to be used. These sets are not only annoying the listeners in the homes, but are interfering with commercial broadcasting, market reports from Washington, D. C., Associated Press, and others.

I would like to ask that you call the attention of the Radiophans to this matter that they may give their views upon the

subject and if possible take steps to remedy the trouble.—H. S. Speck, Little Rock, Arkansas.

**Eastern Silent Hour Wanted**

Your fine paper is appreciated very much. I would certainly like to see you sponsor a movement to get the broadcasters, except far west and Pacific stations, to remain silent after 11 p. m. Eastern time at least one night, say Monday, of each week. Then we would have the opportunity of hearing western and Pacific coast stations undisturbed by eastern and central broadcasters.

Some eastern stations seem to run all night. Their staff members need a rest at least one night a week.

Improperly operated radiating sets need a few sermons, too.—F. H. C., Gastonia, N. C.

**FOUR FILTER SUPER**

(Continued from page 18)

altered diagram to take care of this situation of using 199 tubes in a locality far from all stations. The small tubes where there are stations, or the large tubes where there either are or are not stations, will be O. K. using the circuit given. It should be stated that the above results were on loop aerial; on outside aerial, the small tubes on push-pull were satisfactory.

(In the next article Mr. Fournier will take up the front panel layout and assembly, which, if followed carefully, will result in the panel mounted parts fitting exactly between those on the sub-base. The wiring will also be started.—Editor's Note.)

**REFERENCE LIBRARY**

(Continued from page 19)

frequency stages the jacks should be carefully examined to see that the shorter springs make contact with the longer springs when the plug is not inserted or that the long springs both make contact with the phone plug when it is pushed in.

Where 6 to 9 tubes are used it will be found most desirable to switch the tubes around in sockets to determine which function best as Radio frequency amplifiers, oscillator, detector or audio frequency amplifiers.

(The last article of Mr. Jones' series will be on antennas, the reasons for erecting different types and the form they should take for various receivers. The loop, for example, has certain advantages desirable in many localities, but cannot be used on all sets.—Editor's Note.)

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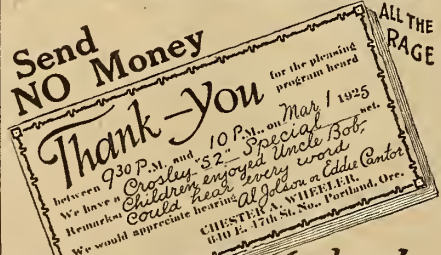
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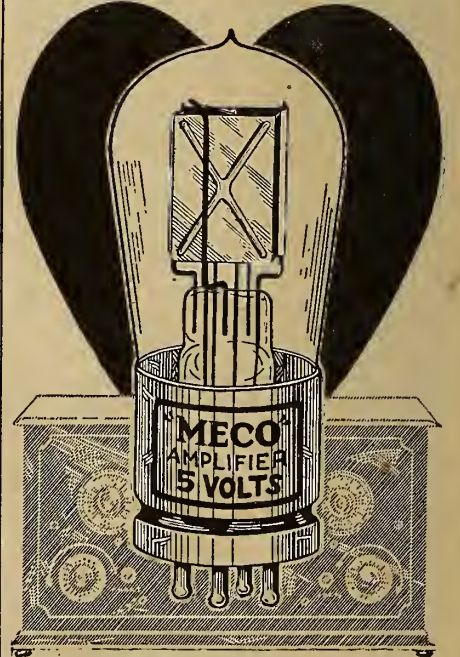
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Des Moines, Iowa



# Wash Boiler Parts Make Loud Speaker

## Tone Minus Distortion in Metal Lamp Horn

An attractive and effective loud speaker on the lines of a table lamp can be made as follows: The materials used were the copper from the bottom of an old dis-

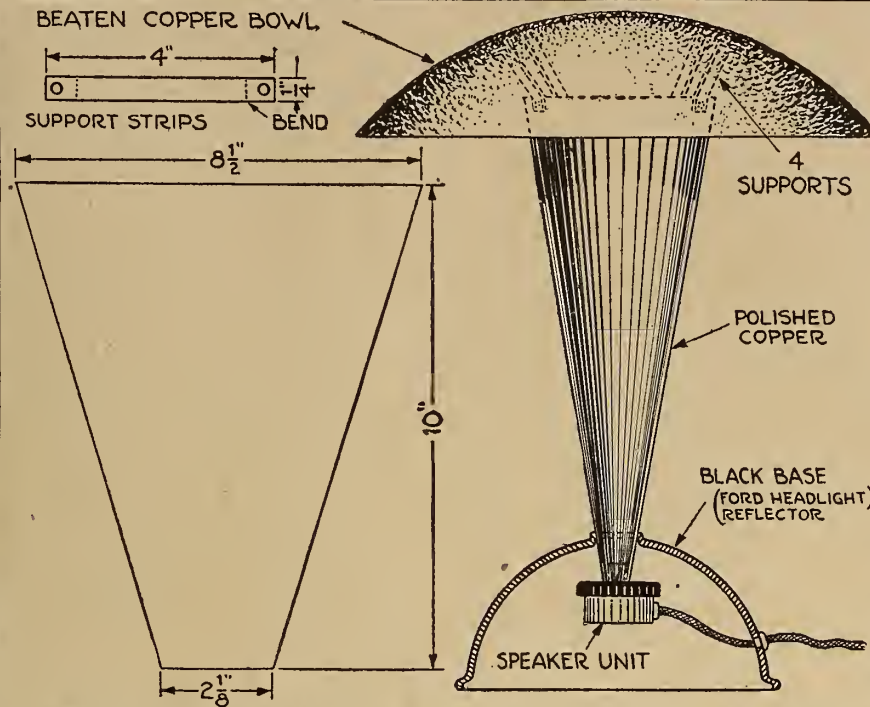
### WORKSHOP KINKS EARN A DOLLAR—

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

carded wash boiler, an old automobile headlight and some solder. The base was made from the reflector of the headlight. The grooved part of the reflector was cut off so that it will set flat on the table. The edge should be smoothed up with a file to prevent scratching the varnish.

A circular disk 12 inches in diameter was cut from the copper of the wash boiler bottom. This disk was hammered into shape. To do this procure a block of wood and use a round head or what is called a ball peen hammer. Place the copper disk on the block and hit it (not tap) all around about 3/4 inch from the edge. When this circle of hammer marks is complete begin another circle just inside of the first and continue until the center is reached. Go over the circles again, and so on until the disk assumes the shape of a hammered copper bowl about 4 inches deep. This hammering is

## ONE TONE ARM PATTERN AND SPEAKER

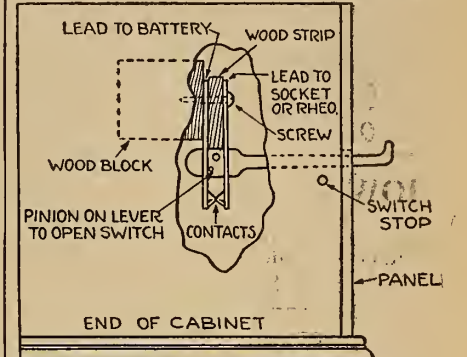


not difficult to do and a very artistic effect can be secured. For the tone arm cut a strip of copper in the shape of a decapitated triangle, as shown in the illustration. Roll this into a funnel, lapping the edges about 3/16 inch and solder the joint. Insert the small end of this funnel into the hole of the reflector, allowing it to project into the bowl about 1 1/2 inches, and solder at the joint. Make some strips of copper 4 inches long and 1/2 inch wide and solder them to

the large end of the tone arm so that they will project about 3 1/2 inches. These strips serve as supports for the top. Invert the hammered bowl and solder it to the supports so that it will be about 1 1/2 inches above the tone arm. It may take some experimenting to get the right distance to produce the volume wanted. Insert the loud speaker unit and fasten it to the small end of the tone arm.—Ray C. Hall, Pine Bluffs, Wyoming.

## Old Telephone Hanger Makes Filament Switch

The illustration shows a homemade switch which automatically opens when the head phones are hung on the hook. This device has no advantage over other switches if the user fails to hang up the phones. The switch may be mounted on the side of the set and arranged so that the hook extends out and away from the cabinet.



The contact strips consist of two parts of an ordinary jack placed so that the contacts face each other and are separated by a strip of insulating material. The fastening screw should not touch both pieces. The lever may be made of 1/8 to 1/4-inch metal, or one taken from a discarded telephone.—Howard Smith, Falls Creek, Pa.

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# Questions and Answers

**Neutralizing with the "X" Wire**  
 (12330) GWS, Youngstown, Canada.  
 In your December 27 issue there appeared an article "X" Wire Key to Neurodync Success." How do you neutralize this new circuit and could you give me any pointers on it?  
 Can I use a five-plate condenser in place of the seven-plate in the hetduogen recently described in your paper?  
 A.—The third neutrodon is set at minimum and two individual tube neutrodons are adjusted in the usual manner by placing a small piece of paper on one of the filament springs. When the circuit has been adjusted in this way as far as possible, the dials are then adjusted for resonance on a low wave length and if there is a tendency for the receiver to oscillate the third neutrodon is increased in capacity until the tendency to whistle disappears. If this latter part of the procedure is done on the lowest wave length one wishes to receive there will be no whistle or oscillation on any wave lengths above it.  
 Relative to the use of a five-plate condenser in place of a seven-plate unit in the hetduogen we must advise that this will not be large enough as a seven-plate just covers the range as it is. In fact, if the seven-plate condenser happens to be made with rather small plates and large spacing between plates, the builder of this set is unable to get above 485 meters. Some of the condensers on the market are made with full size plates and no difficulty is experienced but there are a few in which the plates are small and they should be rated by capacity such as .00012 or .00014 instead of by the number of plates.

**B Battery Circuit Fuse**  
 (12346) WAA, Newark N. J.  
 I have just had the unpleasant experience of blowing out three tubes and since it has cost me \$12 to replace them I am writing to ask if there is not some means of preventing a recurrence of this accident?  
 A.—There are several excellent devices on the market, all of which are very low in cost, for preventing the blow-out of tubes. These are known as fuses and usually consist of a small base in which fuse elements can be inserted to make contact with the terminals. Most of them are designed to blow out at 160 milliamperes, and since either the UV-201A or UV-199 will stand considerable overload for a few moments the fuse blows first.

**Selectivity in Reflex Sets**  
 (12347) GLM, Urbana, Ill.  
 I have carefully constructed a three tube reflex which has tuned Radio frequency on the first two tubes. There is a crystal detector and the third tube is straight audio frequency. My aerial is about 125 feet long and the ground is well soldered to a water pipe. On silent night in Chicago I am able to get western stations very nicely, but on other nights the set is not sufficiently selective. It was suggested that my aerial might be too long, so I tried the set on a shorter aerial about 50 feet long, but the set is still too broad. What can I do to remedy this?  
 A.—The difficulty which you outline is the usual thing with reflex receivers, as it seems almost impossible to make these

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## RULES TO FOLLOW WHEN ASKING INFORMATION

The Question and Answer department offers service to Radio Digest readers without charge but asks that the following suggestions be read carefully before writing.

- 1—Search carefully the back issues which you have, as the point in question has probably been covered several times before.
- 2—Letters for this department should be kept separate from all correspondence to other departments and on other subjects.
- 3—Questions should be written on one side of paper only and each sheet should bear the sender's name and address. All letters should be accompanied by a self-addressed stamped envelope of standard business size.
- 4—Unsigned (or anonymous) letters cannot be answered, either on this page or by letter, nor can those without address.
- 5—No circuits of any standard manufactured receiver will be published.

- 6—No comparative statements on advertised apparatus will be given except as to efficiency in some particular circuit.
- 7—Drawing diagrams on a separate sheet of paper will save time and enable us to give all questions more attention.
- 8—Write each question as a separate paragraph.
- 9—Make a copy of your letter and diagrams, to which we can refer without re-drawing.
- 10—The names and addresses of the writers of letters published will not be released except with the writer's permission.
- 11—We want to be of assistance to you in your difficulties, but are sometimes limited because of the length and time required for the proper consideration of the questions asked. Therefore, please make your letters brief.

sets sharper. Three years ago the tubes were coupled with untuned transformers and all tuning was done with a condenser across the loop or across the secondary of a variocoupler. When more stations were put on the air and tuned Radio frequency came in the transformer used to couple the first and second tube was made of the tuned variety, such as you have, but this does not seem to materially affect strong stations within 500 miles. In this case we can suggest no remedy which will sharpen your receiver.

**Regenerative Receivers**  
 (12338) GFM, Austin, Texas.  
 A number of my friends have what they call regenerative receivers, yet these sets seem to be very different in their internal construction and operation. Will you please explain how this is that they can be so differently constructed and yet all be the same type?  
 A.—The phenomenon of regeneration can be secured in several different ways. If some of the energy in the plate circuit of the detector tube is fed back into the plate circuit by direct magnetic coupling the benefits of regeneration will be secured. If the plate circuit of the detector tube is tuned so that it can be brought into resonance with the grid circuit, there will be feedback or regeneration take place across the internal capac-

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ity of the tube. The grid circuit of the detector may consist of the secondary of the variocoupler shunted by a variable condenser with the plate circuit tuned with a variometer; another method would be to remove the variable condenser and insert a variometer in series with the secondary of the variocoupler. These two systems employ the principle of tuning the plate to resonance. Inductive coupling may be employed either by putting a tickler coil in series with the phones and B battery or placing a tickler coil in series with a variable condenser with these two units in series and parallel to the phones and B battery.


**Radio Frequency Stages**  
 (12414) WFL, Dallas, Texas.  
 Can you tell me if it is feasible and practical to construct a three stage Radio frequency instead of two, such as is used in the usual neurodync set? If this three stage will operate on a loop? I have an

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outside aerial and would like, if it is practical, to construct three stages of Radio frequency neurodync receiver that can be operated either on a loop or outside aerial and would appreciate a plan arrangement showing connection for the receiver that would operate successfully with such a hook-up. Of course in the addition of these three stages of Radio frequency I will add the usual two stages of audio frequency. Would there be any advantage in having this third stage of Radio frequency?  
 A.—While it is possible to add another stage of Radio frequency to a neurodync set it is unnecessary. Most of the neurodyncs are sensitive enough with only two stages. The addition of another stage means another control knob.  
 A loop cannot be used with a neurodync because it would tend to interact with the neutroformers. You can possibly use a loop if you have the whole cabinet shielded, but this would be somewhat detrimental.

**Power Hum Interference**  
 (12326) JLB, Copan, Okla.  
 For the past three months I have been troubled with a hum or roar that appears to come from my electrical meter, however, all the hum does not come from the meter alone, for when the entrance switch is turned off the noise is still there, but it is not so strong. My set is a four tube single circuit, using two stages of audio with plug connections on two, three or four tubes. The noise is heard in all connections, but during daylight the hum is the loudest.  
 The hook-up has been traced and no fault found, and when the set was moved to another part of the city the noise ceased. I would be pleased to have your advice and what to do to eliminate the hum?  
 A.—Try a three circuit tuner. Consult the engineer at your local power plant and tell him your trouble. The three circuit tuner may eliminate the hum. Enlist the aid of a local amateur in Radio and have him help you to locate the source of the trouble.

**Old Tubes Made Good As New**  
 We Re-activate 210A, 301A, 199 and 299 tubes.....\$1  
 Thousands Re-activated and Satisfactory.  
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 Tubes must light. 24 hour service.  
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 Mail Orders Filled. Tubes Tested Free

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**FIXED GRID LEAKS**  
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**Leading Set Builders**

**A REAL FIXED DETECTOR**  
**For REFLEX and CRYSTAL SETS or Operates**  
 as a crystal set in itself. Stands Reflex Voltage, lasts indefinitely, because of readjustment feature and does away with bothersome catwhisker and hunting for Hot Spot. You can depend on it being always "Hot." Get greater distance reception on CRYSTAL SET. Save A and B battery and Tube life, get better detection than Vacuum Tubes. Get a RADETEC and know the joy of real reception. Packed in box with Brackets and Instructions prepaid for \$1.00. Every one guaranteed.  
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 the hard-boiled kind. You are the boys who know a good crystal. You are the very ones who are doing our best kind of advertising. Our New 100% Rectifier is exactly what we say—NOT ONE DEAD SPOT. You can't get a better crystal at any price. A peach for long distance and a bear-cat on local work. You won't get stung on this one—we assure you that. Price 50c each. A few more 99% Rectifiers 3 for \$1.00.  
 Genuine  
**Miller B-Metal PRODUCTS**  
 Hang your eye on this—A bang-up good Crystal Set—crystal included. Fine for those who have poor hearing.  
 Complete, \$1.79  
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Radiophone Broadcasting Stations

Corrected Every Week—Part III

FIND MISTAKES AND YOU'LL GET DOLLAR

ONE DOLLAR will be paid to the Radiophon reader of Radio Digest submitting the most errors in any one station's listing in the Directory of Radiophone Stations...

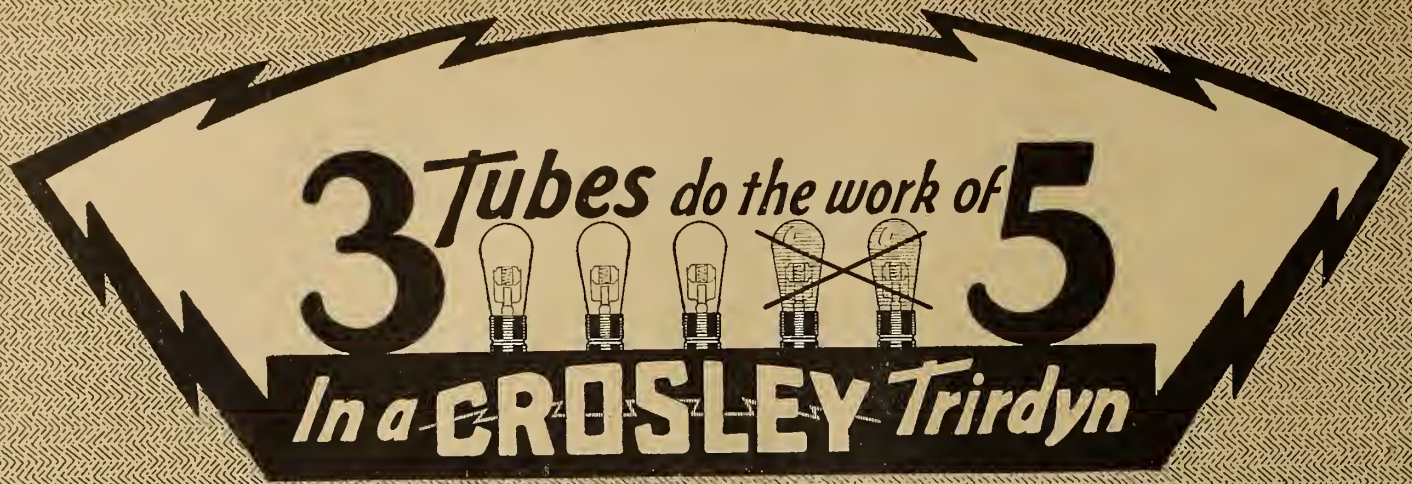
United States (Cont'd)

NOTE—The third part of the schedule list appears below. The fourth part which consists of the remainder of the list will appear next week.
WBS, Takoma Park, Md. 222 meters. 100 watts. Bliss Electrical School.
WDZ, Tuscola, Ill. 278 meters. 100 watts. James L. Bush. Daily ex Sun, 9:30 am, 10, 10:30, 11, 11:30, 12m, 12:30 pm, 1, 1:15, Chicago Board of Trade quotations. Central.
WEA, Flint, Mich. 234 meters. 100 watts. Frank D. Fallain. Slogan, "The Vehicle Club." Daily ex Sun, 7 pm, police broadcasts, music. Eastern.

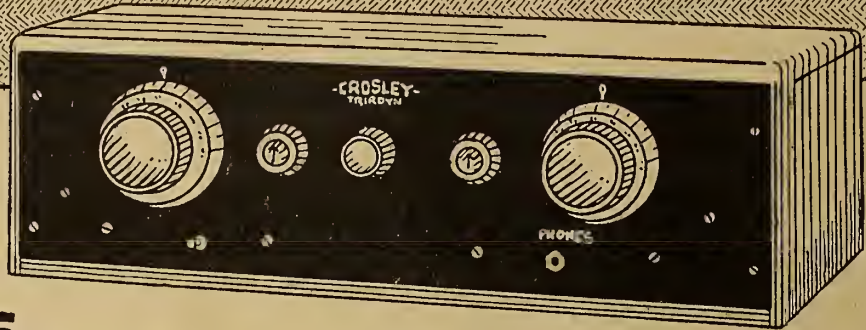
Lighthouse." Mon, Wed, 8:15 pm, music, lectures. Fri, 9-10 pm, sacred music. Sun, 11 am, chapel services; 8:15, chapel services. Central.
WEW, St. Louis, Mo. 248 meters. 100 watts. St. Louis Univ. Announcer, G. E. Rueppel. Daily ex Sun, 9 am, 10, 2, 5 pm, reports. Sun, Tues, Thurs, 7 pm, lectures, music. Central.
WFAA, Dallas, Tex. 475.9 meters. 500 watts. Dallas News and Dallas Journal. Announcer, Adams Calhoun. Slogan, "Working for All Alike." Daily 10:30 am, reports; 12:30-1 pm, address; 2:30-3, 3:30-4, 4:30-5, reports, news; 5:30, bedtime story; 6:45-7, sports, news; 8:30-9:30, concert, weather (silent Wed). Mon, Tues, Thurs, Fri, 6:30-7:30 pm, vespers recital. Tues, Thurs, Sat, 11-12 pm, music. Sun, 6-7 pm, Bible class; 9-11 pm, music. Central.
WFAM, St. Cloud, Minn. 273 meters. 10 watts. St. Cloud Daily Times. Slogan, "Granite City of the World." Announcer, Otto A. Rupp. Daily ex Sun, 8:45 pm, markets. Central.
WFAV, Lincoln, Neb. 275 meters. 250 watts. Univ. of Neb. Announcer, R. A. Cushman. Slogan, "The Home of the Cornhusker." Daily ex Sun, 10 am, 12:15 pm, weather, news, road reports. Thurs, 7 pm, program. Sat, 11:30 pm. Central.
WFB, Eureka, Ill. 240 meters. 100 watts. Eureka College. Central.
WFBK, Knoxville, Tenn. 250 meters. 50 watts. First Baptist church. Announcer, St. John Reynolds. Sun, 10:30 am; 7:30 pm, services; 3:30 pm, sacred music. Central.
WFBP, Philadelphia, Pa. 234 meters. 5 watts. Gethsemane Baptist church. Central.
WFBE, Seymour, Ind. 226 meters. 20 watts. Van de Walle Music and Radio company. Announcer, Clifton M. Fishback. Mon, Wed, 9-10 pm. Fri, 9-10 pm. Central.
WFBG, Altoona, Pa. 278 meters. 100 watts. The Wm. F. Gable Co. Announcer, Roy F. Thompson. Slogan, "The Original Gateway to the West." Daily ex Sat, Sun, 11:45 am, music; 3:45 pm; 6:15, Mon, 7:15 pm, 7:30, 8, 9:15, Tues, 8:30 pm, 11:15, Thurs, 7:15, pm. 8:30, 10:30. Fri, 7:15 pm; 7:30, 8:30, 11:15, Sat. 7:30 pm. Eastern.

WGST, Atlanta, Ga. 270 meters. 500 watts. Georgia School of Technology. Announcer, J. H. Parsons. Slogan, "The Southern Technical Institution with a National Reputation." Mon, 9 pm, Thurs, 7 pm. Central.
WGY, Schenectady, N. Y. 379.5 meters. 1500 watts. General Elec. Co. Announcer, Kolin Hager. Daily ex Sun, 11:55 am, time; 12:30 pm, stock markets; 12:50, weather. Daily ex Sat, Sun, 12:40 pm, fruit, vegetable reports; 6, stocks; 6:10, markets; 6:15, sports, news. Mon, Tues, Thurs, Fri, 2 pm, woman's hour; 7:30 pm, Mon, 6:20 pm, sports, Mon, 6:40 pm, Tues, Thurs, 2:30 pm, organ; 6:30-7 pm, dinner program; Fri, 7 pm; 11:20, organ. Wed, 6:30 pm, stories. Fri, 6:30 pm, children's stories; 6:30, Sunday School lesson; 10:30, late program. 2nd and last Monday, 7:15 pm, agricultural talk. Wed, 7 pm, orchestra. Sat, 9:30 pm, dance program. Sun, 10:30-12 m, service; 3:45 pm, orchestra; 5, organ; 7:30-8:45, service; 9, orchestra from W. J. Easton.
WHA, Madison, Wis. 535.4 meters. 500 watts. Univ. of Wis. Mon, Fri, 7:45 pm, music, talks. Wed, 9-10 pm. Central.
WHAD, Milwaukee, Wis. 275 meters. 500 watts. Marquette University. Milwaukee Journal. Daily ex Sun, 11 am, weather, news. Mon, 7:30-8:30 pm. Wed, Fri, 8-10 pm. Central.
WHAG, Cincinnati, O. 233 meters. 100 watts. Univ. of Cincinnati. Dept. of Elec. Eng. Announcer, W. C. Osterbrock. No definite schedule.
WHAM, Rochester, N. Y. 278 meters. 100 watts. Univ. of Rochester. Rochester Times-Union. Democrat and Chronicle. Daily ex Sun, 8:30-9 pm, 5-6, 6:55, 7-7:30, 7:50-8:30. Sat, 10:45 pm, 12:30 am, dance music. Sun, 3-15, Radio Chapel. Eastern.
WHAR, Atlantic City, N. J. 275 meters. 100 watts. Seaside House. Announcer, E. Denison. Daily, 2-3 pm, music; 7:30-8, news, markets; 8-9, music. Eastern.
WHAS, Louisville, Ky. 393.8 meters. 500 watts. Courier-Journal. Daily ex Sun, 11:45 am, 1:45 pm, 3-4:45 pm, weather; 2:45-3:22 pm, grain. Mon, Wed, Fri, 7-8 pm. Tues, Thurs, 8-10 pm. Sun, 9:45 am, 8-12. Central.
WHBA, Oil City, Pa. 250 meters. 20 watts. Shaffer Music House.
WHEB, Stevens Point, Wis. 240 meters. 50 watts. Hebal's Store.
WHEC, Canton, Ohio. 254 meters. 10 watts. Rev. E. P. Graham.
WHDD, Bellefontaine, Ohio. 222 meters. 20 watts. Charles W. Howard.
WHDF, Rock Island, Ill. 222 meters. 100 watts. Beardley Specialty company.
WHGG, Harrisburg, Pa. 231 meters. 20 watts. John S. Walsh.
WHGV, Culver, Ind. 222 meters. 100 watts. Culver Military Academy.
WHBI, Chesaning, Mich. 227 meters. 50 watts. Chesaning Electric company.
WHBJ, Ft. Wayne, Ind. 234 meters. 10 watts. Lauer Auto company.
WHBK, Ellsworth, Maine. 231 meters. 100 watts. Franklin St. Garage, Inc.
WHBL, Logansport, Ind. 220 meters. 50 watts. James H. Slusser.
WHD, Indianapolis, Minn. 278 meters. 100 watts. Wm. Hood Dunwoody Industrial Institute.
WHDE, Rochester, N. Y. 258 meters. 100 watts. Hickson Electric company, Inc.
WHK, Cleveland, O. 273 meters. 500 watts. Radiovox company, Winton Hotel. Announcer, Ralph M. Rolan. Daily ex Sun, 12:30-1:30 pm, luncheon concert; 6:15, dinner music; 6:30-7, bedtime stories. Thurs, 7:30-8:50, farm hours; 8:30-12 midnight, Cleveland Press program. Fri, 8-12, concert. Sat, 8-12 midnight, Rainbow club. Sun, 10:30 am, church service; 4:30-5:30 pm, chapel; 7:30-9, service; 9-10, concert. Eastern.
WHN, New York, N. Y. 361.2 meters. 500 watts. Loew's State Broadcasting Station. Announcer, N. T. Grandlund. Slogan, "The Voice of the Great White Way." Daily ex Sun, 12-1 pm, 2:15-3:15, 3:45-5:30, 6:30-7:30. Mon, Wed, Sat, 7:30-12. Tues, Thurs, Fri, 9:30-12. Sun, 3-6 pm, 9:30-12. Eastern.
WHO, Des Moines, Ia. 526 meters. 500 watts. Bankers Life Co. Announce, N. Dean Cole. Daily ex Sun, 9:45-10:15 am, 12 m, 2 pm, markets, weather. Mon, Wed, Fri, 7:30-9 pm, concert. Mon, 11:15-12, midnight, dance. Tues, 7-8 pm, concert. Sat, 8-12, dance program; 9-9:45, orchestra, organ. Thurs, 11-12 midnight, dance. Sun, 11 am, church services; 4:5-3:30 pm, concert. Central.
WIAD, Philadelphia, Pa. 250 meters. 100 watts. Howard R. Miller. Slogan, "The Voice from the Birthplace of Liberty." Tues, Fri, 9 pm, Eastern.
WIOB, Omaha, Neb. 278 meters. 500 watts. Daily Journal-Stockman. Announcer, Wm. Koters. Daily ex Sun, 7:45 am, 9:10, 10:20, 12 m, 1:35 pm, 3:50, markets, weather. Central.
WIAS, Burlington, Ia. 254 meters. 100 watts. Home Elec. Co. Announcer, Harry H. Waugh. Slogan, "Burlington, on the Mississippi." Tues, 8:30 pm, concert. Thurs, 7-8 pm, concert. Sat, 10:30-11 pm, organ. Sun, 10:30 am, church services. Central.
WIK, McKeesport, Pa. 234 meters. 100 watts. K & L Electric Co.
WIL, St. Louis, Mo. 273 meters. 150 watts. St. Louis Star and Benson Radio Co. Announcer, Billy Knight. Slogan, "A Wave Length Ahead." Mon, Wed, Sat, 10-11 midnight. Fri, 8-11 pm. Central.
WIP, Philadelphia, Pa. 508.2 meters. 500 watts. Gimbel Bros. Announcer, E. A. Davies. Slogan, "Watch Its Progress." Daily ex Sun, 1-2 pm, 3:4-3:30, 6-6:45, music; 6:45, markets, 7-7:30 pm, bedtime stories. Tues, Thurs, Sat, 8-12 pm, concert. Sun, 11 am, 1:30 pm, 4:30-6:30, 9:30-12 mid, church services, concert. Eastern.
WIW, Waco, Tex. 352.7 meters. 500 watts. Jackson's Radio Engineering Lab. Mon, Fri, 8:30-9:30 pm. Sun, 11-12 m; 7:30-8:30 pm. Central.
WJAG, Norfolk, Neb. 270 meters. 250 watts. Norfolk Daily News. Announcer, Karl Stefan. Slogan, "The World's Greatest Country Daily and Home of Printer's Devil." Daily ex Sun, 12:15 pm. Sun, 3:30-6 pm, music. Central.
WJAK, Greentown, Ind. 254 meters. 50 watts. Clifford L. White.
WJAM, Cedar Rapids, Ia. 268 meters. 20 watts. D. M. Perham. Daily ex Sun, 9 am, 10:30, 1 pm, markets, reports. Tues, Thurs, Sat, 6-6:30 pm, children's hour; 7:30-8:30, music; 9-10:30. Sun, 4 pm, vesper service. Central.
WJOP, Peoria, Ill. 273 meters. 100 watts. Peoria Star. Slogan, "The Grandview City of Illinois." Discontinued temporarily.
WJAR, Providence, R. I. 305.9 meters. 500 watts. The Outlet Co. Announcer, J. A. Reilly. Slogan, "The Southern Gateway of New England." Daily ex Sun, 1:05-2:15 pm, weather, reports, music; 7, weather, talk. Mon, Fri, 10 am, music, talks. Tues, 7:30 pm, baseball; 7:55, music. Wed, Fri, 7:30 pm, New York studio. Fri, 10:45 pm, orchestra. Sat, 7:05 pm, baseball; 7:10, music. Sun, 7:20-9:15 pm, Capitol theater. N. Y.; 9:15-10:15, Skinner organ, N. Y. Eastern.
WIAS, Pittsburgh, Pa. 275 meters. 500 watts. Pittsburgh Radio Supply House, Pickering's Studio. An-

nouncer, Bryan McDonald. Slogan, "World's Jolliest Aerial Station." Daily ex Sun, 7:30-11, concert. Sun, 2 pm, service. Eastern.
WIAZ, Chicago, Ill. 268 meters. 20 watts. Zenith Radio Corp. (Portable).
WID, Granite, O. 217.3 meters. 10 watts. Denison Univ. Announcer, Richard H. Howe. Fri, Sat, 5-6 pm, music, educational lectures. Athletics. Eastern.
WJJD, Mooseheart, Ill. 302.8 meters. 500 watts. Mooseheart Radio Station. Announcer, Jack Nelson. Slogan "The Call of the Moose." Daily ex Sat, Sun, Thurs, 3:30-4:30 pm, children's hour; 6:45-7:15, organ; 7:15-8:15, Mon, Fri, 11:30-12:30 am, organ. Sat, 9-12, midnight; dance. Sun, 7:45-8:40 am, Catholic services; 8:40-9:40, organ; 9:40-11, Protestant; 3-4 pm, Sunday concert. Central.
WIY, New York City. 405.2 meters. 500 watts. R. C. A. Announcer, J. Lewis Reid. Tues, Thurs, Fri, 7:30-1:30 pm, concert. Sun, 8:15-10:30 pm, Eastern.
WIZ, New York, N. Y. 431.3 meters. 500 watts. R. C. A. Announcer, Milton J. Cross. Daily ex Sun, 10-11 am, 1-2 pm, 4-6, entertainment; 7-11:30 pm, special program. Sun, 11 am-1 pm, church services; 2:30-5 pm, 7-10:30 pm, Eastern.
WKA, Cedar Rapids, Ia. 278 meters. 50 watts. H. F. Parr. Announcer, Al. Wed, Fri, 5:10-6 pm, 8:30-9:30. Thurs, Sat, 12:30-2 am. Central.
WKAD, East Providence, R. I. 240 meters. 20 watts. Charles Looff.
WKAN, Montgomery, Ala. 226 meters. 15 watts. United Battery Service Co. Wed, Fri, 8:30-9:30 pm, music, news. Sun, programs. Central.
WKAP, Crown Point, R. I. 234 meters. 50 watts. Duttie Wilcox Flint, Inc.
WKAQ, San Juan, Porto Rico. 340.7 meters. 500 watts. Radio Corp. of Porto Rico. Announcer, Joaquin Agusty. Slogan, "The Island of Enchantment, Where the World's Best Coffee Grows." Tues, 9-10:30 pm, orchestra, music. Wed, 8-10 pm, band; Thurs, 8:30-10 pm, music. Intercontinental.
WKEB, Westboro, Mass. 231 meters. 10 watts. K & B Electric Co.
WKY, Oklahoma City, Okla. 275 meters. 100 watts. WKY Radio Shop. Daily ex Sun, 3-4 pm, markets, weather, news. Mon, Wed, 7-7:30 pm. Mon, Wed, Sat, 9-11 pm, concert. Central.
WLAX, Greencastle, Ind. 231 meters. 10 watts. Greencastle Community Broadcasting Station. Announcer, C. W. Otis. Tues, Thurs, 8 pm. Sun, 7:45 pm, church service. Central.
WLB, Minneapolis, Minn. 278 meters. 500 watts. U. of Minn., Dept. of Elec. Eng.
WLBL, Stevens Point, Wis. 278 meters. 500 watts. Wisconsin Dept. of Markets. Slogan, "Wisconsin, Land of Beautiful Lakes." Daily ex Sun, 8:45 am, 9:45, 10:45, 11:45, 12:30 pm, 1:45, markets. Tues, 8 pm, Sat, 11:59 pm, "Episodes of Sleep." Central.
WLIT, Philadelphia, Pa. 334.5 meters. 500 watts. Lit Bros. Announcer, Harry E. Ehrhart. Club, "Morning Glory." Daily ex Sun, 11:45-12:55 pm, music; 2-3 pm, 4:30-6, music, talks; 7:30-8 pm, Dream Daddy. Mon, Wed, 8-10, entertainment. Fri, 8-10:50, entertainment; 1 am, Club. Eastern.
WLS, Chicago, Ill. 314.6 meters. 500 watts. Sears-Roebuck & Co. Announcer, George D. Hay. Slogan, "World's Largest Store." Daily ex Sun, 9 am, markets, weather; 11, markets; 12-1 pm, farm program; 1:30, markets; 3:45-4:45, homemakers' hour; 6, markets. Tues, 6:30-11 am. Thurs, 6:30-8 pm. Wed, Fri, 6:30-11 pm. Sat, 8-12 midnight, barn dance. Sun, 6:30-8 pm. Central.
WLW, Cincinnati, O. 422.3 meters. 1500 watts. The Crosley Radio Corp. Announcer, Fred Smith. Daily ex Sun, 10:45 am, 1:30 pm; daily ex Sat, Sun, 3, 4, reports. Mon, Tues, Sat, 8-10 pm. Wed, Thurs, 10-12 midnight. Sun, 7:30-10 pm. Central.
WMAO, Cazenovia, N. Y. 275 meters. 100 watts. C. B. Meredith. No definite schedule.
WMAF, South Dartmouth, Mass. 360 meters. 500 watts. Round Hills Radio Corp. Closed down until July 1.
WMAH, Lockport, N. Y. 266 meters. 500 watts. Norton Supply Co. Club, "Lincoln Hood Owls." Mon, Thurs, 8 pm. Sat, 12, midnight owl program, music. Central.
WMAK, Lockport, N. Y. 266 meters. 500 watts. Norton Laboratories. Announcer, Carl E. Welsher. Daily ex Sun, 12 am, weather. Mon, 8-10, Thurs, 12 midnight, Midnight Serenaders. Sun, 10:25 am, service. Eastern.
WMAN, Columbus, Ohio. 278 meters. 500 watts. First Baptist church. Announcer, Dr. D. P. Rittenhouse. Sun, 10:30 pm, 7:30-9 pm, church services. Eastern.
WMAQ, Chicago, Ill. 447.5 meters. 500 watts. The Chicago Daily News. Announcer, Robert Whitney. Mon, Tues, Wed, Thurs, Fri, 4-7 pm. Daily ex Sun, 12-3 pm. Daily ex Sun, Mon, 8-10 pm. Central.
WMAZ, Macon, Ga. 263 meters. 100 watts. Mercer university. Announcer, Hillyer Stratton. Mon, 11-12:30 pm. Tues, Thurs, 8-9 pm; 9-10. Wed, 11-12 midnight. Fri, 8-9, 10-11. Eastern.
WMBF, Miami Beach, Fla. 384.4 meters. 500 watts. Fleetwood Hotel. Daily 7:30-9 pm, dinner hour concert; 10:30-11 pm, popular music. Eastern.
WMC, Memphis, Tenn. 499.9 meters. 500 watts. The Commercial Appeal. Announcer, G. L. Dearing. Slogan, "Station WMC Memphis." "Down in Dixie." Club, "Midnight Frolic." Daily ex Sun, 9:45 am, 12 m, weather, markets, music, 3, closing markets. Daily ex Sun, Wed, 8:30 pm, program. Tues, Fri, 11 pm, midnight frolic. Sun, 11 am, church service. Central.
WMM, Cincinnati, Ohio. 422.3 and 325.9 meters. alternate months. 500 watts. Ainsworth-Gates Radio Co. Hotel Alms. Announcer, Arthur R. Ainsworth. Slogan, "The Station on the Hill." Sun, 6:45-7:30 pm, 10-12. Mon, Wed, Thurs, 8-10 pm. Tues, Sat, 10-2 am. Central.
WNAC, Boston, Mass. 280.2 meters. 500 watts. Shepard Stores. Announcer, John J. Fanning. Daily ex Sun, 10:30 am, 12-2 pm, 4-5, 5:30-7:30, 8-10. Sun, 11-12 m, church services; 3-4 pm, concert; 7:30-9:30, church and concert. Eastern.
WNAD, Norman, Okla. 254 meters. 250 watts. Univ. of Okla. Announcer, C. E. Battle. Slogan, "Oklahoma," "Voice of Sooner Land." Daily 9-15 pm, weather, news. Wed, 8:30-9:30 pm, music. Central.
WNAL, Omaha, Neb. 258 meters. 50 watts. Omaha Central High School. Announcer, R. J. Rockwell. Slogan, "The Pioneer Station of Omaha." Fri, Sat, 7:30 pm. Mon, Tues, Thurs, 7:30 pm, alternate with KFZZ. Central.
WNAP, Springfield, O. 248 meters. 100 watts. Wittenberg College. Announcer, Lester Crowl. College activities. Fri, music.
WNAR, Butler, Mo. 231 meters. 20 watts. First Christian church. Announcer, Perry V. Riley. Sun, 11 am, 7:30 pm. Central.
WNAT, Philadelphia, Pa. 250 meters. 100 watts. Lennig Bros. Co. Announcer, Jess Britton Young. Slogan, "The Little Broadcasting Station Around the Corner." Wed, 7:45 pm. Eastern.
WNAX, Yankton, S. D. 244 meters. 100 watts. Dakota Radio Apparatus Co. Daily ex Sun, 11:30-11:45 am, markets, weather; 5-6 pm, music. Central.
WNJ, Newark, N. J. 233 meters. 150 watts. Radio Shop of Newark, Inc. Announcer, W. A. Bingenheimer. Slogan, "The Voice of Newark." Tues, Wed, Fri, 6:30-10 pm, 10:30-12:30 am, dance music. Eastern.
WNYC, New York, N. Y. 526 meters. 1000 watts. New York Municipal Radio Station. Slogan, "The Municipal Broadcasting Station of the City of New York." Daily 7:30 pm, 10:30, police; 7:55, entertainment; 8:50, weather. Sun, 9-11 pm, Mark Straub theater. Eastern.
WOC, Lima, O. 261 meters. 50 watts. Page Opera House (H. P. Maus).
(Note—The fourth part of the directory will appear next week.)



Regular  
**\$50**  
 Formerly \$65



The famous Crosley Trirdyn with three tubes excels most five or six tube sets in simplicity of tuning, in selectivity, in volume, in clarity, in economy of operation and in distance getting efficiency

This remarkable accomplishment in radio engineering is due to the unique combination of Radio Frequency Amplification with Armstrong Regeneration. Many trick circuits have been designed to get around the Armstrong Regenerative feature, hoping to get results "just as good."

Every additional tube means additional expense, an added dial to tune, greater difficulty in operation, more distortion and more tube noises. The Crosley Trirdyn with three tubes has only two dials. These operate but two circuits, making tuning and logging easy.

The Trirdyn Regular, the most popular receiver on the market selling at its price or more, was

reduced from \$65 to \$50; the Trirdyn Special from \$75 to \$60. To these have been added two new Trirdyns in beautiful cabinets—the Trirdyn Regular with sloping panel at \$55 and the Trirdyn Special with sloping panel at \$65. Again the demand for Crosley Radios has increased tremendously.

You can't beat the results obtained from a Crosley Radio. Priced from the one-tube 50, "The Little Giant of Radio," at \$14.50, to the new Trirdyn Special with sloping panel at \$65.

Crosley Radios are licensed under Armstrong U. S. Patent 1,113,149. Prices quoted without accessories. West of Rockies—add 10 per cent.

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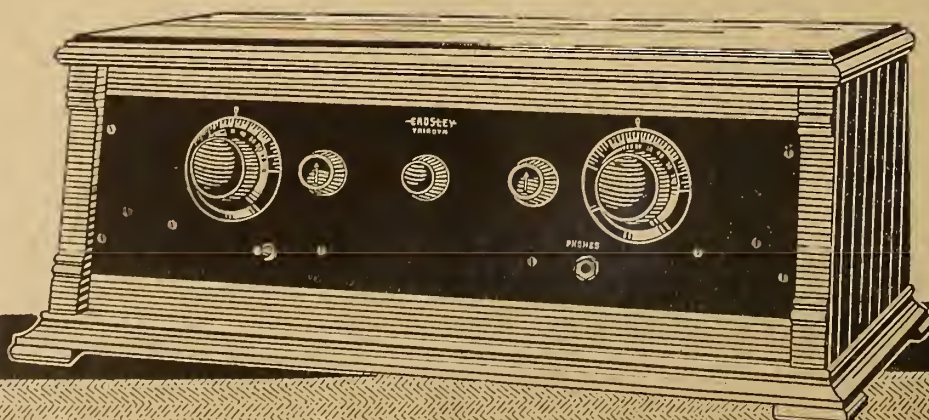
### THE CROSLEY RADIO CORPORATION

3493 SASSAFRAS STREET

Powel Crosley, Jr., President

CINCINNATI, OHIO

*Tune in with the Crosley Broadcasting Station WLW*



*New Special*  
**\$65**  
*Sloping Panel*