

# Radio

EVERY WEEK

INVEST

IN RADIO DEBUT

REG. U. S. PAT. OFF.

Vol. XIV

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SATURDAY, A

## LECTURES ON EVOLUTION

### ASKS LEGAL ACTION TO SILENCE STATION

NEW YORKER HOLDS WNYC POLITICAL MOUTHPIECE

Says Mayor Uses Municipal Station to Broadcast Propaganda at City's Expense

By Jack Forrest

NEW YORK.—Action has been started by the Citizens' union of this city to close the municipal broadcasting station, WNYC, on the grounds that it is being used by Mayor Hylan for disseminating political propaganda.

Application for the closing order was made by Leonard M. Wallstein, counsel for the Citizens' union, based on affidavits of Henry Fletcher, vice-chairman of the organization. The court's order requires the mayor and Commissioner Mills, the joint defendants, to show cause why an injunction should not be issued against the further operation of the station.

Three grounds, justifying a court order for closing the station were cited by Mr. Wallstein.

"That the city is without legal authority to spend money for the purchase, construction or operation of a broadcasting station.

"That the law makes no provision for the broadcasting of propaganda on behalf of the defendants or any other person or persons.

"The such acts constitute a waste of city funds and other property of the city of New York and cause an irreparable injury to the city."

When the station was opened a little more than a year ago at an estimated cost to the taxpayers of \$50,000, the then commissioner of plants and structures, Grover Whalen, speaking for the mayor, issued a statement in which he said:

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### CHASE THEMSELVES AROUND THE WORLD

MINNEAPOLIS.—Last Thursday night WAMD attempted to get a long distance record by tuning in themselves. They hoped to hear their own program as it returned from around a world tour, having passed over Asia and Europe and sailed across two oceans and several lakes. The operators, station directors, and assembled guests became so confused by signals and static they were unable to tell whether they heard an outgoing or an incoming program.

### WJR, NEW DETROIT PLANT, OPENS SOON

STATION OF JEWETT RADIO HAS 5,000-WATT RATING

Transmitter Is Located in Pontiac, Michigan; Studios Are in Automobile City

DETROIT.—The inaugural program from WJR, the new 5,000-watt broadcasting station of the Jewett Radio and Phonograph company, located at Pontiac with control studios here, will be worthy of the station's ideals; and the date—August 15—should be marked down on the listeners' calendar as one of the important ones of the summer season.

Beginning at 7 o'clock in the evening, the best talent available will pass before the microphone in the studio of the station at the Book-Cadillac hotel. A varied entertainment of character and appeal will be provided.

One of the features to be presented to the Radio audience will be the Detroit Symphony orchestra, generally conceded as one of the finest symphonies in the country.

### HARVARD MAN TO BROADCAST BASIC THEORY

Man Comes From Ape

Professor Holds Man Can Believe Darwin and Still Be a Christian

BOSTON.—Dr. E. A. Hooton, professor of anthropology at Harvard university, will endeavor to explain the theory of evolution to Radio listeners in an hour's lecture which will be broadcast from Westinghouse Station WBZ Friday evening, August 7.

Dr. Hooton will go on the air at 9 o'clock, Eastern time, and although it will be impossible to cover at length this vitally interesting and absorbing subject in such a short time, he will explain to his vast audience the basic facts of the evolution theory.

"One of the greatest events in the history of the world took place when the ancestors of man descended from the trees and started to walk on their hind legs," declares this noted scientist who demonstrates how changing methods of moving about, of fighting and of living

(Continued on page 2)



Some people say that Chicago juries do funny things when they try gunmen but after looking at the little lady pictured above you will have to admit that the body of Windy City men who pronounced Mary Bragdon guilty of being pretty enough to assume the titles of "Miss Chicago" and "Miss Illinois," in a recent contest, were correct in their decision. Miss Bragdon is heard frequently from WHT. Madame Olga Petrova (left) now appearing in "Hurricane," recently talked about the stage from WIP. Madeleine Hulsizer (right) is oft times heard from WOE.

BROADCASTS APE TALK

(Continued from page 1)

are believed to have altered prehistoric man's physical structure as apish ways were abandoned.

How Use of Hands Aided Man

The rising of man's ancestor to his feet aided in his progress in many ways, according to Dr. Hooton, and by a chain of circumstances it indirectly brought about a condition which allowed his brains to grow.

To begin with, his hands were freed from the business of locomotion. They were used for grasping food and subduing his enemies. The result was that his jaws were released from their arduous labor as weapons. They gradually diminished in size causing less pressure of muscle on the cranium as Dr. Hooton illustrates by comparison of the skulls and jaws of the other primates of today with those of man and which he will endeavor to explain to his vast unseen audience when he broadcasts from WBEZ.

Many people feel that the evolutionary theory should not be taught—that it is a blow aimed at their religious faith. They regard scientists as demons in human form who would take from them the last vestige of the faith which comforts their souls and substitute a mechanical, materialistic code.

Religion Cannot Fight Anthropology

Dr. Hooton cannot see the logic of their attitude. He holds that religion has no real quarrel with anthropology.

"I do not regard evolution as a religious dogma or as a political theory," says this prominent scientist. "One does not believe in facts—one accepts them. I put evolution and religion in two different categories; one is an interpretation of facts, the other a belief in certain supernatural phenomena, an emotional reaction to that belief, and a philosophy of life. But if I thought that a wide dissemination of the facts of evolution would remove the fear of hell-fire in the popular mind, then perhaps I would agree with those who oppose its teaching.

"I feel that a man can honestly accept the facts of evolution, and at the same time be devoted to Christianity and guide his life by its principles."

The chief complaint of the extreme fundamentalists is that the study of evolution is destructive of religious faith. To that charge Dr. Hooton has given his answer and expressed a viewpoint held by many people who are both intellectual and religious.

ACTS AGAINST STATION

(Continued from page 1)

"Editorial writers are now concerning themselves with possible misuse of the broadcasting station. Let me assure these gentlemen no administration would be foolhardy enough to touch the sacred precincts of the homes of its people with any political propaganda. The programs broadcast from the municipal station must first of all be of a very high-class character; they must be free from politics; they must be educational and instructive."

1925 WNYC Budget \$44,088

Leo J. McDermott, an attorney associated with Mr. Wallstein, sets forth in an affidavit of many pages the history of WNYC. He shows that in addition to the original cost of the station, its maintenance and personal service pay had grown until the 1925 budget called for \$44,088 yearly. Mr. McDermott, after charging that the station is used mainly for political propaganda, says:

"As to the supposed use of this station for the purpose of the fire department, deponent cannot find that there is even a pretense that it has ever been used for such a purpose. An inspection of the many programs published for Station WNYC discloses nothing whatever relating to the fire department.

"As to the supposed police department's use of such broadcasting station, deponent has often listened to the broadcasting of said Station WNYC, and although he has heard the broadcasting of the so-called 'police alarms,' has never yet heard any broadcasting from said station which in his opinion was of any real value as a police department activity."

In explanation of this action the Citizens' union made a public statement, in which it said:

"The maintenance of the broadcasting station at city expense for any purposes, in the view of the Citizens' union, is unauthorized by law. But if the city officials had used it properly, merely as an adjunct of the police department or even for the broadcasting of music and educational non-political talks, no objection would have been made."

Boost Greater Movies by Radio

NEW YORK.—In connection with the "Greater Movie Season" movement all the orchestras and artists of Broadway's picture palaces united in a grand Radio pageant which was broadcast by New York stations last week. In addition to this associated talent, many notables of national prominence appeared before the microphone.

- 10. N. Dean Cole, WHO..... 5,378
11. Lambdin Kay, WLS..... 5,136
12. Robert Emery, WBEZ..... 4,894
13. Charles Erstein, WTAS..... 4,841
14. Jerry Sullivan, WOL..... 4,760
15. O. E. Becker, WGB..... 4,627
16. Stanley Barnett, WOC..... 4,616

How to Vote and Get Bonus

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

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

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

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

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

Station Receives 55,000 Fan Messages Since April

NEW ORLEANS.—More than fifty-five thousand letters and telegrams have been received by the management of WSMB broadcasting station since its inaugural, April 21 of this year, the station statistician reports. Letters and telegrams have been received at the rate of 600 a day, and the summer season, which often thins out a station's mail, has had no effect on WSMB's volume of mail, except to increase it.

Official statistics show that the number of Radio users in Germany is increasing rapidly.

McNAMEE REMAINS LEADER IN CONTEST

EASTERNER TOPS G. D. HAY BY NEARLY 18,000 VOTES

Fourth and Fifth Place Holders Have Changed; Barnett Seems to Help Leader

Only three more ballots counting the one published above to be marked for the best announcer and the 1925 Gold Cup contest will be decided! As before, Graham McNamee, WEA, is still leading the field and seems to be gaining more strength with each trip of the mailman to the Digest offices.

George Hay, WLS, is now over 17,000 votes behind the leader and unless there is a sudden cyclone of votes from the great open spaces when the contest draws to a close last year's cup winner's only chance to see the cup will be when it leaves Chicago on the Century on its way to Manhattan. However, it must be remembered that the 60 vote bonus that goes to every batch of 22 consecutively numbered ballots may have much to do with altering the final standing.

Barnett Seems to Help

That Stanley Barnett is making good his promise to keep from getting votes and throwing his support to McNamee is evidenced by his dropping to last place among the sixteen leaders and having added but two votes to his last week's total.

Gene Rouse is still in the third position but his spurt of last week has not carried through into this week with as much strength as before. The Woodmen's announcer polled some four thousand votes last week but only managed to boost his total by 2,898 on the latest count.

Hired Hand Gaining

Down Texas way things are beginning to pick up and the Hired Hand of WBAF is gaining on Henry Field, KFNF, who holds the fourth position by barely over two hundred counters. The corn out in Iowa is growing rapidly now and it may be that the farmers are too tired when evening comes to listen in on the Shenandoah station and hear Field. At the same time, though, it looks like the Fort Worth station will be off the air for a period while they are completing their new station. In this case, the Hired Hand will not be heard several evenings and the Iowa seed man may have an opportunity to strengthen his hold on fourth place.

Many stations are boosting their own announcers in replies to fan letters and there is a possibility of swaying the fans toward a dark horse when the time comes to submit the bonus votes. In that case the headline on the story announcing the choice for the best announcers may contain a name never before mentioned there.

Lane Passes Arlin

There have been no new contestants to break into the leaders' group but unless some of those down towards the bottom of this list do not watch out someone may come up from the unlisted host below in time to be counted in the final standing and thus receive the certificate of merit. These certificates will be awarded this year as last to the fifteen announcers immediately below the winner.

Although "Bill" Hay, formerly of KFEX, has severed his connection with the announcing end of Radio and is no longer heard from the Nebraska station he still continues well up on the list. He was recently heard from WLS, where George Hay introduced him.

Frank Lane, KFRU, and H. W. Arlin, KDKA, are running neck and neck down

at six and seven. Lane passed Arlin in the balloting of the past week.

N. Dean Cole, WHO, took quite a jump and passed Lambdin Kay again. Cole is now tenth and Kay is eleventh. The only other change in standing occurred at the bottom of the list where O. E. Becker went over Barnett to fifteenth place.

The latest standings are:

The Sixteen Leaders

Table with 3 columns: Position, Name and Station, Votes. Lists top 16 announcers and their vote counts.

CONTENTS

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Table listing contents of the issue: All the Live News of Radio, WEAF, the Chief of the Link Stations, Advance Programs for the Week, An Evening at Home with the Listener In, Editorials, A. B. C. Course in Radio Fundamentals, Radio Inductive Interference and Its Cure, Interesting Work with Oscillating Crystals, The Reader's View, Pipe Fittings Make Antenna Masts, Questions and Answers, Directory of Radiophone Broadcasting Stations.

Looking Ahead

A Bridge Circuit from Nicaragua will be presented in the next issue, together with detailed instructions for building a set incorporating it. While Mr. R. N. Skeeters, who sent in the data, had not read Milo Gurney's articles, his hook-up forms a bridge that permits of high amplification.

WHAS, "Down in Old Kaintuck," will be pictured and described in the next issue of Radio Digest. The Courier-Journal and Louisville Times station has made its city famous for something besides Derbies and Colonels. Pictures of the studio and members of the staff will be shown.

The End Is Close in the Gold Cup Contest, and the next to the last ballot will appear next week. The contest closes August 22, and if you want to see your favorite at the top of the list do not fail to clip and send the next two ballots.

Single Circuit Set Owners Will Be Interested in the non-radiating stage of tuned R. F. that will be outlined next week by Mr. J. A. Thatcher of the Toronto Radio Research society, as it adds selectivity and range, yet eliminates them as offenders in the matter of whistling interference.

Characteristics of the Three Electrode Tube form the basis of Professor Moreton's next article of the A. B. C. Series. The beginner in Radio is often confused by such terms as Mutual Conductance, Amplification Constant and Plate Impedance. Here is a chance to have their significance cleared up.

Newsstands Don't Always Have One Left

WHEN YOU WANT YOU WANT IT! BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

Subscription form for Radio Digest, including fields for Name, Address, City, State, and a note to enclose a check for five dollars.

## NEWS BRIEFS FROM THE BROADCASTERS

### INVITE MONKEY TRIAL MEN TO SPEAK FROM SHOW

**Cuba Joins Argentine to Entertain; Army Band Heard on Four Station Hook-up**

Officials of the Radio World's Fair have invited Bryan and Darrow to use their special broadcasting hook-up to address 25,000,000 people on the evolution question during the show in New York.

Maria Montero, pre-eminent danseuse; Juan Pulido, Spanish recording baritone of the National theater, Havana, Cuba, and Carlos Cobián, Argentine orchestra combined to delight WOR afternoon listeners recently.

New York, Washington, Philadelphia and Providence heard the music of the United States army band on July 29, when it was broadcast from WEAJ, WCAP, WOO and WJAR from 7:30 to 9 p. m., Eastern daylight time. Capt. William J. Stannard conducted the concert, playing in the army barracks, Washington.

A series of golf talks from Station WSAI, of the United States Playing Card company, Cincinnati, are being given Wednesday evenings by George Bowden, professional at the Maketewah Country club, Cincinnati. Mr. Bowden is one of the leading professionals in the United States.

On August 9 Station 2LO, London, will transmit the first real broadcasting play ever produced in Britain. It is a mystery play in modern style by a new author, with the underlying motive of the Christ running through it.

A novel feature of the ten weeks series of band concerts given by the Goldman band on the campus of New York university will be the tournament for boys' bands to be broadcast through WEAJ and others on Friday, August 14, beginning at 9 p. m.

During the absence of Mrs. Ellen Rose Dickey, home adviser of the Sears-Roebuck Agricultural foundation on her vacation, her work over WLS will be carried on by Mrs. J. C. Scully, of Brookings, S. D. Mrs. Scully, who is a graduate of the South Dakota Agricultural college, has been instructor in home economics for five years at the high school at Clark, S. D.

Hawaiian music seems especially popular in summer with the Radio audience, so Station KDKA gave another of its series by the KDKA Hawaiian players on August 7.

Open-air band concerts and special late dance programs during the next two months are the newest hot-weather features to be slated for long distance Radio listeners by KOA, Rocky Mountain broadcasting station of the General Electric company at Denver.

Of special interest in the Northwest was KFOA's recent program which had for its principal soloists the principals in this year's production of "The Wayfarer," being held at University of Washington stadium in Seattle.

Kiutus Tecumseh, an Indian tenor who has been a WLS staff artist, broadcast recently from KJR, Seattle. Simeon Oliver, an Eskimo pianist from Unalaska and Tecumseh's partner, accompanied the chief.

"Radio Breezes," by Kenneth C. Beaton, known to millions of newspaper readers as K C B, is now heard as a regular KGO Tuesday evening feature. K C B will speak at 8 o'clock.

Two new ideas are to be broadcast from KTCL, Seattle. One is a "friendly aid" service which is to be directed by George H. Crandell, a well-known lawyer. The service will offer friendly advice and counsel on legal troubles that everyone runs into. The other feature is known as the "Voice of Seattle" and will be broadcast from a downtown street intersection. Harold Gramm, program director of KTCL, will give a description of the streets of Seattle and several novelties are to be introduced.

### Universal Company Takes Over WCAU, Philadelphia

PHILADELPHIA.—Station WCAU, located at the Hotel Pennsylvania, formerly operated by Durham and company, has been taken over by the Universal Broadcasting company. Stanley A. Broza, a member of the firm well known in broadcasting circles, has been appointed director of studio and programs, and has arranged some elaborate new features and surprises for the Radio audience for the coming season.

### ABDEL KRIM WANTS RADIO—NO CAN DO!

PARIS.—A neutral journalist who has recently returned from a visit to Ajdeer, the capital of the Rif, noticing that the Rifian method of communication between general headquarters and local commands was the field telephone, asked him why he did not use Radio also. The Rif Sultan replied: "In the first place I have no apparatus. I dare say I could get that easily enough, but I have no one at present who understands the working of Radio."

### CHASE THEMSELVES AROUND THE WORLD

MINNEAPOLIS.—Last Thursday night WAMD attempted to get a long distance record by tuning in themselves. They hoped to hear their own program as it returned from around a world tour, having passed over Asia and Europe and sailed across two oceans and several lakes. The operators, station directors, and assembled guests became so confused by signals and static they were unable to tell whether they heard an outgoing or an incoming program.

### GRACE DRAYTON IN RADIO DEBUT



It is well and fitting that the first talk over the Radio to the kiddies given by Grace Drayton from WMCA should be entitled "Loving Children." She has won international fame as an artist with her "Kiddy" drawings, verse, and prose.

### Why Worry About Time Used When We Work It Out For You Weekly?

DENVER, Colo.—Broadcasting experiences at Denver further reveal that static is not the only problem of Radio fans. To compute the correct time elsewhere and to know when and how to calculate differences between Eastern, Central, Mountain and Pacific coast time, to say nothing of daylight saving, when "DX-ing" is a unique problem in itself. The puzzle is made all the more complex by the growing number of broadcasters. Government records, it is said, now indicate in excess of 100 class B stations in this country alone. "How many hours difference between here and Honolulu, Chicago and Dallas, Sitka, Alaska, and Richmond, Va?" are typical of the many questions raised by inquirers among KOA's audience. Astronomers, science professors, railroad officials and weather forecasters as well as broadcasting officials, declare an everlasting avalanche of time-questions

has been raised since the overwhelming popularity of Radio as a summer diversion. "I am a profound Radio enthusiast," reads a recent communication to the General Electric station at Denver from a student of a leading western university. "My greatest bugaboo, however, is knowing when to listen for a 10 o'clock program in Wisconsin or a 6 p. m. program in Mexico. "I am fully aware that 5 p. m. in London and Paris is around 12 o'clock noon, standard time, in New York, 10 a. m. in Denver and 9 a. m. in Oakland, Calif., but how am I to know which of the other cities are embraced in the Eastern time group and which in the Central, Mountain and Pacific coast groups?" (The time standards in use by each station is listed in the "Radiophone Broadcastingcasting Stations" list, published weekly by Radio Digest on the next to last page.—Editor's Note.)

### WJR, NEW DETROIT PLANT, OPENS SOON

#### STATION OF JEWETT RADIO HAS 5,000-WATT RATING

Transmitter Is Located in Pontiac, Michigan; Studios Are in Automobile City

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#### Music from Belle Isle

At the time the orchestra is broadcast it will be playing in a new \$50,000 shell which was built this summer on the city's beautiful Belle Isle park, in the Detroit river. This program will be followed by a varied studio entertainment presenting vocal and instrumental groups assisted by vocal and instrumental soloists. During this studio program a number of famous men will be presented in short talks incidental to the inauguration of the station.

Popular entertainment will have its place on the program, since it is the station's intention to please every member of the Radio audience, and in following out this intention it is necessary to present all of the various entertainment suited to broadcasting.

WJR is the station; 7 p. m., Eastern time, is the hour; 517 meters is the wave length, and 5,000 watts the power; the date—August 15.

### 'BIG BROTHER' ON VAUDEVILLE BILL

#### Bob Emery Shows Boston Keith's Audience How He Entertains Kiddies

BOSTON.—For the first time so far as is known, a Radio announcer has had a week's engagement at B. F. Keith's theater in Boston. On July 27, Bob Emery, Big Brother to 25,000 members of the Boston Edison Big Brother club foretook the microphone at WEEI's studio for one week to meet the children face to face on the stage and show his audience how he entertains the kiddies nightly at WEEI.

The routine of Big Brother's act consisted of a brief flash of motion pictures showing views of the recent Big Brother club outing, ukulele songs, piano-logues, and a brief Radio sketch in which Bob Emery was the principal. The Radio sketch was entitled "The Program Director." It was in two parts and depicted the troubles of a program director in his office and then some of the trying situations in the studio before the microphone. This sketch was written by Charles Burton, superintendent of broadcasting at WEEI, showing the Radio audience exactly how broadcasting is done. The audience not only saw Emery in action on the stage, but heard from amplifying horns exactly how his voice comes to them over the air.

### New Stations

WGBU is the new Florida station which has been puzzling fans for the last few weeks. This new 500-watt Western Electric 1B station, operating on 384.4 meters, is located at Suwanee, Fla., 100 miles north of WMBF, Miami Beach. The chief announcer is Robert H. Nolan.

WCAU, Philadelphia, formerly operated by Durham and company, is now owned and operated by the Universal Broadcasting company.

The following limited commercial class "A" stations were licensed this week: KQP, Hood River, Ore., 100 watts, 270 meters; KFCC, Helena, Mont., 10 watts, 248 meters; KPFW, Avalon, Calif., 250 watts, 211.1 meters.

San Francisco is to have its first super-station when KPO, Hale Brothers, goes on the air soon with its new 4,000-watt transmitter.

## 'BWS' LEAVING WOC FOR EASTERN 'MIKE'

### PALMER SCHOOL TO LOSE POPULAR ANNOUNCER

**Stanley W. Barnett Goes to Baltimore Soon to Help Start High Power Plant**

DAVENPORT, Iowa.—According to an announcement made public here by the Palmer School of Chiropractic, Stanley W. Barnett, studio director of Station WOC, and known to the Radio audience as "Announcer BWS," has resigned his position with the Chiropractic Fountain Head Radiophone station, the resignation to become effective some time in August. According to his present plans, he will connect with a new high-power station which is under construction in Baltimore, Md., and which will go on the air about October 1. The Gas and Electric company of Baltimore will operate the new station. It will have a capacity of 5,000 watts.

Frederick R. Huber, manager of the station, in outlining the policy said: "Everything that is of the best in Baltimore will be broadcast. Baltimore's best instrumental and vocal talent, her best attractions, her best artists. It may be that the Baltimore Symphony orchestra, the Park band and the Municipal band may give concerts. Or some of our leading organists, or members of the Peabody conservatory faculty. New discoveries at the Johns Hopkins university can be given to the world through us. The possibilities of our new station are unlimited."

#### With WOC Over 3 Years

Mr. Barnett has been connected with Station WOC since its inception three and a half years ago, and has seen one of the best and most powerful stations grow up from a small, insignificant beginning; and in this development "BWS" has played a very prominent part. WOC, about eight months ago, installed the latest type 5,000-watt transmitter.

When interviewed at WOC recently concerning his change, Mr. Barnett stated that for some time he had felt a desire to make a change, primarily, to be nearer his former home in Pennsylvania.

"You know," he said, "my folks never go to bed at night without hearing me sign off at WOC, but I rarely get to see them on account of the distance and the time that I would be absent from the studios at WOC."

"What are your other reasons?" he was asked.

"Well," he confided with pleasing modesty, "I have been told that I have played a responsible part in making WOC's organization, reputation and enviable record of service what it is, and when I was approached by another Radio station to do the same thing for them, and in view of the other factor, I decided to make the change, much as I dislike the idea of leaving WOC, Davenport, and all the friends I have among the station staff, and the artists who frequently come here. As for the Radio audience, I don't think they will miss me so very much because I will be on the air again within a few weeks, and they and I will at that time be able to renew our acquaintances. I really believe, though, that I, personally, will feel the change much more than the listeners in will feel it," he concluded.

#### Sorry to Lose "BWS"

When Dr. B. J. Palmer, president of the Palmer School of Chiropractic, was interviewed concerning Mr. Barnett's resignation, he stated that while sorry to lose the services of "BWS" he was, at the same time glad that Mr. Barnett was being called upon to help in building up a similar organization in another part of the country. In regard to the future personnel at WOC, Dr. Palmer stated that they were at present selecting from a number of applicants a man who would satisfactorily fill the position of announcer and who, at the same time, would be as highly acceptable and pleasing to the Radio audience as was Mr. Barnett.

"We also intend to put on several new features in our broadcasting program which we feel sure our Radio audience will find more than ever attractive, pleasing and profitable. It will be some days, however," concluded Dr. Palmer, "before we shall be in a position to make public our choice of a successor."

Before coming to the Palmer School of Chiropractic—from which, incidentally, he is a graduate, besides being their chief announcer at WOC, and one of the pioneer announcers in the country—Mr. Barnett was a first-class electrician (Radio) in Uncle Sam's navy, and saw service during the World war.

#### Landlord Cannot Refuse Radio

VIENNA.—The right of a tenant to set up a receiving outfit despite the opposition of his landlord was the subject of a recent test action in the Austrian courts and resulted in the complete victory of the tenant.

## BIDS WEST GOODBYE; GOES TO BALTIMORE



Stanley W. Barnett, former "Announcer BWS" at WOC, Palmer School of Chiropractic at Davenport, Iowa, has resigned from his post there to take a position with the new 5,000-watt station of the Gas and Electric company at Baltimore, Md. The new station will take the air October 1, it is planned.

## WIP to Have Home on \$18,000,000 Building

**Gimbel Brothers Soon to Start New Store**

PHILADELPHIA.—Gimbel Brothers of this city, operators and owners of Station WIP, are having plans prepared for the erection of a 5,000-watt station on the top floor of their new twelve-story department store building, construction of which starts soon. The building will cost \$18,000,000.

Richard Gimbel, a member of the firm, and who has taken an active interest in the operation of the station, has made a tour of all the principal stations of this country and abroad in an effort to learn just what will make WIP one of the most attractive, as well as most powerful, broadcasters in the United States. Edward A. Davies, director of WIP, states that the new station will be put in operation as soon as the new building is completed.

## JACK DEMPSEY HELPS OPEN NEW WOK STUDIO

**Terrace Garden Is Site of New Hotel Plant**

CHICAGO.—WOK, at Homewood, a suburb near here, opened its new Chicago studio in the Terrace Gardens, Morrison hotel, recently and celebrated its increase in power with a dinner-dance for friends and Radio artists.

One special feature was a talk by Jack Dempsey.

The station is owned by the Neurotound Radio company and has 5,000-watt equipment. Only 1,000 watts will be used for the time being. Batteries supply the transmitting power.

George W. Allen, a new voice to Radio, is announcer and director. Harry Waters, formerly at WHY, is assistant director and announcer. Robert North, pianist, who has been heard from many stations, is also on the station staff.

## Silver Cup Is Award for Most MacMillan Messages

NEW YORK.—A silver cup has been offered as a trophy to the amateur Radio operator who picks up the largest number of messages from the MacMillan expedition from now until September 15, by the Second Radio World's Fair, through U. J. Herrmann, managing director, in letters addressed to the National Geographic society and the Amateur Radio Relay league.

**EVEREADY HOUR EVERY TUESDAY AT 8 P.M.**  
Eastern Standard Time  
For real radio enjoyment, tune in the "Eveready-Group" Broadcast through

WEAF	New York
WJAR	Providence
WEL	Boston
WFI	Philadelphia
WGL	Buffalo
WGAE	Pittsburgh
WEAR	Cleveland
WSAI	Cincinnati
WWJ	Detroit
WCCO	Minneapolis
	St. Paul
WOC	Davenport

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# WEAF, "Chief of the Link Stations"



The input control board where voices are amplified and relayed by phone to the WEAF string.



Two views of reception room. Door in the upper photo leads to studio pictured at page bottom.

"Smiling" Betty Lutz, the charming day hostess at WEAF.



Here is one of the most popular quartets ever heard in America, the four genial announcers of WEAF. At the top is Graham McNamee, whose voice has been heard over as many as fourteen stations at once and who has headed the Gold Cup Announcers' contest list for weeks. Next we have Phillips Carlin, also heard over the WEAF link. He always smiles they say! The gentleman with the dreamy eyes always radiates joy over the "links" perhaps because his name is Leslie Joy. At the bottom is James Haupt, who has made good use of his excellent musical education to make the programs he announces more interesting.



No wonder WEAF's voice is always cheery. Look at the announcers.

**E**MBODYING the latest developments in studio acoustics, in studio arrangement and many technical improvements in broadcasting equipment, WEAF's studio and remote control facilities in New York city, are the last word in this important phase of broadcasting.

Years of broadcasting by WEAF have indicated desirable features in studio design which improves the quality of Radio programs. Minute attention to detail is responsible for much of the improvement in acoustic properties. The parquet floors are laid in pitch and are insulated from the walls of the studio. False walls are used between the studios and the hall to introduce a dead air space, making them practically impervious to sounds in the hall.

The draperies on the walls are so arranged that they can be adjusted to give the correct degree of deadening for the particular music being transmitted. For instance, heavy brass bands require more deadening than a quartet or a pianist. A speaking voice requires the least deadening for good transmission. In every case the studio director can make his corrections and adjustments without loss of time.

The paramount feature of the studio installation is the use of two studios, a small one for singers, speakers and small groups of instruments and a second large studio for bands, large choruses and orchestras. Between the two

studios is the monitoring booth from which the programs are directed.

WEAF has four announcers on the staff. They are well known to the audiences throughout the country, due to the linking of stations with WEAF for their varied programs. When you hear, "Good evening, ladies and gentlemen of the Radio audience," you can be sure that it is the voice of Graham McNamee, ready to deliver his announcement of the forthcoming attraction. He has covered most of the national events that have been broadcast through WEAF, and is noted for his well modulated voice. To him, falls the honor of announcing the Eveready hour and Victor presentations.

To those who are familiar with the introduction and announcements of "The Man in the Silver Mask," the "Silvertown Cord Orchestra," or the "Happiness Candy Boys," the voice of Phillips Carlin is a source of real enjoyment. Among many of his friends he is known as the "Orator of WEAF." His smile is continuous.

When a delay comes in any of the programs, Leslie Joy, announcer steps in and fills the gap with a baritone solo. He has had a wide and varied career, though still under thirty years of age.

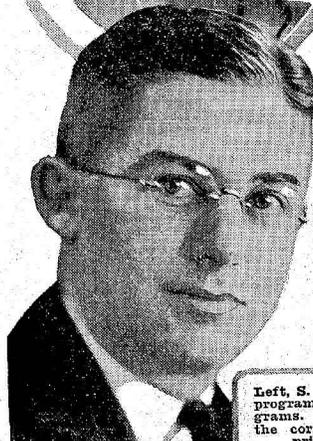
(Turn to page 6)



At the phone, O. B. Hanson, chief engineer, "the man behind the scenes."



Left, Winifred Barr (upper) and Kathleen Stewart (lower) are evening hostess-companists at WEAF.



Left, S. L. Ross, director of programs that are programs. Right, a glimpse at the corner of one of the principal studios.



## MATRIMONY NOTES SWAMP KOA PLANT

### SPINSTERS-BACHELORS, ASK AIRLINE TO ALTAR

Station Refuses Cupid Role; Requests Continue to Come from Coast to Coast

DENVER, Col.—Radio may be faced with the wholesale responsibility of solving matrimonial problems for enterprising spinsters and bachelors of the country, if the spring rush on KOA here is any criterion.

Regardless of growing demands from correspondents in the unmarried class, officials of the Rocky Mountain broadcasting station, have adopted the strict matrimonial policy of "hands off," in declining the responsibility of finding mates. Likewise they are holding out hopes that the situation will become less acute with the expiration of summer.

#### Ohio Leads All

Ohio ranks first in the number of correspondents appealing to the station for guidance in the matrimonial field, with Iowa taking second place and Washington third.

An Illinois girl gives her age as 18 and advises she could settle down with "any nice man, if such a creature exists." She adds further, "I never have been able to run across one yet." A Cincinnati maiden declares she is "very good looking and quite popular among the young set." and a high school girl in Iowa suggests, "I suppose I am counted as old-fashioned because my hair is not bobbed."

#### Women Scarce There

From an Oregon lumber camp a bachelor writes, "Women are very scarce here and I am looking for someone to write to. Please forward some names." An ex-soldier asks KOA to supply him with names of pretty Denver girls, and a Colorado rancher wants to hear from a girl who cares about living in the country.

A Hartford, Conn., lady correspondent wrote a lengthy letter to the broadcasting station after finishing a book of romance which "has such a beautiful ending," and a Frankfort, Ky., correspondent advises that she is "just past 30; sews and loves music and good books."

## Expects Half Billion to Be Spent on Radio

### Radio Fair Head Bases Estimate on Government Reports

NEW YORK.—Half a billion dollars is likely to be spent by the American public for radio apparatus within the next year, in the opinion of U. J. Herrmann, managing director of the Second Radio World's Fair, who bases his conclusions on government reports and the estimates of leading manufacturers.

"One of the greatest gains in radio sales this year will be among the farmers," Mr. Herrmann declares. "A considerable proportion of our agriculturists, for one reason or another, was slow in developing the radio fever; but now radio has become an indispensable factor of farm life, not only from the standpoint of entertainment and general education but in view of the invaluable information on market conditions and on agricultural improvements and advice.

"Everything points to a prosperous year for the farmers. Large sums will be expended in the chief agricultural states for radio installations."

Mr. Herrmann states that representatives of several leading grange organizations would be in New York the week of September 14-19 to view the exhibits of new radio products at the Second Radio World's Fair in the 25th Field Artillery Armory, the largest hall in the world.

## "Lopez Speaking" Is Again Heard from Manhattan Isle

NEW YORK.—Vincent Lopez has returned to the good old U. S. A. and is back on the air again playing through WEAF every Tuesday, Thursday and Saturday from the roof of the Hotel Pennsylvania.

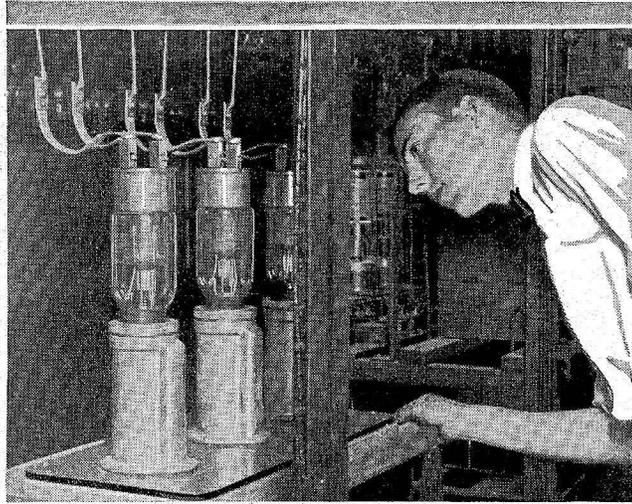
One of the pioneers of broadcasting, whose "Lopez speaking" is famous throughout the country, he returned to New York on the S. S. Paris following an unusually successful engagement at the immense London "Hippodrome" and at the famous Kit Kat club.

Although the sole attraction in a theater ordinarily the home of spectacular operettas, the Lopez orchestra proved a sufficient drawing card to fill most of the 2,000 seats daily.

#### New Mike at KGB

TACOMA, Wash.—Local Station KGB, in having its station recently overhauled, has added the latest type of improved microphone with accompanying amplifiers. The wave length remains 249.7 meters.

## WPL USES WATER COOLED TUBES



Some of the giant water-cooled tubes in the transmitter of Station WPL, the broadcasting plant of the Paulist Fathers, New York city, soon to open as the first Radio church directly connected with the Roman Catholic church.

## WEAF, CHIEF OF LINK

(Continued from page 5)

Those who listened to WEAF's "home talent" program which was broadcast by WEAF and seven other stations are probably not aware that the entire presentation was conceived by James Haupt, one of WEAF's popular announcers and familiarly known to the entire staff as just plain "Jimmie." His forte is in his fundamental knowledge of music which bears outlet in the planning of such programs as the "Fireside Hour" and the "WEAF Light Opera Quartet."

Upon entering the reception room at WEAF, a visitor is greeted at the door by Miss Betty Lutz. She is the day hostess, and is noted for her charming manner and big smile that is given to everyone. During the evening, Kathleen Stewart and Winifred T. Barr act as hostess-accompanists. Their names are perhaps mentioned more than the call letters of the popular New York station itself.

A large and comfortable reception room with doors leading directly into each studio provide a waiting room for a large number of artists. A special loud speaking equipment furnishes them with entertainment while they are waiting for their turn to perform.

The plant department, or transmitting room is adjacent to the studio. Here all studio and remote control circuits terminate in a power input panel and are connected with the special line to the transmitter located at West street. A system of adjustable distortion net works is located in the plant department so that the attenuation of lines controlling broadcasting from remote control points can be suitably equalized for radio broadcasting purposes. All remote control will thus be handled at one point by a specially trained crew.

A special ventilation system has been installed in both studios, which changes the air within them every seven minutes. This assures cool, clean air even in mid-summer. In order to eliminate street noises during broadcasting the windows to the street may be kept closed without interfering with the comfort of the artists.

All of these facilities result in a marked improvement in the conduct of the programs and practically eliminate long waits between numbers in the program, and those waits occasioned by switching from one studio to another or to remote control points, when broadcasting is done from the outside.

WEAF has broadcast some of the largest and most notable events in the history of the country. The Democratic convention and the inaugural address of President Coolidge being two of the most important.

During the broadcasting of the Defense Day test, broadcasting was accomplished over the largest link of stations that ever was attempted. The success of this test showed the remarkable possibilities of broadcasting when the nation is in the throes of a catastrophe. "The Daddy of 'em all—WEAF—"

The French academy has just decided to admit the word "haut-parleur" (loud speaker) into the dictionary, thus sanctioning its use.

## ERECT NEW STATION AS A 'TRAFFIC COP'

### WILL OBSERVE 'JAMMING' OF EUROPEAN STATIONS

Believe New Detector Plant Will Aid in Clearing up Difficulties of Broadcasters

LONDON.—An interception station—a sort of central listening post—is the latest development of the British Broadcasting company for improving and developing the broadcast services both of Great Britain and the continent.

It is being constructed near Bromley, Kent, and will be working in six weeks. It is the first station of its kind to be erected.

By the use of a supersensitive and powerful receiver working on four high frequency, one detector and two low frequency tubes, the station will be able to pick up signals from all continental and many American transmitting stations. It will be able to tell if one station is jamming the transmissions from another. By the use of a direction-finding apparatus the operator will be able to tell in a few minutes what stations are at fault.

## "Charleston" Taught by Radio in Chicago

### Dancing Master Instructs Fans in Fundamentals

CHICAGO.—"The Charleston" is all the go this month! Not the sleepy old town "down Carolina way," but the dance that is said to have originated on the banks of the Ashley and Cooper rivers that flow past that quaint Palmetto city. In order that radio listeners might be up to date on this latest dance craze, WMBB, in cooperation with a local morning newspaper, will broadcast lessons telling how the fundamental steps might be mastered. The lessons will be given by the dancing master of the ballroom where the station is located.

Diagrams published in the paper each morning are explained via Radio at 8:30, Central Standard time. By studying the cuts and then tuning in on the Radio, all who really care to may learn the dance.

## Pittsburghers Seek Time to Search Ether for DX

PITTSBURGH.—This city will have a Radio silent night if the plans of the local Retail Credit Men's association are carried through to a successful conclusion. This organization has recently formed a committee with a view to bringing about a silent night at least once or twice a month here. It has arranged conferences with other trade bodies and with local broadcasters in order that they can find periods when they may tune their sets for out of town stations and thus check up on the capabilities of these instruments.

## Make Sure of Receiving Your Copy Each Week

and receive the best service from Radio Digest. Requests for missing copies are numerous. You cannot afford to miss a single issue. Your best protection is a mail subscription. Now is the time to get on the weekly mailing list.

One of the popular Radio Broadcasting Stations writes:—\* \* \* "We find the trouble in this locality is the fact that our listeners are having difficulty in securing copies of Radio Digest." \* \* \*

Many readers miss some of the issues of Radio Digest. It is a disappointment to reach a newsstand sold out. Readers become dissatisfied and Radio Digest loses a reader. Our best efforts are being put forth to have copies always on newsstands. Frankly, we admit that the job is very strenuous.

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Advise us promptly of any difficulty you have in getting your copy. Give us the name and address of the dealer who is sold out.

Your mail subscription will solve your problem.

You will find a coupon in each issue.

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Radio Digest Publishing Co.  
510 N. Dearborn Street  
Chicago, Ill.

## RADIO MAY HELP IN PASSING NEW LAWS

### NEW YORK GOVERNOR USES WGY FOR REFERENDUM

Broadcasting Discussions On Important Legislation Will Obtain Views of Voters for Representatives

SCHENECTADY, N. Y.—The Radio referendum may, in a few years, be provided for by legislative enactment. Until the result of such a referendum becomes binding on elected representatives, the Radio appeal for the sentiment of the voters may be expected to have an important part in interpreting the wishes of the electorate and in influencing the action of the law maker.

Governor Alfred E. Smith of New York has several times appealed to the voters on matters of importance to them and he is convinced that Radio broadcasting has entered on a new and almost limitless field of public service.

Governor Smith says: "The American democracy covers so vast a territory that we must heartily welcome an art that brings its executives and legislators into the most immediate contact with the public they have been elected to serve. The advantage is double. It expedites the sending of an intimate message to the whole body of citizens and it secures to the speaker a more prompt and frank expression of personal opinion than he could obtain in any other way. Thus there is preserved a mutual relationship that is of especially high value as new problems arise which can best be solved by a renewed meeting of minds."

#### Officials Close to People

"Recent experiences in broadcasting matters of public moment through the medium of WGY have given me a new sense of close fellowship with my fellow citizens; their many replies have been a help and an inspiration in seeking a solution to the questions which an executive can conscientiously answer only in the full light of the common thought."

WGY, one of three powerful stations of the General Electric company is located at Schenectady, within sixteen miles of the capitol at Albany, which is connected to the Radio equipment by wire lines. From time to time the governor, legislators and department heads have called on WGY for the privilege of using its facilities to reach the citizenry. Whenever this could be done consistently and with fairness to those already scheduled on the program, the Schenectady station has given of its time. The health department offers weekly talks; the highway department, during the summer months, furnishes the automobile owner with a report on road conditions; the agricultural department, as well as the department of farms and markets, issues frequent bulletins of interest to the farmer, including in this bulletin service special harvest weather reports. Last fall when fires in the Adirondack mountains forced a suspension of hunting, WGY was used by the governor and by the conservation commission in warning those already in the woods that an emergency existed and that hunting was banned. One of the first and most interesting of Albany programs was the broadcasting of the inauguration address of Gov. Nathan L. Miller.

#### Referendum Already Taken

Governor Smith, as well as the Republican leaders whom he has opposed, have recognized the growing importance of Radio in legislative matters and have used the facilities of WGY to take a Radio referendum on pending legislation. In March of this year when Governor Smith found his plans on a financial program opposed he appealed to the people by Radio discussing the subject, "Spending the People's Money." The response from the audience, conveyed directly to the elected representatives, resulted in harmonizing the views of the governor and the legislature.

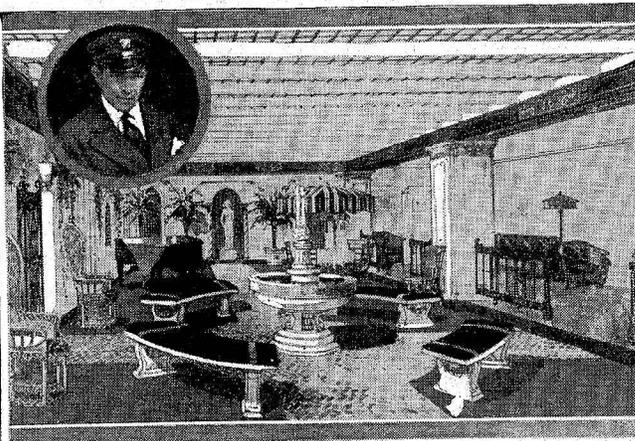
A second Radio referendum on matters legislative was taken in June after Governor Smith had called a special session of the legislature to reconsider the park program.

Before the legislature convened in special session Governor Smith broadcast his views from WGY. His voice, amplified by the Radio power station, was carried to every part of the state. Wire lines also carried it to WJZ, in New York, and this station broadcast the speech. Two nights later Senator John Knight, leader of the majority, replied to the governor and presented his side of the controversy. Still later Judge Alphonse T. Clearwater, a member of the Niagara State Reservation commission, gave a Radio discussion on the issue.

The voters were thus able to hear both sides of the question and many of them wrote to their representatives in Albany requesting action on one side or the other.

Much of the distortion, howls and squeals in multi-tube sets can be eliminated by the use of matched tubes.

## BEAUTIFUL STUDIO IS INSPIRATION



"BETTER broadcasting begins with better studios, and that means environment and atmosphere," said Lieut. Comdr. E. F. McDonald, Jr., president of the National Association of Broadcasters and the Zenith Radio corporation, "and we propose to prove the point." The new superpower station, WJAZ, of the Zenith company, now being built, will have probably the most beautiful studios in the world. The decorator's painting of the studios, with an insert photograph of Mr. McDonald, are shown above.

After being elevated briskly to the twenty-third story of the new Straus building, Chicago, where the Zenith studios are located, one first comes into a reception room of unusually large dimensions, set with costly tapestries and carpeting and furnished in period furniture. To the right is an artistic archway within which a massive art metal gate fills in the enclosure. Flanked on either side by smaller archways are wrought iron gratings beneath which artistically built in benches are positioned. This room being given over exclusively as a lounge for visitors and artists.

Passing through a great archway and into the studio proper one first comes upon a great wide veranda—giving the impression of having left the drawing room of a chateau and out into the garden.

In the center stands a massive art fountain of stone which adds a touch of realism with its tiny spray of water noiselessly sparkling and enlivening the Japanese goldfish within its spacious reservoir. The ancient tiled flooring are here and there offset by an occasional stone seat or other appropriate settings all of which lends a touch of ancient days and a silent effect that plays upon the emotions.

The Zenith Station, WJAZ, however, has not left any details to the artists'

## FORD AND GLENN BEGIN TRIP HOME

Lullaby Boys Drive Eastward to WLS and Leave Jazz Behind

CHICAGO.—Ford Rush and Glenn Rowell, the Lullaby Boys of WLS, Sears-Roebuck station here, who left in June for the Pacific coast on a tour of the stations, are on their way home to Chicago, where they expect to arrive August 15 and resume their popular programs, it has been announced today by Edgar L. Bill, director of the station. Ford and Glenn, with their families, started June 2 in two automobiles on their transcontinental trip. On their way to the coast they broadcast many of their WLS features. From Seattle, where they broadcast over KJR, they have just sent word that the WLS listeners may expect to hear their voices nightly again in Chicago about the middle of August. Little Glenn writes that he is tired listening to jazz programs in the West. "It's jazz everywhere," says Glenn, "and we found little of the human interest features we try to give over WLS."

#### Artificial Larynx in London

LONDON.—The most novel mechanical noise yet broadcast from a British station was the sound generated on an artificial larynx recently invented by Sir Richard Paget, the famous throat surgeon. Sir Richard declares the use of this device will enable dumb people to talk. (George P. Grace, an American, recently demonstrated a very similar invention of his from WCX, Detroit.—Editor's Note.)

## BRITISH ANNOUNCER MUST BE VERSATILE

ENGLISH COMPANY WANTS WELL QUALIFIED MEN

After Landing Position It Is Weeks Before New Announcers Speak Over Microphone

LONDON, Eng.—The British Broadcasting company, which requires several additional announcers, points out that applicants for the posts must have very exceptional qualifications. The following are the qualifications the B. B. C. lays down for the ideal announcer:

"He must have a pleasant, refined voice. "He must possess a general knowledge of so many subjects as almost to make him a walking encyclopaedia. Consequently, university men are most suitable for the work.

"He must have personality so that 2,000,000 listeners receive the impression of having a friendly chat with him.

"He must be able to deal adequately and sympathetically with every subject broadcast.

"He must be musical and know how to be interesting on such a subject as chamber music, and be able to discuss plays and the hundred and one things that concern the microphone's evening.

"He must keep listeners happy through the whole program.

"He must be witty without being funny, and smart without being sarcastic."

With only twenty-one stations to supply, the B. B. C. does not deem advisable to follow America's lead and inaugurate a proper announcer's course. When a suitable man is found he first spends his time listening to others and watching how they work. It is weeks before he is entrusted with reading a few items of "local news" into the mike.

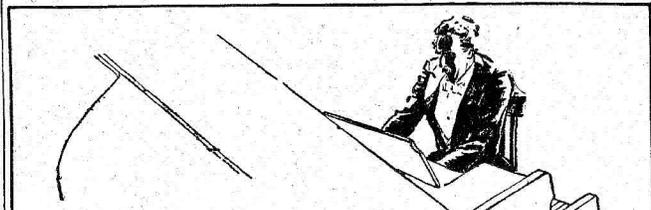
Just to make his job a little more difficult, the B. B. C. expects its announcers also to be shown. They must describe the items so that fans want to hear them.

#### KFVL Demolished by Fire

SEATTLE.—The telephone and Radio schools and Station KFVL, Vancouver, Wash., were destroyed when the building which they occupied was burned down by a fire of undetermined origin. The building was at Vancouver Barracks.

## 'Oklahoma Pepper Bird' Guest at KTHS, Hot Springs

HOT SPRINGS NATIONAL PARK, Ark.—Roy C. Griffin, known to Radioland as the "Oklahoma Pepper Bird" and originator of the famous "Brown Derby" club of Station KFRU, Eristow, Oklahoma, was a visitor at Station KTHS, the New Arlington Hotel, Hot Springs, Ark., for several days recently. Mr. Griffin broadcast "The Voice of Oklahoma" through the KTHS "mike" and was shown the wonders of the National Park and its million dollar bath house row by Director G. C. Arnoux and Chief Technician E. L. Olds.



## A Revelation in Tone - Volume - Clarity

Here is a "loud speaker" that brings the artists into your very room, so realistic is its reproduction.

Piano music, the most difficult to reproduce, sounds so natural that you are carried away by its beauty.

Vocal selections retain all of the colorings of the artist.

Orchestra music is a treat, every instrument can be heard, clear and full.

Magnetic diaphragm control—used exclusively in the Kellogg Unit—is the new principle that performs these wonders in radio reception.

No excess vibration, no chattering, every tone true.

The Kellogg Unit is available for use with a phonograph, and will reproduce voice or music with a full, sweet, clear tone.

A popular instrument. The Kellogg Symphony Reproducer is a revelation in Tone—Volume—Clarity.



At all good dealers "Not Merely a Loud Speaker"

At your dealers for \$20—Hear one today

KELLOGG SWITCHBOARD & SUPPLY COMPANY, Chicago, Illinois

## Kellogg Symphony Reproducer

With every Kellogg Radio part, Use—Is The Test



# TWO-IN-ONE PLAYERS AT WGR MONDAY

## Sunday, August 9

(Continued from page 8)

WDAF, Kansas City, Mo. (365.6), 4-5 p. m., Newman, Royal, Pantagos theater; 9-9:30 p. m., Sunday school lesson, Dr. Walter L. Wilson.

WFAA, Dallas, Tex. (475.9), 6:30-7:30 p. m., Radio Bible class, Dr. William M. Anderson; 8-9, City Temple service; 9:30-11, Miss Dowell Sisters.

WHAD, Milwaukee, Wis. (279), 9:15 p. m., Milwaukee Park Board band.

WHAS, Louisville, Ky. (399.8), 11 a. m., Christ Church cathedral.

WHO, Des Moines, Iowa (526), 7:30-9 p. m., Bankers' Life trio.

WOAI, San Antonio, Tex. (394.5), 11 a. m., First Presbyterian church; 8 p. m., Christian church; 9:30-10:30, musical program, Fainhope Borden.

WOAW, Omaha, Neb. (482.6), 9 a. m., chapel service, Rev. R. R. Brown; 8 p. m., chapel service.

WOC, Davenport, Iowa (483.5), 9 p. m., Palmer Little Symphony, Paul J. Vipperman, tenor; 8-8:30, Rev. H. F. Rugh, pastor.

WOS, Jefferson City, (440.9), 8 p. m., Union church service.

WSUI, Iowa City, Iowa (484), 9 p. m., familiar hymns.

### Mountain Standard Time Stations

KOA, Denver, Colo. (322.4), 10:30 a. m., Augustana Lutheran church; 4 p. m., Sunday afternoon music.



Mrs. Claire Murphy, left, will play the leading role Monday in "Her Engagement King," given by the Two-in-One players at WGR. Marion Boogar, above, is one of the popular blues singers who appear regularly at KMX. Phillip Ashcraft is the soloist for the First Baptist church whose services are to be broadcast Sunday from KGO.



Augustana Lutheran church; 8, Augustana Lutheran church.

**Pacific Standard Time Stations**

KFWB, Hollywood, Calif. (252), 9-11 p. m., Late news and Warner Brothers' movie frolic, with several Warner Brothers stars as guests.

KGO, Oakland, Calif. (365.2), 11 a. m., service, First Baptist church; 8:30 p. m., Cliff hotel concert orchestra; 7:45, First Baptist church.

KGW, Portland, Ore. (482.6), 10:30 a. m., First Presbyterian church; 7:35, First Church of Christ, Scientist; 8:30-9, Art Hickman's Billmore hotel concert orchestra, Edward Fitzpatrick, director; 7-7:30, organ recital, Arthur Blakely, organist; 10, program, Martin Music company, arranged by J. Howard Johnson, Ruth Pitts, soprano; John Martin, pianist.

KJR, Seattle, Wash. (384.4), 11 a. m., First Methodist church; 7 p. m., First Methodist Episcopal church.

KMX, Hollywood, Calif. (336.8), 7-8 p. m., First Presbyterian church of Hollywood, Rev. Stewart P. MacLennan, pastor; 8-8:30, Ambassador hotel concert orchestra, Josef Rosenfeld, director; 9-10:30, program, Beverly Hills Nursery, presenting the Calmon Lubovicki recital trio.

KPO, San Francisco, Calif. (428.3), 6-6:30 p. m., Waldemar Lind and the States Restaurant orchestra; 8:30-9, Palace hotel concert orchestra; 8:30-10, Rudy Selzer's Palmont hotel concert orchestra.

KTCL, Seattle, Wash. (305.9), 7:50-9:10 p. m., First Church of Christ, Scientist; 9:10-10:10, International Bible Students' association.

## Monday, August 10

Monday, silent night for: CKAC, CNRT, KFAE, KFD, KFWB, KGO, KGW, KJRM, KJW, KMX, WBAV, WBBM, WBCN, WCAU, WDFW, WDAQ, WBBH, WBI, WCF, WCH, WGES, WGRS, WJBO, WJPD, WJY, WKAA, WMAQ, WMBB, WOC, WOAI, WQJ, WRG, WREO.

### Atlantic or Eastern Daylight Saving Time Stations

CHNC, Toronto, Can. (356.7), 8 p. m., CHNC orchestra.

WABG, Richmond Hill, N. Y. (315.6), 7:30-7:45 p. m., Von La Col trio, piano, banjo and saxophone; 7:45-8, sports talk, Theonon Fisher; 8-8:15, Mme. Eugenie Baumann, soprano; 8:15-8:30, Raymond Maher, baritone; 8:30-8:45, recitations, Horace J. Taylor; 8:45-9:15, symphonies string trio; 9:15-9:30, Raymond Maher; 9:30-9:45, Von La Col trio; 9:45-10, Mme. Eugenie Baumann; 10-10:30, Symphonies string trio; 10:30-10:50, dance orchestra; 11:05-11:30, dance orchestra.

WBNS, New York, N. Y. (272.6), 8 p. m., Syrian Oriental musicians; 8:15, World News Digest; 8:25, instrumental selections; 8:50, Syrian Oriental music.

WCAE, Pittsburgh, Pa. (461.3), 9:30 p. m., William Penn hotel dinner concert; 7:30, Uncle Kaybes; 8:30, concert; 11, Sandusky Ten dance music orchestra.

WEAF, New York, N. Y. (491.5), 4-4:10 p. m., Sylvia Miller, soprano; 4:10-4:30, Lollita Galambos, pianist; 4:30-4:50, Sylvia Miller, soprano; 4:50-5:15, Lollita Galambos; 4:55-5, "The Human Side of Music," Margaret Zerbe Cowd; 6-7, dinner music, Walders Astoria; 7-7:15, Albert Edward Greenlaw, Canadian basso; 7:15-8:30, program, Mark Strand theater and studio, direction of Joseph Plunkert; 8:30-8:45, health talk, Metropolitan Life Insurance company; 8:45-10:15, Goldman band concert; 10:15-10:30, Giuseppe

De Benedetto, tenor; 10:30-11:30, Hotel Bossert Marine Roof orchestra.

WEEL, Boston, Mass. (475.6), 7:30 p. m., Althea trio; 8:50, Tower hotel talk; 9, Ed Andrews and his Nautical Garden orchestra; 10, talk, Thermo Appliance company.

WFL, Philadelphia, Pa. (394.5), 3 p. m., Loreta Kerr, pianist; 6:45, Bellevue Stratford Roof Garden orchestra.

WGBS, New York, N. Y. (315.0), 8-8:45, Duke Yutman's orchestra; 9-9:15, Uncle Gueber; 9:30-7:30, Premier club orchestra.

WGR, Buffalo, N. Y. (319), 6:30-7:30 p. m., Century orchestra; 9-9:45, Ed. Muehl, E. Tool; 9:45-10:15, "Two-in-One Players," present, "Her Engagement King," 11-11:30, supper dance music, Vincent Lopez, Hotel Statler dance orchestra, Harold Giesler, club orchestra.

WHAH, Atlantic City, N. J. (275), 7:30 p. m., lecture period; 8, Seaside club orchestra.

WHN, New York, N. Y. (391.2), 8-8:30 p. m., Roseland dance orchestra; 9:25-9:50, songs and piano, Grossman and Osborne; 11-11:30, organ recital, Lexington theater; 12-12:30 a. m., Club Richman entertainment.

WIP, Philadelphia, Pa. (508.2), 3 p. m., Song of the Surf; 8:30, Comert's symphonic orchestra; 9-9:30, Benjamin Franklin concert orchestra; 7, Uncle Vini's bedtime stories.

WJAR, Providence, R. I. (305.9), 7:45 p. m., Berry Spring dance hour, N. Y. (454.3), 4:10-4:20 p. m., John W.J. Daniel, tenor; 4:30-5:30, Fred Hall's Royal Terrace orchestra; 7-8, Bernard Levitt's Hotel Commodore dinner concert; 8-8:15, Wall Street Journal review; 8:10-8:30, NYU Air college; 8:30-9:30, program, Landay Hall; 10:45-11:45, Jacques Green and his Club Beauville orchestra.

WLIT, Philadelphia, Pa. (508.2), 2 p. m., Aranda cafe concert orchestra; 7:30, Evanson Daddy's bedtime stories; 9, Stanley theater hour music; 10, Aranda cafe dance orchestra.

WNGA, New York, N. Y. (340.7), 6:30-7:30 p. m., Ernie Golden and his Hotel Malcolm orchestra; 7:30-8 p. m., songs, Cowboy Sisters; 8-9, lecture, Church of Christ Scientist; 9-9:15, Crescent male quartet; 9:30-9:45, Crescent male quartet.

WNYC, New York, N. Y. (529), 8:30-7 p. m., dance program; 7:10-7:30, dance program; 7:35-7:45, news of the day; 8:05-8:15, piano recital; 8:15-10:15, band concert, Central park; 10:15-10:25, "trend of the Times," Dr. Sydney N. Tusher.

WOB, Philadelphia, Pa. (508.2), 4:45 p. m., organ recital, Mary E. Vogt; 7:30, A. Candeloro's Roof Garden orchestra; 7-8, Mark Strand theater concert; 8:45, Goldman band concert; 10:15, Giuseppe de Benedetto, tenor; 10:30, Hotel Bossert Marine Roof orchestra; 11, A. Candeloro's dance orchestra.

WOB, Newark, N. J. (405.2), 8:15-7:15 p. m., Ernie Kriket's Cinderella orchestra; 7:15-7:30, sports talk, Bill Walker; 9-10, Al Reid; 10-11, The Fortunians.

WPG, Atlantic City, N. J. (289.8), 6:45 p. m., Arthur Scott Brook, organist; 8, Hotel Martorlo trio; 8:05, "Young as Bankers," Mrs. William Leinbeer; 8:20, Hotel Ambassador dinner concert; 9, Hotel Traymore concert orchestra; 10, Hotel Ambassador, Gaylord Young dance orchestra; 11, The Fortunians.

### Eastern Standard or Central Daylight Saving Time Stations

KOKA, Pittsburgh, Pa. (309.1), 8:45 p. m., program.

WBZ, Springfield, Mass. (332.1), 6 p. m., Capitol theater orchestra; Margaret Tigue, organist; 8, Alton Drum corps; 8:30, May Yoh, actress; 8:45, Ruth Shubert, pianist; Allan Kandil, violinist; 11:15, Marie Dutton, comedienne; 9:40, at the theaters; A. L. S. Wood.

WGX, Detroit, Mich. (516.9), 4:15 p. m., concert; 6,

dinner concert, Book-Cadillac hotel; 8, Detroit Symphony orchestra.

WEAR, Cleveland, Ohio (389.4), 7-8 p. m., Loew's State theater.

WGY, Schenectady, N. Y. (379.5), 6:15 p. m., "Jelly Making," Lucile Brewer; 6:35, Mrs. Charles W. Clark, soprano; Charles W. Clark, tenor; Mildred E. Hilton, pianist; Clarence Gruenwald, Hilda Nadler, saxophonist.

WHAZ, Troy, N. Y. (379.5), 8:15 p. m., Mrs. Frank Schumaker, pianist; Mrs. Howard Wentworth, soprano; 9:15, Carl B. Kilns, tenor; Russell B. Wild, singer.

WHY, Deerfield, Ill. (389.8), 7-12:30 p. m., Al Carney, organist; Grayling's string trio; Kitson Klenser Klenser's Lollita thirty minutes of melody; Hugh Ashpinal, tenor; program a la carte; Tom Brown, pianist; Sam Mosk, tenor; Harry Seaman; Kapo trio; Harold Merrill; Gertrude Murgoff; Al Carney, organist.

WJID, Massesett, Ill. (302.6), 8:45-7:15 p. m., dinner concert; 7:15-8, Moonheart Novelty orchestra; Belmont hotel trio; 10:30-11 a. m., Charley Straight and his orchestra; Albert Brown, organist.

WKRC, Cincinnati, Ohio (422.3), 8 p. m., dance music, Caldwell and Taylor, Original Bandol Boys; 9, program, Robert E. Bentley Post, No. 50; 12, Marion McKay's Bond Hill House orchestra.

WLW, Cincinnati, Ohio (422.3), 7 p. m., dinner concert, Hotel Gibson orchestra, Robert Visconti, director; 10, thirty minute program of dance music, Liggett Coal Heavers; 10:30, organ recital, Cyril Buschke; The Famous Lyric Male Quartet; instrumental acts.

WMAK, Lockport, N. Y. (265.5), 8:30-10:15 p. m., musical, Max Freedman.

WMBF, Miami Beach, Fla. (384.4), 7 p. m., concert; 7:30, Fleetwood hotel dance orchestra; 10-12, entertainment.

WORD, Batavia, Ill. (275), 8:20 p. m., Bible questions and answers; 8:45, Kaneville band concert.

WSAI, Cincinnati, Ohio (426), 10 p. m., Charles Stokes, violinist; Edith Brucette, soprano; Sam Pusateri, baritone; Tom Byrne, cellist; Maxwell Sparks, baritone.

WTAM, Cleveland, Ohio (389.4), 6-7 p. m., Golden Pfeasant orchestra; 8-9, Willard symphony; 9-11, concert; 11-12, Euclid Beach orchestra.

WTAS, Elgin, Ill. (302.8), 8:30-10 p. m., Purple Grackle orchestra; Herbie Mintz, Tommy Dunlap, Tubby Garro, Maurice Marsellis, Art Suller, Berge Wegber's Hotel Bond trio; Mrs. Margaret Campbell Smith, soprano; 6:55, dinner music.

WWJ, Detroit, Mich. (352.7), 6 p. m., dinner concert; 7:20, Goldman band concert.

### Central Standard Time Stations

KFAB, Lincoln, Neb. (340.8), 6-7 p. m., dinner concert; 7:30-8, Delshaw's dance orchestra; 8-9:30, Mart KHS, Hot Springs National Park, Ark. (374.8), 9:25 p. m., New Arlington-Meyer Davis; instrumental club orchestra; Clyde Davis, violinist.

KMF, Shenandoah, Iowa (266), 7:30 p. m., Seed house program.

KFRU, Bristow, Okla. (394.5), 7-8 p. m., Oklahoma educational hour; 8-9:30, musical and entertainment.

KFJO, St. Louis, Mo. (545.1), 8 p. m., "Immoral, Immoral," Mrs. Margaret Campbell Smith.

KFVE, University City, Mo. (240), 10 p. m., Orchestra Romina.

KFV, Council Bluffs, Iowa (278), 7:30-9 p. m., John G. Woodward and company; Art Doty and his band; program, Hazel Bell; 11:12, Rocky Toney.

KHS, Hot Springs National Park, Ark. (374.8), 9:25 p. m., New Arlington-Meyer Davis; instrumental club orchestra; Clyde Davis, violinist.

WGBD, Zion, Ill. (344.6), 8 p. m., mandolin and guitar band; vocal trio; clarinet duet, Studebaker, Klaxon; Wiedman sisters; Mrs. Herbert Pihl, Floyd

Wansley; Esther Wiedman, soprano; Marion Lee, reader; Mrs. Bessie Wiedman Shaefer, pianist.

WCOO, Minneapolis-St. Paul, Minn. (416.4), 6:45 p. m., P. and B. family.

WDAF, Kansas City, Mo. (365.6), 6-7 p. m., piano tuning in number; Cecile Burton, reader; Tell-me-a-story Lady; Flanation players; 9-9:30, around the town with WDAF.

WFAA, Dallas, Tex. (475.9), 6:30-7:30 p. m., Artie Collins and his Jolly Pirates; 8:30-9:30, Mrs. A. F. Gray.

WHAD, Milwaukee, Wis. (275), 6-7 p. m., Arthur Richter, organist; 8:10, Marquette university studio program.

WHO, Des Moines, Iowa (526), 7:30-9 p. m., program, Dean Holmes Cooper, director; 11-12, Corn Sugar orchestra.

WOAI, San Antonio, Tex. (394.5), 8:30 p. m., Menger hotel trio.

WOAW, Omaha, Neb. (482.6), 6 p. m., Phyllis Griswold, organist; 6:30, McCrory's popular period; 6:45, Ray Muzey's Carter Lake club orchestra; 9, Steen trio; 10, orchestra.

WOS, Jefferson City, Mo. (440.9), 8 p. m., "For Farmer Steps in Missouri," Guy B. James; Metropolitan Music Makers.

WSMB, New Orleans, La. (319), 6:30-7:30 p. m., entertainment; 8:30-10:30, De Luxe program.

WSUI, Iowa City, Iowa (484), 8 p. m., musical program.

### Mountain Standard Time Stations

KOA, Denver, Colo. (322.4), 6:30 p. m., Herbert White and his Silver State orchestra; 8, KOA book chat; music; "Our Vanishing Flowers," Colorado Mountain club.

### Pacific Standard Time Stations

KFOA, Seattle, Wash. (454.3), 6-6:45 p. m., concert orchestra; 6:45-8:15, Sherman, Clay and company studio program; 8:30-10, Times studio program.

KFWB, Hollywood, Calif. (252), 6-7 p. m., children's hour, Big Brother of KPWB; 7-7:45, Question and Answer period; K. G. Grunstein, Technical editor of Radio Doing; 8-9, program, Star Motor company of California, Peggy Matthews, blues singer, Dora Cloud, new pianist and Sabina Sauter's stringed trio; 9-10, Harold's Collection's, Barbara Bannell, blues singer, Katherine Ribler, soprano and Alma and Nick Brown; 10-11, Warner Brothers' frolic, direction Charlie Weisman.

KGO, Oakland, Calif. (361.2), 6-7 p. m., dinner concert, Kohler & Chase Ampley studios; 8, "Taking the Scare Out of Quarantine," Hugh Harrett Dubbs; "Symphony on the New Education," William Institute; "From a Composer's Workshop," Arthur S. Gardner, Portnoy trio.

KJRM, Portland, Ore. (491.5), 6-7 p. m., Claude Johnson and his Baker theater orchestra.

KMX, Hollywood, Calif. (336.8), 5:30-6:15 p. m., Wurlitzer pipe organ studio; 6:15, travel talk, W. P. Alder; 6:30-7, Atwater-Kent Radio orchestra, Paul



Finstala, leader; 7-7:30, Mexican music, El Eon de Mexico; 7:30-8, program, Columbia Outfitting company; 8-9, program, L. W. Stockwell company; 9-10, program, Liskenwaller and Gouss; 10-11, Goodrich Silver-ton Cord dance orchestra, Lillian May Challenger, conductor; 11-12, Abe Szyme's Concert Grand dance orchestra, from Ambassador hotel.

KPO, San Francisco, Calif. (428.3), 7-7:30 p. m., Rudy Selzer's Palmont hotel concert orchestra; 8-10, program, American Legion; 10-11, Waldemar Lind and the States Restaurant orchestra.

KTCL, Seattle, Wash. (305.9), 9-10 p. m., National Machine Sales company.

## Tuesday, August 11

Tuesday silent night for: CNRT, KFAE, KFUO, KFWA, KOA, PWX, WHAD, WBAV, WBBB, WCBR, WMAQ, WTAM.

### Atlantic or Eastern Daylight Saving Time Stations

CNRA, Moncton, Can. (313), 9 p. m., Stellart art-ists; Lou Fraser, pianist; quartet; Lena McCunn, soprano; Roy Stewart, baritone; Harry Murray, reader; Pearl Fuvris, contralto; Eddie Matheson, tenor; CNRA dance orchestra, Walter Carl.

WCAE, Pittsburgh, Pa. (461.3), 6:30 p. m., dinner concert, William Penn hotel; 7:30, Uncle Kaybes; 8:30, WEAF program; 8:50, Gold Dust Twins; 9, Broadway hour; 10, grand opera.

WCAU, Philadelphia, Pa. (278), 6:30 p. m., Billy Hayes and his Garden dance orchestra; 8:30, recital, N. Snelgenburg and company; 8:30, recital; 10:30, Billy Hayes and his Cathay Ten Garden dance orchestra.

(Continued on page 10)



POETS HAVE SPECIAL PROGRAM AT KOA

Wednesday, August 12

(Continued from page 10)

WLT, Philadelphia, Pa. (384.5), 7:30 p. m., Dream Daddy's bedtime stories; 8:30, Fairmount Park Symphony orchestra; 10, Arredia cafe dance orchestra.

WOS, Jefferson City, Mo. (440.9), 8 p. m., "The Public Service Commission and Its Relation to the Public as an Arm of the State Government," Hon. L. H. Brown; song service, Rev. J. O. Humphreys.

Mountain Standard Time Stations
KOA, Denver, Colo. (522.4), 6:30 p. m., Herbert White and his Silver State orchestra; 7:30, Samman's hour; 8, survey of contemporary poets and poetry.

Pacific Standard Time Stations
KFAE, Pullman, Wash. (348.6), 7:30-8:30 p. m., Margaret Abundant, pianist; Margaret McLaughlin, violinist; P. C. Butterfield, pianist; popular numbers, members Treadwell orchestra; mariophone duets; Cooper Sisters; Cleah and Zora; "Advertising in the Home Community," Prof. J. L. Ashlock; U. S. Public Health service talk.

WCAE, Pittsburgh, Pa. (461.3), 6:30 p. m., dinner concert; William Penn hotel; 7:30, Uncle Kabner; 8, studio concert; 9, Awatere-Kent artists; 10, Goodrich Silverton Cord orchestra; Joseph Knecht, director.

WEEI, Boston, Mass. (475.6), 7:45 p. m., Charlie Donelan in Florida; 8, musicals; 9, Awatere Kent artists; 10, Goodrich Silverton orchestra.

WFI, Philadelphia, Pa. (384.5), 6:45 p. m., Bellevue Stratford Roof Garden orchestra; 8, "Pop" concert; 9, Awatere Kent Radio artists; 10, The Silverton Cord orchestra.

WGBS, New York, N. Y. (315.6), 3:4 p. m., reading of "The Greatest Thing in the World," Everett Backus; talk, "Vegetables and Flowers for Profit," Helen Hopkins; talk, Mattie Craigie; Irish and Scotch musical program, James MacCrae; 6-6:30, Uncle Gabbee; 6:30-7:30, Star Light Rambler.

WGR, Buffalo, N. Y. (319), 6:30-7:30 p. m., Vincent Lopez Hotel Stadler dance orchestra, Harold Gliner, director; 8-11, identically with WGR including Awatere Kent artists; 11, California Night Hawks dance orchestra.

WHAR, Atlantic City, N. J. (275), 7:30 p. m., Beside the Sea orchestra; 8, vocal and instrumental studio concert; WHN, New York, N. Y. (361.2), 8-8:30 p. m., Will



Bernard Johnson, baritone, is one of the most promising of the younger singers in Omaha. He sings at WOAW, regularly. Marjorie Tyler is one of the leading actresses of the WGY players and has been heard many times on Broadway via WJZ.

Mrs. S. K. Surman is the contralto who sings with the Courier-Journal quartet from WHAS. This quartet is a well-known Louisville organization.

male quartet; 12-2, Samovar orchestra, Nate Caldwell, Roy Truener, Charlie and Dave, William Molinare, Sunset male quartet.

WMAQ, Chicago, Ill. (447.5), 2:45 p. m., Chicago-Boston baseball game; 6, Chicago leader organ; 8, Chopin's orchestra; 8:30, lecture, Northwestern university; 9, Dr. Baghat Sindi Thind, speaker; 9:30, Chapman's orchestra.

WMBE, Miami Beach, Fla. (384.4), 7 p. m., concert; 7:30, Pinewood hotel dance orchestra; 10-12, dance music.

WORD, Batavia, Ill. (275), 8:30 p. m., hymns and sacred songs; R. S. & singers; 8:45, Bible lecture, A. L. Seeley.

WQI, Chicago, Ill. (447.5), 7-8 p. m., Rainbo Garden Party; Hineshaw conservatory; Minnie Cary Stine, contralto; Marvin Hinchaw, baritone; John Rack, saxo-

phonist; Helen Haldeman, pianist; 10-11, Ralph Williams and his Rainbo Skyline; Melodians; Esther Trostred, soprano; Alice Hesser, pianist; Anita Gheib, contralto; Ronella Gray; Rick, Soyler and Gardner; Williamson Brothers and Joe Bernini; Fred A. Jacobsen; Paul Small, tenor; Gail Bardenell; Condit; Clarence Chedler, tenor; L. J. Ginger, bass.

WSAI, Cincinnati, Ohio (329), 10 p. m., golf talk; 10-10, Richard Gray, baritone; Herbert Smith, bass; Helene Kessing, soprano; 11, Congress playing card string quartet.

WTAM, Cleveland, Ohio (389.4), 6-7 p. m., dinner dance music, Musico Box; 8-10, public auditorium organ recital; 10-11, Hollenden hour; 11-11, Euclid Beach studio.

WTAS, Elgin, Ill. (302.8), 8-10:30 p. m., Purple Graciale orchestra; Violet Eaton, Roland Hinchey, Flo Henrie, Lillian Bernard, Phil Wilcox, Brock Sisters.

WWJ, Detroit, Mich. (352.7), 6 p. m., dinner concert.

Central Standard Time Stations

KFAB, Lincoln, Neb. (340.8), 6-7 p. m., dinner concert; 7:30-8, Roy P. Knotts and his Blue Moon dance orchestra; 8-9:30, John Hickman, violinist; Gladys Erickson, pianist; Baines Hall, banjolele; Dutch entertainers; Colonians' dance orchestra.

KFMQ, Fayetteville, Ark. (339.8), 7:30 p. m., farmers' picnic program; farm show; Cy Adams, special speaker.

KHLS, Shenandoah, Iowa (266), 7:30 p. m., concert, Harry Field Seed company.

KFRJ, Bristol, Okla. (394.5), 10:10:30 p. m., entertainment program; farm show; Cy Adams, special speaker.

KFUO, St. Louis, Mo. (545.1), 9:15 p. m., "Christianity," International W. M.

KHLS, Hot Springs National Park, Ark. (374.8), 9:25 p. m., New Arlington hotel orchestra.

Everlyridge company, the Everlyridge Hawaiian trio; 8-9, Warner Brothers Synopsators, Joe Martin, leader; Geo. Green and Don McNamee, two pianos and accordion and band; duets, Tom Mitchell, tenor; 8-10, program, Independent Furniture Manufacturing company, Mitchell's Dartmouth dance orchestra; 10-11, Warner Brothers midweek music frolic, Charlie Weltman, master of ceremonies.

KGW, Portland, Ore. (491.5), 6-7 p. m., Jackie Souther's orchestra; 10-11, Sherman, Clay and company.

KHJ, Los Angeles, Calif. (405.2), 5:30-6 p. m., Ledgerton's Arcade cafeteria orchestra, Jack Cronshaw, leader; 6-8:30, Art Hickman's Baltimore hotel concert orchestra; Edward Fitzpatrick, director; 8:30-7:30, Radio kiddies' hour, Dick Winslow, juvenile screen reporter, Baby Muriel MacCormac, Mickey McLean, screen starlets; 9, Dr. Marc Bumpgard, scientific lecturer; 8:30-9:30, program, Alva Radio company; 9:30-10:30, program, Galle Lily Creamery company of Glendale; 10:30-11:30, Art Hickman's Baltimore hotel dance orchestra, Earl Burnett, leader.

KNX, Hollywood, Calif. (336.8), 5:30-6:15 p. m., Wurlier pipe organ studio; 6:15, travel talk, W. P. Alder; 6:30-7, Awatere-Kent Radio orchestra, Paul Frutkin, leader; 7-8, Ambassador hotel concert orchestra, Josef Rosenfeld, director; 8-9, program, Security Trust and Savings bank; 9-10, program, Hercules Gasoline company, the program with a kick; 10-11, KNX studio program of popular songs numbers.

KPO, San Francisco, Calif. (428.3), 9:30 p. m., Walter Reed and the States Restaurant orchestra; 7:30, Rudy Selzer's Fairmont hotel concert orchestra; 8:30, program, courtesy American Bank, Goodrich Silverton Cord orchestra; 10-11, Waldemar Lind and the States Restaurant orchestra.

KTC, Seattle, Wash. (355.2), 8 p. m., Transportation club; 8-8:15, KTC Friendly advice, George H. Grandall; 8:20-8:40, voice of Seattle; 10-11, Alaska week.

Thursday, August 13

Thursday, silent night for: CKAC, CNRT, KFAB, KFAE, KFDM, KFMO, KFOA, KFUG, KFVE, KFWA, KGD, KSD, PWA, WGA, WBAV, WCEE, WEAQ, WEI, WHA, WHAD, WHAZ, WJLD, WRKO, WLIT, WOR, WRBC, WTAM.

Atlantic or Eastern Daylight Saving Time Stations

CHNC, Toronto, Can. (356.7), 9 p. m., Charles E. Dudley and his dance orchestra; Bert Teich, white singer; Bob Harvey, tenor.

Oakland's Chatbeay Shanley; 8:30-8:45, Ethel West, soprano; 9-9:30, Jimmy Clarke and his White Way Hotel; talk, Mattie Craigie; Irish and Scotch musical program, James MacCrae; 6-6:30, Uncle Gabbee; 6:30-7:30, Star Light Rambler.

WJAH, Providence, R. I. (305.9), 8 p. m., studio program; Awatere Kent Radio artists; 10, Goodrich Silverton Cord orchestra.

WJY, New York, N. Y. (405.2), 8:30-9 p. m., Herman Popper's Viennese Trio; 8:30-10, Herman Popper's Viennese Trio.

WJZ, New York, N. Y. (454.3), 4:30-5:30 p. m., Bernard Levitov's Hotel Commodore orchestra; 7-8, Bernard Levitov's orchestra; 8-10, Wall Street Journal review; 9-10:30, N. Y. U. air culture; 10-11, Romany's hour of music.

WLIT, Philadelphia, Pa. (384.5), 2 p. m., Arredia cafe concert; 4:30, talk "Care of Children."

WMAA, New York, N. Y. (340.7), 11-12 m., musical program; 8:15-8:30 p. m., Maria Alvington, soprano; 8:30-9:30, Rainbow studio orchestra; 9:30-10, Snellett Weir, baritone; 11-12, Ernie Golden and his Hotel McAlpin orchestra.

WNYC, New York, N. Y. (520), 7-7:10 p. m., market night; 7:10-7:30, dance program; 7:35-8, Archibald orchestra; 8:15-8:35, concert program; 9:45-10:30, dance program.

WOD, Philadelphia, Pa. (308.2), 7:30 p. m., A. Caudel's Roof Garden orchestra.

WOR, Newark, N. J. (405.2), 8 p. m., weekly book review; Alvo B. Coler; 8:20, Martin McKay's Bond Hill House orchestra; 9, popular song feature, Mae Parr, Merrill Schwarz, E. Asward; 9:30, Marion McKay's orchestra.

WLS, Chicago, Ill. (344.6), 6:30 p. m., Ralph Emerson, pianist; Maxine Blum, contralto; 7:15, concert, Rex's Cornhuskers; 7:45, lullaby time, Rex and Uncle George; 8, Perry Lee Burkner, tenor; 8:15, Lone Scout program; 8:45, dance music, Rex's Cornhuskers; 9, farm program; Babble and Barr, harmony duo; 10, Mr. and Mrs. Eugene Schweizer, concert artists, solos and duets; 11-11:30, dance music, Rex's Cornhuskers.

WLW, Cincinnati, Ohio (422.3), 4 p. m., "Shut-In" program; 7, dinner concert, Hotel Gibson orchestra; 8:40, Fred Franz, tenor; 8:50, Hawaiian quintet; 9:10, Fred Franz, tenor; 9:20, Sunday school

(Continued on page 12)





# An Evening at Home with the Listener In

(FOR PACIFIC TIME)

## STATIONS IN ORDER OF WAVE LENGTHS USED

Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call	Meters	Call
217.3	WOK	275.3	WJAZ	313	CNRA	361.2	WHN	405.2	WJY	467	KFI
226	WBBM	278	KOIL	315.6	KFDM	365.6	WDAP	405.2	WOR	468.5	WCAP
240	KFVE	278	WCAU	315.6	WGBS	370	CYE	410.7	CKAC	475.9	WBAP
243.8	WAMD	278	WBLB	319	WSMB	370.2	WGN	421	KIAP	475.9	WFAA
250	WMBE	278	WREB	322.4	KOA	374.3	KTHS	422.3	WLAW	480	CYL
252	KFWE	282.8	WOAN	325.9	WSAI	379.8	WGY	428.3	WSB	483.6	WOC
252	WGCP	285.5	WKAR	326	WKRC	379.5	WHAZ	428.3	KPO	483.6	WSUI
261.5	WMAK	285.5	WREB	330	CYX	384.4	CKY	428.3	CNRO	491.5	KON
266	KFNE	293.9	WBEA	336.9	KNX	384.4	WMBF	434.5	NAL	501.5	WBEA
266	WBCN	293.9	WBAO	336.9	KFAP	384.4	WMBF	434.5	CFN	502.2	KLX
268	WOTB	296.9	KPRC	340.7	WKAQ	389.4	KPRU	440.9	KLDS	508.2	WIP
272.6	WBBJ	299.8	KFMQ	344.6	WCBP	394.5	WPI	440.9	WDWF	508.2	WOO
272.6	WFBW	299.8	KSL	344.6	WLS	394.5	WLIT	440.9	WMAQ	516.9	WCX
273	WRH	299.8	KFWE	348.6	KFAB	394.5	WOAT	447.5	WJQ	526	WNO
275	KFAT	302.8	WTAS	352.7	WWJ	399.8	WHAS	454.3	KFOA	526	WNVC
275	WCAC	302.8	WTCL	352.7	CPCA	399.8	WHT	454.3	WJZ	526	WCAG
275	WHAD	305.9	WJAP	356.9	CENC	400	PWX	456	KVW	526.4	KYW
275	WHAR	305.9	WJAP	356.9	CENC	400	PWX	456	KVW	526.4	KYW
275	WORD	309.1	KDKA	361.2	EGO	405.2	KELJ	461.3	WCAB	545.1	KFUO

## INSTRUCTIONS FOR USE OF TABLES

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

For listeners whose standard of time is not shown here, the following instructions should be remembered: Mountain time: Use table for Pacific time but add one hour to every figure given. Can also use Central time table by subtracting one hour from every figure given.

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

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

The periods given in the "Evening at Home" tables are only representative of each station's evening sign-on and sign-off hours, and on Sunday, the late afternoon sign-on and sign-off. If a station has an intermittent rather than continuous program, the table cannot show this. Above is given a list of all stations in the "Evening at Home" tables, arranged in order of the wave lengths used (or supposed to be used) by the stations. This arrangement provides a handy index for the other tables.

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

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## Educational Talks to Be on WBAV Program

Columbus, Ohio, Station Guides Small Investors Right

COLUMBUS, O.—Station WBAV here operates approximately 10 hours per week. Of the 10 hours, 15 minutes is devoted to two educational talks. Of the two talks, one is 10 minutes in length and is prepared by the state department of health. The other, of five minutes duration, is devoted to safe investments.

Yet five minutes' time each week, taken on Saturday, when laborers and salaried men draw their pay and farmers cash in on their produce, has resulted in a saving probably amounting to thousands of dollars.

Each Saturday Karl T. Finn, manager of the Columbus Better Business Commission, of his paper ready. In a free and easy manner, Mr. Finn lambasts crooked stocks and bonds and their salesmen. He names firms and their representatives who should be avoided and describes their smooth methods. The result, as attested by the steady stream of letters demonstrating that would-be investors have been made wiser by the get-rich-quick agents.

In all, it has proven the most practically helpful series of talks ever broadcast by a Columbus station.

## RADIO SELF STARTER TO AWAKEN SLEEPERS

Automatic Device Will Start Set at Broadcaster's Will

LONDON, Eng.—A time, not far distant, when broadcasting stations will be able to "call up" listeners just as if they were at the telephone, is the prospect held out by an ingenious but simple invention known as the "Radio Self Starter." The device can be constructed at home and attached to any broadcast receiver.

It operates by means of a permanent crystal detector and a pair of relays. Immediately the local station begins transmission the current set up in the receiving aerial, though feeble, is sufficient to actuate the relays, which switch on the tube current and thus put the set into operation.

An important advantage of this new invention is that it permits the broadcast station to get in touch with listeners at any time, irrespective of the regular transmitting hours.

## Sport Lovers to Get Regular Radio Report

WJZ to Give One-Half Hour Bulletins on Baseball

NEW YORK.—After several weeks of experimenting, the staff of Station WJZ here has worked out a program for the broadcasting of news of interest to the following of the world of sport which they think will meet with the hearty approval of all.

On week days, baseball scores of the major leagues will be given in the evening every half hour, from the hours of 4 to 6 o'clock, local time, in the afternoon. The first report will be made to the radio audience at 4 o'clock, the next at 4:30, etc., until 6 o'clock when the last afternoon report will be made. At 8 o'clock each week day evening, with the exception of Tuesday, a sporting final report will be sent out which will include a summary of the baseball scores for the day, results of all races at local and other prominent tracks and other big sporting events of the day.

On Tuesdays, the sporting final will be given at 7:55 instead of the usual 8 o'clock. On Sundays, the series of baseball scores given in the afternoon on week days will be omitted but the sporting final will be broadcast as usual.

## THOUSANDS LISTEN TO RADIO BAND CONCERTS

Attend Concerts Broadcast from Mall in Central Park

NEW YORK.—Commissioner William W. Mills of the department of plants and structures here, under whose administration Municipal Station WNYC is operated, estimates that upwards of 300,000 people in this city hear the public concerts broadcast four nights a week from the Mall in Central Park.

Among the organizations to be heard there through the balance of the summer are George Briegel and his twenty-second regiment band. Mr. Briegel is recognized among musicians as one of the most capable bandmasters in the country.

Hugo Riesenfeld and his orchestra, and a symphony orchestra headed by Naham Franko will be heard frequently. These concerts begin at 7.15 p. m., eastern time, and are broadcast through WNYC on Monday, Wednesday, Friday and Saturday of each week. Well-known vocal and instrumental soloists are heard with them each performance.

Call	Met.	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Met.	Call
AT9	435	Silent	3:00-4:00	Silent	Silent	Silent	Silent	Silent	435	AT9
CFNC	356.9	Silent	4:00-5:00	Silent	Silent	Silent	Silent	Silent	356.9	CFNC
CHNC	356.9	9:00-11:00	Silent	Silent	Silent	Silent	Silent	Silent	356.9	CHNC
CHNC	356.9	Silent	Silent	4:30-5:30	Silent	Silent	Silent	Silent	356.9	CHNC
CJAC	516.9	8:00-10:00	6:30-7:30	6:30-8:30	6:30-7:30	5:00-7:00	4:30-7:00	4:30-7:00	516.9	CJAC
CJAC	410.7	4:30-9:30	3:30-2:30	Silent	Silent	Silent	Silent	Silent	410.7	CJAC
KY	384.4	Silent	Silent	Silent	Silent	6:30-8:45	6:00-7:00	6:30-7:45	384.4	KY
CNRA	313	Silent	Silent	Silent	Silent	4:30-5:30	Silent	4:30-5:30	313	CNRA
CNRA	434.5	4:30-9:30	Silent	Silent	Silent	4:30-9:30	Silent	Silent	434.5	CNRA
CYB	370	8:15-9:45	Silent	Silent	Silent	7:15-8:15	Silent	Silent	370	CYB
CYB	480	Silent	Silent	Silent	Silent	8:00-9:30	Silent	Silent	480	CYB
CYX	330	Silent	Silent	7:15-8:30	Silent	Silent	Silent	Silent	330	CYX
KDCA	309.1	5:45-6:55	4:00-5:00	5:45-6:55	5:45-6:55	5:45-6:55	5:00-8:00	5:45-6:55	309.1	KDCA
KDCA	340.7	4:00-5:00	2:00-3:00	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	340.7	KDCA
KFAE	348.6	Silent	Silent	Silent	Silent	7:30-9:30	Silent	Silent	348.6	KFAE
KFAE	410.7	Silent	Silent	Silent	Silent	7:00-9:30	Silent	Silent	410.7	KFAE
KFDM	315.6	Silent	6:00-7:00	Silent	Silent	6:00-8:30	Silent	Silent	315.6	KFDM
KFDM	467	6:45-12:00	4:00-11:00	6:45-11:00	6:45-11:00	6:45-11:00	6:45-11:00	6:45-11:00	467	KFDM
KFMI	299.8	Silent	Silent	Silent	7:00-8:00	5:30-6:30	Silent	Silent	299.8	KFMI
KFNF	298	5:30-7:30	7:30-7:15	5:30-7:30	5:30-7:30	5:30-7:30	5:30-7:30	5:30-7:30	298	KFNF
KFOA	454.3	6:00-11:00	Silent	5:00-8:00	5:00-8:00	5:00-8:00	5:00-8:00	5:00-8:00	454.3	KFOA
KFOA	394.5	5:30-10:00	3:00-5:00	5:30-8:00	5:30-8:00	5:30-8:00	5:30-8:00	5:30-8:00	394.5	KFOA
KFOU	545.1	Silent	6:15-7:15	6:00-7:00	Silent	7:15-8:15	Silent	Silent	545.1	KFOU
KFVE	240	8:00-10:00	Silent	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	240	KFVE
KFWA	281	Silent	Silent	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	281	KFWA
KFWA	329	8:00-10:00	9:30-11:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	329	KFWA
KGW	491.5	6:00-12:00	7:45-9:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	491.5	KGW
KHJ	465.2	6:00-11:00	6:00-11:00	7:00-1:30	7:00-1:30	7:00-1:30	7:00-1:30	7:00-1:30	465.2	KHJ
KIAP	421	Silent	2:00-3:00	7:00-8:30	Silent	Silent	7:00-10:00	8:30-12:00	421	KIAP
KJR	364.4	Silent	7:00-9:00	7:00-11:00	Silent	Silent	8:30-12:00	8:30-12:00	364.4	KJR
KJR	293.9	Silent	7:15-9:30	Silent	8:00-9:00	Silent	8:00-9:00	8:00-9:00	293.9	KJR
KLDS	400.9	Silent	4:30-8:00	Silent	6:00-7:00	Silent	6:00-7:00	6:00-7:00	400.9	KLDS
KLX	508.2	8:00-2:00	Silent	6:00-11:00	Silent	6:00-1:30	Silent	6:00-1:30	508.2	KLX
KNX	335.9	8:00-2:00	5:00-11:00	8:00-11:00	6:00-12:00	6:00-12:00	6:00-12:00	6:00-12:00	335.9	KNX
KNX	335.9	8:00-2:00	5:00-11:00	8:00-11:00	6:00-12:00	6:00-12:00	6:00-12:00	6:00-12:00	335.9	KNX
KOIL	278	5:30-7:00	5:30-6:30	5:30-6:30	5:30-6:30	5:30-6:30	5:30-6:30	5:30-6:30	278	KOIL
KPRC	428.3	6:35-12:00	6:30-10:00	6:30-11:00	6:30-11:00	6:30-11:00	6:30-11:00	6:30-11:00	428.3	KPRC
KPRC	269.9	6:35-12:00	6:30-10:00	6:30-11:00	6:30-11:00	6:30-11:00	6:30-11:00	6:30-11:00	269.9	KPRC
KPWA	305.8	6:00-11:00	7:50-10:10	8:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	305.8	KPWA
KTHS	379.8	7:25-8:25	7:25-8:00	7:25-8:25	7:25-8:25	7:25-8:25	7:25-8:25	7:25-8:25	379.8	KTHS
KTW	458	Silent	7:00-9:30	Silent	Silent	Silent	Silent	Silent	458	KTW
KWVG	276	6:30-7:30	Silent	Silent	6:30-7:30	Silent	6:30-7:30	6:30-7:30	276	KWVG
KYV	454.3	Silent	1:00-2:00	Silent	4:45-5:00	4:45-5:00	4:45-5:00	4:45-5:00	454.3	KYV
KYV	454.3	Silent	1:00-2:00	Silent	4:45-5:00	4:45-5:00	4:45-5:00	4:45-5:00	454.3	KYV
PWX	400	5:30-8:00	Silent	Silent	Silent	Silent	Silent	Silent	400	PWX
WAHG	315.6	9:00-11:00	Silent	4:00-10:00	Silent	Silent	Silent	Silent	315.6	WAHG
WBAJ	475.9	8:00-9:00	12:00-3:00	8:00-9:00	5:30-8:45	5:30-8:45	5:30-8:45	5:30-8:45	475.9	WBAJ
WBAJ	475.9	8:00-9:00	12:00-3:00	8:00-9:00	5:30-8:45	5:30-8:45	5:30-8:45	5:30-8:45	475.9	WBAJ
WBAV	293.9	Silent	8:00-9:00	7:00-8:00	Silent	Silent	Silent	Silent	293.9	WBAV
WBAV	293.9	Silent	8:00-9:00	7:00-8:00	Silent	Silent	Silent	Silent	293.9	WBAV
WBBM	226	5:00-9:00	1:00-11:00	Silent	5:00-9:00	5:00-9:00	5:00-9:00	5:00-9:00	226	WBBM
WBBR	272.6	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	4:00-5:00	272.6	WBBR
WBN	268	6:00-10:00	8:00-9:00	Silent	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00	268	WBN
WBZ	335.1	Silent	4:00-6:45	3:00-6:55	3:00-6:55	3:00-6:55	3:00-6:55	3:00-6:55	335.1	WBZ
WCAC	275	Silent	Silent	4:00-6:00	Silent	Silent	Silent	Silent	275	WCAC
WCAC	461.3	4:30-11:30	2:30-3:30	4:30-7:00	4:30-7:00	4:30-7:00	4:30-7:00	4:30-7:00	461.3	WCAC
WCAC	461.3	4:30-11:30	2:30-3:30	4:30-7:00	4:30-7:00					

# An Evening at Home with the Listener In

(FOR CENTRAL TIME)

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(FOR EASTERN TIME or Cities Using Central Daylight Saving Time)

Call	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Call	Location	Met.	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Call	
AT9	Silent	5:00-6:00	Silent	Silent	Silent	7:00-8:35	Silent	AT9	Fort Bragg, N. C.	435	Silent	6:00-7:00	Silent	Silent	Silent	8:00-9:55	Silent	AT9	
CFCA	Silent	6:00-7:00	Silent	Silent	7:15-8:15	7:15-8:15	Silent	CFCA	Toronto, Ont.	356.9	Silent	7:00-8:00	Silent	8:15-9:15	8:15-9:15	8:15-9:15	Silent	CFCA	
CFCN	11:30-1:00	Silent	Silent	Silent	Silent	Silent	Silent	CFCN	Calgary, Alta.	434.5	12:00-2:00	Silent	Silent	Silent	Silent	10:00-11:00	Silent	CFCN	
CHNC	Silent	Silent	6:30-7:30	Silent	Silent	Silent	Silent	CHNC	Toronto, Ont.	356.9	Silent	Silent	Silent	Silent	Silent	10:00-11:00	Silent	CHNC	
CICA	10:00-12:00	8:30-9:30	8:30-9:30	8:30-9:30	8:30-9:30	7:00-9:00	10:00-12:00	CICA	Edmonton, Can.	516.9	11:00-1:00	9:30-10:30	9:30-11:30	9:30-10:30	11:00-1:00	10:30-1:00	Silent	CICA	
CKAC	5:30-9:30	Silent	Silent	5:30-9:30	Silent	6:30-7:50	Silent	CKAC	Montreal, Que.	410.7	6:30-10:30	Silent	Silent	6:30-10:30	Silent	7:30-8:30	Silent	CKAC	
CKY	Silent	7:00-9:45	Silent	Silent	8:30-10:30	Silent	Silent	CKY	Winnipeg, Man.	394.4	Silent	8:00-10:45	Silent	9:30-11:45	Silent	9:00-10:00	Silent	CKY	
CNRA	6:30-11:30	Silent	Silent	Silent	Silent	6:30-7:30	Silent	CNRA	Moncton, Can.	515	Silent	Silent	Silent	Silent	Silent	7:30-8:30	Silent	CNRA	
CYB	10:30-11:45	Silent	Silent	Silent	9:15-10:15	Silent	Silent	CYB	Ottawa, Ont.	434.5	7:30-12:30	Silent	Silent	7:30-8:30	Silent	7:30-12:30	Silent	CYB	
CYL	Silent	Silent	Silent	Silent	Silent	Silent	Silent	CYL	Mexico City, Mex.	370	11:30-12:45	Silent	Silent	Silent	Silent	Silent	Silent	CYL	
CYX	Silent	Silent	Silent	Silent	Silent	Silent	Silent	CYX	Mexico City, Mex.	480	Silent	Silent	Silent	11:00-12:30	Silent	Silent	Silent	CYX	
KDCA	7:45-8:55	6:00-7:00	7:45-8:55	7:45-8:55	7:45-8:55	7:00-10:30	7:45-8:55	KDCA	Pittsburgh, Pa.	309.1	8:45-9:55	7:00-8:00	8:45-9:55	8:45-9:55	8:45-9:55	8:00-11:30	8:45-9:55	KDCA	
KFAE	6:00-7:00	4:00-5:00	6:00-9:30	6:00-7:00	6:00-7:00	6:00-9:30	Silent	KFAE	Lincoln, Neb.	340.7	7:00-8:00	5:00-6:00	7:00-10:30	7:00-8:00	7:00-10:30	Silent	Silent	KFAE	
KFAU	Silent	Silent	Silent	Silent	Silent	9:30-11:00	Silent	KFAU	Pullman, Wash.	348.6	Silent	Silent	Silent	10:30-12:00	Silent	Silent	Silent	KFAU	
KFD	Silent	Silent	Silent	Silent	Silent	9:00-11:00	Silent	KFD	Boise, Idaho	275	Silent	Silent	10:00-12:00	Silent	Silent	Silent	Silent	KFD	
KFM	8:45-2:00	8:00-1:00	8:45-1:00	8:45-1:00	8:45-1:00	8:45-1:00	8:45-1:00	KFM	Daeguon, Texas	315.6	Silent	9:00-10:30	Silent	9:00-11:30	Silent	Silent	Silent	KFM	
KFMQ	Silent	Silent	Silent	Silent	Silent	Silent	Silent	KFMQ	Los Angeles, Calif.	487	9:45-2:00	Silent	9:45-2:00	9:45-2:00	9:45-2:00	9:45-2:00	9:45-2:00	KFMQ	
KFOA	7:30-9:30	6:50-9:15	7:30-9:30	7:30-9:30	7:30-9:30	7:30-9:30	7:30-9:30	KFOA	Fayetteville, Ark.	299.8	Silent	Silent	Silent	11:00-11:55	8:30-9:30	8:30-9:30	8:30-9:30	KFOA	
KFRU	7:30-12:00	5:00-7:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	KFRU	Shenandoah, Ia.	266	8:30-10:30	7:30-10:15	8:30-10:30	8:30-10:30	8:30-10:30	8:00-2:00	8:00-2:00	KFRU	
KFUO	Silent	8:15-9:15	Silent	Silent	Silent	Silent	Silent	KFUO	Seattle, Wash.	454.3	9:00-2:00	Silent	9:00-1:00	9:00-2:00	9:00-2:00	9:00-2:00	9:00-2:00	KFUO	
KFVE	10:00-12:00	Silent	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	KFVE	Bristol, Okla.	394.5	8:00-1:00	6:00-8:00	8:00-11:30	11:30-1:00	10:00-11:30	11:30-1:00	12:00-2:00	KFVE	
KFWB	9:00-1:00	11:00-1:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	KFWB	St. Louis, Mo.	515	9:15-10:15	6:00-8:00	9:00-10:30	9:00-10:30	9:00-10:30	9:00-10:30	9:00-10:30	KFWB	
KGO	10:00-2:00	5:50-11:00	10:00-3:00	10:00-3:00	10:00-3:00	10:00-3:00	10:00-3:00	KGO	University City, Me.	240	11:00-1:00	Silent	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	KGO	
KGW	8:00-2:00	9:45-11:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	KGW	Ogden, Utah	261	11:00-1:00	Silent	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	KGW	
KHJ	7:30-1:00	8:00-1:00	7:30-1:00	7:30-1:00	7:30-1:00	7:30-1:00	7:30-1:00	KHJ	Hollywood, Calif.	292	10:00-1:00	12:00-2:00	9:30-2:00	10:45-2:00	10:00-2:00	10:00-2:00	10:00-2:00	KHJ	
KIAP	Silent	4:00-5:00	Silent	Silent	Silent	Silent	Silent	KIAP	Portland, Ore.	491.5	9:00-3:00	10:45-12:00	11:00-4:00	11:00-4:00	11:00-4:00	11:00-4:00	11:00-4:00	KIAP	
KJR	Silent	9:00-1:00	Silent	Silent	Silent	Silent	Silent	KJR	Los Angeles, Calif.	405.2	8:30-2:00	9:00-2:00	9:00-2:00	8:30-2:00	8:30-2:00	8:30-2:00	8:30-2:00	KJR	
KJL	Silent	9:15-11:30	Silent	Silent	Silent	Silent	Silent	KJL	Seattle, Wash.	384.4	Silent	10:00-11:00	10:00-2:00	Silent	10:00-1:00	11:30-3:00	11:30-3:00	KJL	
KKLS	Silent	6:30-10:00	Silent	Silent	Silent	Silent	Silent	KKLS	Los Angeles, Calif.	293.9	Silent	10:15-12:30	Silent	11:00-12:00	Silent	11:00-12:00	Silent	KKLS	
KKX	10:00-4:00	9:00-1:00	10:00-4:00	10:00-4:00	10:00-4:00	10:00-4:00	10:00-4:00	KKX	Independence, Mo.	309.1	Silent	7:30-11:00	Silent	Silent	Silent	9:00-10:00	Silent	KKX	
KOA	9:00-10:00	5:00-10:30	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	KOA	Oakland, Calif.	508.2	Silent	Silent	9:00-2:00	Silent	9:00-2:00	9:00-2:00	9:00-2:00	KOA	
KOIL	7:30-12:00	7:30-9:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	KOIL	Hollywood, Calif.	336.9	11:00-5:00	8:00-2:00	9:30-3:00	9:30-3:00	9:30-3:00	9:30-3:00	9:30-3:00	KOIL	
KPD	8:35-2:30	8:30-12:00	8:35-2:30	8:35-2:30	8:35-2:30	8:35-2:30	8:35-2:30	KPD	Denver, Colo.	322.4	8:00-1:00	6:30-11:00	8:30-11:00	Silent	8:30-11:00	8:30-11:00	8:30-11:00	8:30-11:00	KPD
KPRC	7:30-12:00	8:30-1:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	7:30-12:00	KPRC	San Francisco, Calif.	428.3	9:35-3:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	KPRC	
KSL	9:00-12:00	10:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	KSL	Houston, Texas	296.9	8:30-11:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	KSL	
KTCL	8:30-2:00	9:45-11:00	8:30-2:00	8:30-2:00	8:30-2:00	8:30-2:00	8:30-2:00	KTCL	Salt Lake City, Utah	289.3	10:00-1:00	11:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	KTCL	
KTHS	9:25-10:25	9:25-10:25	9:25-10:25	9:25-10:25	9:25-10:25	9:25-10:25	9:25-10:25	KTHS	Hart Springs, Ark.	374.8	10:25-11:25	10:25-11:00	10:25-11:25	10:25-11:25	10:25-11:25	10:25-11:25	10:25-11:25	KTHS	
KWVG	8:30-9:30	Silent	8:30-9:30	8:30-9:30	8:30-9:30	8:30-9:30	8:30-9:30	KWVG	Brownsville, Texas	278	9:30-10:30	Silent	Silent	Silent	Silent	Silent	Silent	KWVG	
KTW	Silent	9:00-11:30	Silent	Silent	Silent	Silent	Silent	KTW	Seattle, Wash.	455	10:00-12:30	Silent	Silent	Silent	Silent	Silent	Silent	KTW	
KYAA	6:00-12:30	Silent	6:00-12:30	6:00-12:30	6:00-12:30	6:00-12:30	6:00-12:30	KYAA	Chicago, Ill.	535.4	7:00-1:30	4:00-8:00	Silent	7:00-1:30	7:00-1:30	7:00-1:30	7:00-1:30	7:00-1:30	KYAA
KYB	Silent	Silent	Silent	Silent	Silent	Silent	Silent	KYB	Radio, Va.	424.5	Silent	Silent	7:45-8:00	7:45-8:00	7:45-8:00	7:45-8:00	7:45-8:00	KYB	
KYD	7:30-10:00	Silent	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	KYD	Havana, Cuba	400	8:30-11:00	Silent	Silent	Silent	Silent	Silent	Silent	KYD	
KYF	10:00-11:00	Silent	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	KYF	Richmond, N. Y.	315.8	12:00-2:00	Silent	7:00-1:00	Silent	Silent	Silent	Silent	7:00-1:00	KYF
KYH	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYH	Minneapolis, Minn.	245.8	11:00-12:30	3:00-11:00	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	KYH
KYI	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYI	Ft. Worth, Tex.	475.9	8:00-1:00	12:00-1:00	8:50-2:00	8:50-2:00	8:50-2:00	8:50-2:00	8:50-2:00	8:50-2:00	KYI
KYJ	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYJ	Columbus, O.	293.8	Silent	Silent	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	KYJ	
KYK	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYK	Chicago, Ill.	226	8:00-12:00	4:00-2:00	Silent	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	KYK
KYL	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYL	Spring Island, N. Y.	272.6	7:00-8:00	8:00-9:00	7:00-8:00	Silent	7:00-8:00	Silent	Silent	7:00-8:00	KYL
KYM	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYM	Winnipeg, Man.	226.6	9:00-1:00	5:00-12:00	Silent	9:00-1:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	KYM
KYN	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYN	Springfield, Mass.	226.6	9:00-1:00	5:00-12:00	Silent	9:00-1:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	KYN
KYO	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYO	Pittsfield, Conn.	275	Silent	Silent	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYO	
KYP	7:00-9:00	10:00-11:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	KYP	Plainfield, Pa.	481.3	7:30-8:30	5:30-6:30							

# Radio Digest

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## A More Representative Democracy

USE of the Radio by an eastern governor to sound out the people on matters of grave importance pending before the state legislature points out a new and faster way for cooperation between voters and their representatives. The idea of appealing to voters to write to their state and national representatives is almost as old as legislatures, but the old method of appeal takes a great deal of time. It requires the enlistment of a large working force, and very often a great many public meetings to arouse public action. In one meeting, advertised by press and Radio, the speaker can reach by Radio a great audience and, if his arguments are presented in an orderly and effective way, he is assured of a response. If a sufficient number of letters is received, elected officials are almost certain to be swayed in their action by the sentiment expressed.

For three years the Radio audience has been educated in the habit of writing letters of comment on programs and artists. The Radio stations have encouraged the habit because these letters are substitutes for the applause which a performer was accustomed to receive. It is quite natural, therefore, for a listener, after hearing an address and a request that he express his views, to write to assemblyman or senator.

A democracy with Radio should prove more representative than a democracy without Radio. Concerted approval or disapproval of a plan of legislative action may now speedily reach the attention of the elected official. Interest in state and national policies should no longer be limited to the casting of a ballot on election day. Common action, produced by a Radio address, should make the citizen feel that this is in fact a government of, for and by the people.

## Making Politicians Think

"THE Place and the Power of Radio in Politics," is the title of a recent paper by Dr. Frank W. Elliot, of WOC fame and vice-president of the National Association of Broadcasters. The power of Radio in politics, we believe, has been very well displayed. Both President Coolidge and Candidate Davis last year found it much to their advantage to talk simultaneously from a chain of linked stations to audiences in every section of the country.

However, Dr. Elliot's paper is worth while. In it he has made a very careful analysis of the future of political Radio. In it he also says, "Its (Radio's) power is to compel the politician to really think before broadcasting."

We hope Dr. Elliot is right. In that case perhaps we have misjudged the average run of politicians. We didn't even dream they ever thought. Except, of course, when it becomes necessary for them to think how they can better themselves to the detriment of someone else, usually the people.

But what can you expect when the best citizens refuse to use their franchise of citizenship to elect the kind of men who can and will think for the people, once they have been elected to office? Perhaps Radio will stimulate the interest in voting so necessary to our common good. That, we should say, would be the biggest thing Radio could ever do for this government.

## A Billion Dollars for Radio

PREDICTIONS for the fall and winter Radio season are hitting high. A large show promoter conservatively estimates that half a billion dollars will be spent for Radio sets, parts and accessories during the next year. An official of a large set manufacturer says one billion dollars is closer to the mark.

Quite a growth? In 1920 the entire Radio business of the United States summed up a bare two million dollars. Last season it is estimated that between three and five hundred million dollars was turned over in sales. Yes, quite a growth for a period of five years.

Beautiful sets, so handsome they overshadow the furniture of the parlors for which they are intended; perfect receivers, as good as science knows yet how to make, await the fall buying public.

Yes, we believe at least a half billion dollars will be spent this year. Why not?

## RADIO INDI-GEST

### Maybe She Swam

"A bit of human static was found on the air at 4:30 when the dials revealed a vocal flapper flapping through that grand old song, "By the Waters of Minnetonka." I hope Mrs. Soprano reads this and recognizes her identity." (Elmer Douglass in Chi Trib).  
"By the Waters of the Minnetonka"  
Was the song the flapper flapped  
And knowing water flaps the shore  
That's the pun that Elmer sapped.

### Orders Radio in His Coffin

Sam R. Kimball, aged San Fernando valley rancher, has placed an order with a Los Angeles undertaker for a \$1,200 steel coffin equipped with an up-to-date Radio receiving set, it was revealed today.—News Item.

In view of the foregoing, think what might have happened if certain characters of history had taken transmitters to their honored graves. For instance:

King Tut, broadcasting to those who would dig him up: "Please go 'way and let me sleep!"  
Cleopatra, to those who have been handing out the dirt about her affair with Anthony: "I ain't that kind of a girl!"

Omar Khayyam, to his publishers: "Cut out all reference to 'Jug of Wine' in revised U. S. A. version of Rubaiyat."  
Hamlet: "The world is wrong! I was not nuts!"

Darwin, after hearing Bryan's Dayton speech broadcast over WGN: "I meant no insult to the monkey group. I had no idea that the human race would ever produce a being such as W. J. B."  
Schubert, Wagner, Mozart, and Beethoven, in unison over four station hook-up: "There is no Society of Authors, Publishers, and Composers here so we have named the place Heaven."

### The Old Stuff Goeth

"A pick-up was made by Station WGY in the night traffic court of Schenectady, N. Y., and sent by land wire to WJZ and broadcast to the metropolitan audience. Three cases were tried for the benefit of the Radio-fans, the first of which was for Drunken and Reckless Driving, the second for Driving without a License, and the last for Speeding. These were real honest to goodness cases and when the judge said \$50, the Radio audience should have been able to hear the tear drops spatter on the courtroom floor as the luckless offender parted with his weekly stipend." (Press Note)

Try this with your static:

"I'm late I know my darling wife,  
But please let me explain—  
I lost my cash and near my life  
When a bandit held up the train."  
"That's all the bunk," she said,  
"A judge nicked you for your dough  
For having moonshine on the head—  
I heard it o'er the Radio."

Another said, "I'm so sorry dear,  
A friend was sick tonight,  
So I had to linger near  
and cheer him in his plight."  
"Get away with that old stuff,  
Don't try to fool me so.  
Some motor cop called you bluff  
I heard it o'er the Radio."

The old ones are now taboo,  
All lies will have to go.  
Wife has it all on you  
Over the Radio.

### Mizz Partington Returns

From away down in the Tar Heel state comes word that Mizz Partington, until some months back a regular feature in this department, is building a new eight tuber and will soon be with us. "Hold your horses the elephants are coming!"

### I Sure Is Good Says Elmer

By Delmer Buglass

I AM beginning to believe that I am pretty good. I once thought that I was somewhat superior to other human beings, but now I know I am. I am quite sure. Many people say I am prejudiced and don't know my stuff, but I know I do and they don't, so why worry?

The reason I am good is that I know that NWG is good. Nobody else would know it unless I told 'em, so I write regularly telling people how wonderful I am and NWG are. I am afraid people don't appreciate my kind criticisms.

Why, if I didn't criticize broadcasting stations I know my readers would surely tune in some awful station that I don't like and they would. And I couldn't stand that. I want them to tune in NWG, which is always good. Betcha boots. Now be careful, my kind readers, and don't tune in anything I say I don't like, because I am sure my heart would break.

### Don't Forget the Stamps

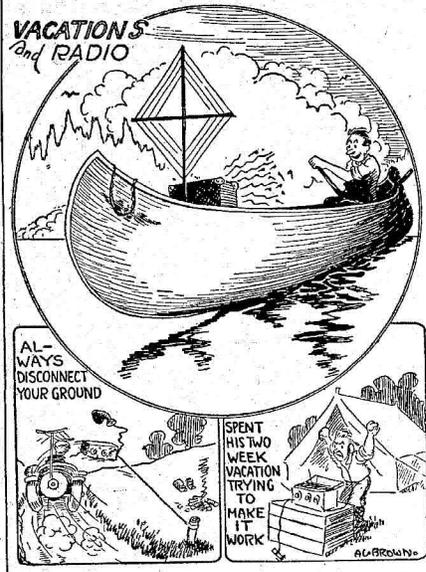
Dear Indi: Why, oh, why do you scorn my contributions? I have sent you three wonderful poems and still I fail to see them in print. If you can't use them send them back so I can submit them to the American Meritician. CRYSTAL SET IKE.

Listen, Ike, it's this way. Your poems were beautiful, but evidently you have never heard the old one about "good verses come in short poems." Cut them down or send a self addressed and stamped envelope for their return.

### Rebroadcasting the Old Ones

Dear Indi: I hooked my set to the bed post during the warm weather last week and got "Hot Springs." C.A.F.

## Summer Radios and Some Are Not



## Condensed

BY DIELECTRIC

The symphony players again at KDKA, Pittsburgh, were all that one would expect whose receivers had played host on previous occasions. Despite the absence of any modernism to the music of the Magic Flute, few will deny the beauty of the overture to that opera, and it was this selection which won me to a prolonged hearing of that evening's program. Lucile Werner should be included where praise is being meted out, for her singing of "My Mother Bid Me Bind My Hair," a Hadyn gem, was splendidly interpreted.

I ran across a good—real good—male quartet the other evening. Haven't found so many since these hot nights have come upon us. Yet that should not pass as explanation. Anyway, those four men did get right into the heart of a medley of old time airs, familiar to our grandmothers, and sang heartily, too. They never resorted to an overdose of pathos, yet their voices were soft with feeling where the "darkies" were referred to and the otherwise backeyed phrases were newly presented. WSAI, Cincinnati, was responsible for our hearing such a program and we should thank them.

Another of the operatic programs from the studio of WEA, New York, presented "Martha" (incidentally this is most closely associated in my mind with the great prima donna, Melba). These performances have gone a long way to acquaint many people with the beautiful melodies to be found in grand operas and to disabuse the minds of some as to the real character of such musical productions. Mr. Benedetto has seldom failed to impress one with the seriousness of his art and the singing of Lionel was no exception.

Elgin, Ill., with its WTAS broadcasting station, has something to boast of, even if others outside the immediate vicinity find cause for complaint at times. They were well supplied with excellent material when the evening's entertainment consisted of a group of soloists and an orchestra. Diversity may not guarantee enjoyment, yet it is likely to meet the wishes of a large number of listeners in, and that was precisely what WTAS gave.

It is very improbable that any old time listener would skip over the dial setting for WSB on the dedication date of the wonderful new transmitter at the Atlanta Biltmore hotel. To me it seems as though the "Voice of the South" is synonymous with Radio broadcasting. Each step this dear old southern station has taken, found Dielectric always on hand to rejoice with the owners of one of the most friendly and interesting stations in the land. Three years' reminiscence was crowded into that one program and few of the genuine BCL's tuned out without wishing them all the success in the world. Lambdin Kay is a name thousands do not recognize, though that genial gentleman's voice could not be imitated far.

Symphony orchestras are no longer the delight of those only who pack concert halls—thank fortune—but are enjoyed and are the instructors of thousands of Radio listeners today. Comparisons are not in order here and I have no desire to make any, but to any music lover missing the concert given by the Detroit symphony orchestra recently, I have only sympathy. It was a banner evening in the history of classical music broadcasting and if such a program is again presented be sure to get there early. WCX was thanked.

# A. B. C. Course in Radio Fundamentals

## Chapter XX—Characteristics of Two and Three Electrode Tubes

By David Penn Moreton

LET us first consider what happens in a two electrode vacuum tube, in which there is a good vacuum, when there is, first, a variation in the temperature of the filament and, secondly, a variation in the voltage of the battery connected between the plate and the filament. The connections of the tube for this investigation are shown in figure 83.

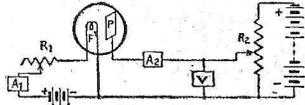


Figure 83

The current through the filament may be varied in value by means of the rheostat  $R_1$ , and the value of this current is indicated by the ammeter  $A_1$ . The voltage applied between the plate and the filament may be varied in value by moving the sliding contact C along the resistance  $R_2$ , the value of the voltage being indicated by the voltmeter V, and the value of the current in this circuit by the milliammeter  $A_2$ .

### Space Charge

Suppose now, that the voltage between the plate and the filament is kept at some constant value and the filament temperature is gradually raised by increasing the filament current. The number of electrons sent out by the filament will continue to increase as the temperature of the filament rises, and there will be a stream of electrons passing from the filament to the plate. Due to this stream of electrons passing from the filament to the plate, there are, at any instant, a number of electrons in the space between the filament and the plate.

This group or cloud of electrons, between the plate and the filament, produces a negative space charge. The effect of this negative space charge upon the electrons leaving the filament is opposite to that of the positive plate potential. As the temperature of the filament is increased, there will be an increase in the electrons between the plate and filament and, hence, an increase in the value of the space charge, until finally the space charge neutralizes the plate potential and there is no further increase in the plate current due to an increase in filament temperature. The tendency of the filament to emit more electrons per second, due to the increased temperature, is offset by the space charge effect which repels the electrons back into the filament so that the net number emitted remains constant.

If the voltage between the plate and the filament be increased, there will be an increase in the current as indicated by the milliammeter  $A_2$  in figure 83. With this higher voltage connected to the plate, a larger space charge will be required to offset the effect of the plate potential.

The variation in plate current with filament temperature is shown graphically in figure 84, for three different voltages

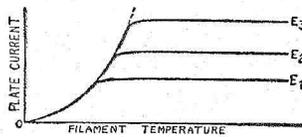


Figure 84

between the filament and the plate. Let us now assume that the filament temperature is kept constant and the voltage between the plate and the filament is varied. There will be a definite number of electrons emitted by the filament each second. The magnitude of the plate current will depend upon the number of electrons reaching the plate per second, which in turn depends upon the potential of the plate, the current increasing in value as the voltage between the plate and the filament increases in value. As this voltage is increased, a value is finally reached at which all the electrons emitted by the filament arrive at the plate. When this value of plate voltage is reached, the plate current is at a maximum and this value of the current is called the saturation current for that particular filament temperature.

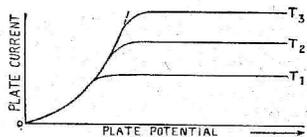


Figure 85

The variation in plate current with plate potential is shown by curve  $T_1$ , in figure 85. This curve shows that when the plate potential is zero, there is no plate current and, as the plate potential increases, there is at first a very small increase in plate current, but as the plate potential continues to increase, the plate current increases more rapidly than the plate potential up to a certain point, when the plate current has reached the saturation value as explained above.

If the temperature of the filament is raised to a higher constant value by increasing the current through it, and the

plate potential varied in value from zero upwards, the plate current will increase with the plate potential along the same line as it did for the lower filament temperature until the saturation point is reached and the filament current will rise higher in value than it did before as shown by the curve marked  $T_2$ . A further increase in filament temperature will give the curve marked  $T_3$ .

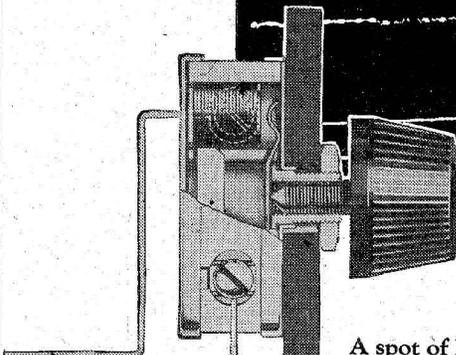
### Three Electrode Vacuum Tube

The three electrode vacuum tube differs from the two electrode tube described in the last chapter, in the addition of a third electrode G, as shown in figure 86, between the plate and the filament and in the path of the electrons. This electrode

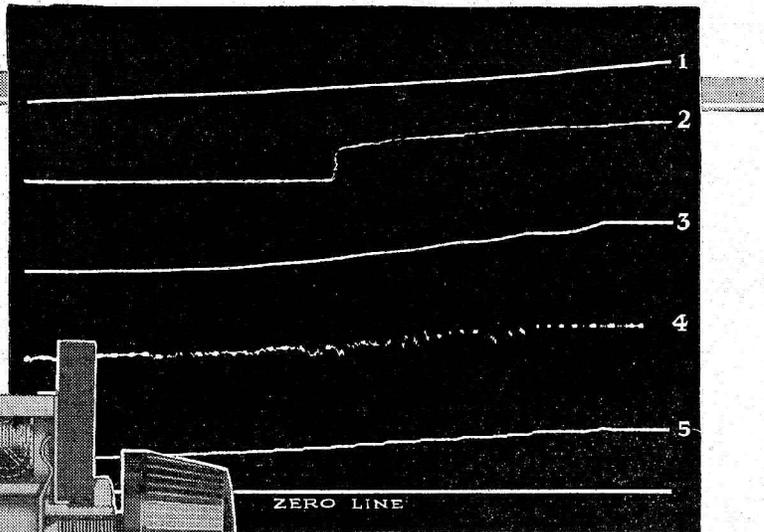
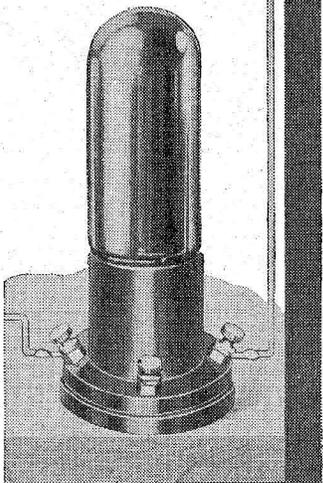
may be a perforated plate or mesh or grid of fine wires, through the openings of which the electrons must pass in their travel from the filament to the plate. It is possible to accelerate or decelerate the electrons moving from the filament to the plate, and to counteract or increase at will the effect of the space charge, by applying a positive or negative potential to this third electrode or grid. This third electrode provides a means of controlling the current in the plate circuit, without changing the plate potential or filament temperature. The chief advantage of this method of controlling the plate current is that, while the plate current may be

(Continued on page 19)

**Bradleystat**  
PERFECT FILAMENT CONTROL  
The result of more than twenty years' research and experience in the manufacture of graphite disc rheostats for radio, mines, mills, etc.



Use the same Bradleystat for ALL Radio Tubes without changing connections.



## Only Graphite Discs provide noiseless filament control

A spot of light, silently guided by an automatic electric oscillograph, traced the above curves on a moving photographic film. The test, made at the University of Wisconsin, was impersonal and impartial. The result, however, proves beyond a doubt the superiority of the Bradleystat for radio filament control.

The first line (No. 1) shows the silent, stepless variation produced by the Bradleystat. The following curves (Nos. 2, 3, 4, and 5) were produced by other types of rheostats, some using loose powder instead of graphite discs. See the scratchy, noisy control. Every jog in the white lines means a distracting noise in the loud-speaker.

Is it any wonder that Bradleystats are being substituted for ordinary rheostats by thousands of set owners? Try one, yourself, and hear the difference!

Mail the Coupon for Literature

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Mfrs. of graphite disc rheostats for over twenty years.

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# Radio Inductive Interference and Its Cure

## Part II—Means of Suppression

By Radio Branch, Dept. Marine and Fisheries, Canada

**I**N MAKING all these tests it is important to approach the subject with an unprejudiced mind as to the source of the interference, and before concluding that the interference is caused by any given source, it is well to consider all possible conditions in which the interference may have originated from some other unknown cause. Investigating interference is a very fascinating detective game and one would sometimes suppose that the source of the interference had a sense of humor and was trying to evade detection in a manner similar to that of the most clever criminal.

The obvious and only satisfactory method of suppressing Radio inductive

The burrs are carefully removed from the hole in the fibre tube so as not to cut the insulation. End rings or filers are mounted at the end of the winding to build up the same diameter as the outside diameter of the winding. These may be made of tape or a suitable size of fibre tube. The whole coil is covered with five layers of Empire cloth and then taped with black friction tape and painted with insulating varnish. Mounting lugs made of fibre are then attached to each end of the coil.

This coil should be mounted on a board covered with asbestos 1/4 inch thick and the leads soldered and thoroughly taped according to standard wiring practice.

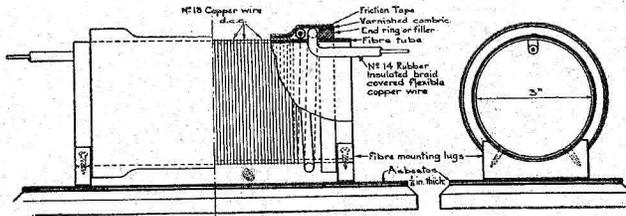


Figure 1

interference which is caused by electrical apparatus which is defective is to put this apparatus in good condition. The owners of such electrical apparatus are always very pleased to have their attention drawn to the fact that their apparatus is in need of repair, it having been found many times that this Radio interference is the first indication of a fault, which if not attended to, may cause serious damage.

In cases where the electrical apparatus appears to be in good mechanical and electrical condition it is very often possible to supply some means of preventing electrical surges, originating in the apparatus, from getting out to the power line where they would radiate and cause interference.

### Condenser Prevents Surges Traveling

These electrical surges have the property of passing through condensers more readily than through inductances. The method employed therefore, in preventing electrical surges from traveling along the power lines and thus causing Radio interference, is to provide a path to ground in the form of a condenser to filter or drain off this surge. In order to make this filter more effective, it is often advisable to introduce between the line and the source of the disturbance a trap which will make the passage of the surge more difficult. This trap preferably takes the form of a choke coil which consists of a number of turns of wire of suffi-

### Mounting Condensers

Condensers which will stand a test voltage of 1,000 volts direct current may be connected across an alternating current or direct current circuit of 250 volts or less. On circuits which are protected by fuses of not more than 15 amperes capacity, no additional fuse is required for the condenser. On circuits protected by fuses of greater than 15 amperes capacity, a separate cutout base and small fuse (of approved type) not exceeding 15 amperes, must be installed between the condenser and each ungrounded power wire. Where condensers are not installed in metal boxes and are to be placed on wooden surfaces, they should be mounted on pads of asbestos at least 1/4 inch thick, and these pads should be sufficiently large to extend beyond the clamps used for holding the condenser in place.

Where condensers are to be used on 550-volt circuits, two condensers of approved type must be connected in series between the lines, and the common point may be grounded. In such installations the condensers are to be protected by 600-volt fuses not greater than 10 amperes in each live line, and both the condensers and fuses are to be enclosed in a grounded metal case. Where the condensers are to be connected to two-phase or three-phase circuits not greater than 600 volts, one condenser may be connected from each live line to ground and installed with fuses as stated above.

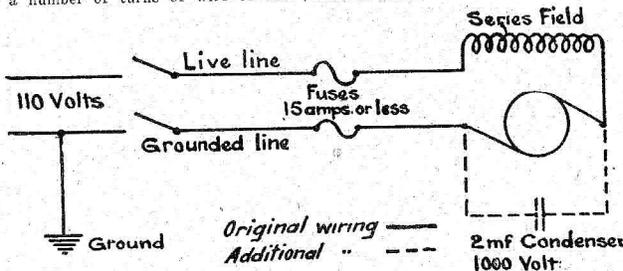


Figure 2

cient size to carry the required current without overheating, and sufficient insulation to withstand the voltage of the line. These installations should be approved by the local electrical inspector to ensure that there are no fire or accident hazards introduced by the installation.

It is important in the design of these choke coils that they should have low distributed capacity in order to prevent electrical surge passing through the choke coil by means of this capacity.

### Choke Coil Construction

A type of choke coil recommended for cases where the current is less than three amperes is constructed according to figure 1. It consists of 100 turns of number 18 double cotton covered copper wire in a single layer wound on a fibre tube 3 inches in diameter, 1/4 inch thick. Leads are soldered to each end and made from number 14 flexible rubber insulated braid covered copper wire, making one turn around the tube then through a hole in the tube and extending through the inside of the tube a length of one foot.

a choke coil and thus prevent the necessity of adding additional choke coils to the system.

### Electric Motor Interference

A series commutator motor, causing a surge by sparking at the brushes, may have its leads reversed to reduce the Radio interference. Where one wire is grounded, Radio interference from such a motor is sometimes reduced by reversing the leads supplying the motor, so that one of the brushes is connected to the ground side of the line and the field coil is connected to the live side of the line. In this case, the field coil is used as a choke. It may also be necessary to place a condenser of one or two microfarads

voltage lighting circuit may be determined by means of a test lamp connected from ground, first to one wire and then to the other. The lamp will light when connected from the live line to ground.

**Battery Chargers and Sign Flashers**  
A battery charger of the vibrator type may be prevented from causing interference by connecting a condenser of 1/2 microfarad capacity across the vibrating contacts. In the case of battery chargers it is useless to put condensers across the mains, as it is necessary to make use of the choke consisting of the wire and coil within the battery charger, to prevent this surge from getting out on the line. Flashing electric signs may usually be

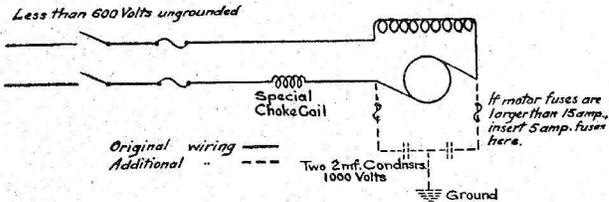


Figure 3

capacity across the brushes. See figure 2. In cases where neither side of the line is grounded, a choke may be inserted on the line connected directly to one of the brushes, while the field coil may act as a choke in the other line. In this case it is recommended to use two 2-microfarad condensers in series and ground the middle point according to the diagram, figure 3.

In cases where it is not convenient to make connections with the brushes of a motor, the condenser may be placed across the line as near the motor as possible, and a choke coil may be inserted in the live line when necessary. Instructions for the installation of these units were given above. The live side of a low

prevented from causing interference by connecting condensers from 1/2 to 2 microfarads capacity across the contacts of the circuit breaker. As the Radio interference from such sources depends upon the conditions of the installation, it is necessary to make these few experiments, as suggested above, in each case, in order to reduce the interference most effectively.

Sometimes the interference from a flashing sign installation is caused by sparking at the commutator of the motor which drives the flasher. This may readily be determined by the nature of the sound in the Radio receiver and may be remedied by the method described for (Continued on page 20)

### Quality Parts Matched for Perfect Teamwork

Your "pet" hook-up needs first quality parts—perfectly matched—to give you real radio. Every Federal Standard Radio Part is designed, made, matched and guaranteed by Federal. That is why you find Federal parts in all the better hook-ups—that is why you should insist on Federal parts when purchasing.

FEDERAL TELEPHONE MANUFACTURING CORP. Buffalo, N. Y.



# Federal

Standard RADIO Products

As these condensers contain wax, they should not be placed where they may be subjected to excessive heat. Condensers when connected to a circuit as stated above have no objectionable effect on the circuit, or the operation of any electrical apparatus and they do not consume any power.

### Approved Condensers

Condensers similar to Northern Electric company type R-21-A.A., 1 mfd., 1,000 volts direct current, are suitable for installing in metal boxes as described above. Special condensers having number 14 rubber insulated leads, suitable for installing without metal boxes, may be obtained at cost from the Radio Branch, Department of Marine and Fisheries, Ottawa, until such time as some commercial firm stocks them. (This probably only applies to Canadian fans.—Editor's Note.)

In many cases it is possible to make slight changes in the connections of the electrical apparatus causing the surge in order to use some existing apparatus as

# Interesting Work With Oscillating Crystals

## Zincite (ZnO) Used By Russian Engineer

By Frederic M. Delano

THE term "oscillating crystal" has been a standard joke among the Radio fraternity for a number of years since it was presumed that the usual crystal rectifiers, as used in reception, were incapable of oscillation and could pass radio frequency current in but one direction. Yet, strange to say, this seeming impossibility has now become not only a possibility, but a workable reality.

The oscillating crystal was first developed by a Russian, M. Lossev, and it has been attracting considerable attention in Europe this past few months, with some comment in the press of America. Many and remarkable are the tests, hook-ups and results gained by the Radio amateurs on the Continent and the British Isles. Among the most important perhaps, from the standpoint of practicability, and utility for the average amateur, are those worked out and actually tested with success by one of M. Lossev's friends, M. Vinogradov, a Radio engineer formerly with a Belgian Radio company and now doing some special Radio work for one of the largest technical magazines in Europe.

### Develops Lossev's Circuit

The basic hook-up from which these were worked out, by the way, is not the origination of Vinogradov, but he has taken the original idea of Lossev and worked out refinements and helps that formed, ultimately, the circuit shown herewith. Vinogradov says that while there is a wide difference of opinion in Europe, the one group of scientists claiming the oscillating crystal useless, the other group that it will soon replace the vacuum tube, he personally is reporting only what he has done himself.

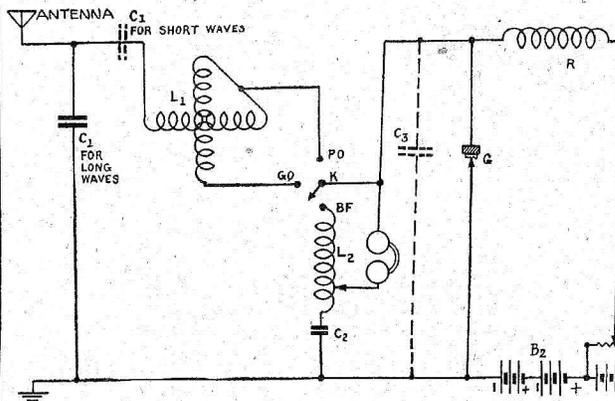
The diagram gives an idea of a receiver made with the Zincite crystal, and, as shown without dotted lines, allows for the reception of the longer wave lengths from 2,600 to 13,000 meters. The batteries, B-1 and B-2 are ordinary dry batteries such as are used in America as C units; B-1 providing 4½ volts at the terminals and B-2 giving 9 volts since two C units are placed in series. Potentiometer P has a resistance of about 400 ohms (standard on the American market) and may be made of 9 meters—about 29 feet 6 inches—of nickeltine wire, .1 mm. in thickness.

The unit R is about 900 ohms and should have as large an inductance as possible, a very low distributed capacity and be wound in sections on a multi-slotted coil. Fill the first narrow slot, then pass to the next and then to the third, much as when winding an untuned radio frequency transformer. It is a good idea to wind with enameled or silk insulated copper wire of about .1 mm. thickness (No. 38 B. & S.) of which about 1,250 feet will be necessary.

### The Tuning Circuits

Coil L-2 should have an inductance of about 0.02 henry, and can be wound on a wooden slotted form 60 mm. (2¼ inches) long by 20 mm. (¾ inch) in diameter. For this, some 475 feet of insulated copper wire will be used, .3 mm. to .4 mm. in diameter (No. 24 B. & S. to No. 20 B. & S.). Two honeycomb coils, one of 250 turns and one of 500 turns, can be used. If the inductance is wound by the experimenter, he must be careful to arrange for a tap at the fiftieth turn for the connection to the head receivers.

The condenser C-2 should be of 0.25 mfd. capacity. These also are for sale in the United States, but if the experimenter



Many an interesting hour can be had experimenting with this hook-up.

wishes to make this unit himself, he must be careful to have each metallic surface of 14,625 square centimeters, if he uses paraffine paper 0.1 mm. thick for dielectric. Condenser C-2 has a capacity of .01 mfd. and the surface of each armature (metallic surface) should be 650 square centimeters for paraffine paper.

(Editor's Note.—Either Mr. Delano meant the dimension for the first unit to read 14,625 or that for the second to read 6.50, as obviously the area for the .25 mfd. unit should be larger than that for the 0.01 mfd. unit.)

The variometer is made of two coils turning one within the other, the outer coil or stator, being composed of two sections of 38 turns each, wound with .6 mm. to .3 mm. wire (No. 18 B. & S. to No. 16 B. & S.). The interior or rotor part of the variometer is composed of two sections of 50 turns each, of the same size wire.

### The Zincite Crystal

The detector is composed of a pointed steel wire of .2 mm. (No. 26 B. & S.) wound in a spiral, and the Zincite crystal (ZnO) mounted in a cup or held by a strong clip. Any of the usual crystal detector mountings can be used at this point. The entire unit, however, should be placed on a piece of felt or soft rubber to increase the stability of the system, and connections to it should be of very flexible wire. The cracks in the crystal itself should be red and the surface black. It is the red part which contains the sensitive points.

The three contact points of the commutator (switch) K should be widely enough separated to avoid all possibility of two of these contacts being covered or touched by the switch blade at the same time.

For reception below 1,000 meters, and this includes the American broadcast band of course, the connections shown in dotted lines should be used. Condenser C-1 is shifted from its position across the aerial and ground and placed in series with the aerial lead-in and variometer. The condenser C-3 has a capacity of .004 mfd.

Operation of Circuit  
For proper functioning of either of these sets, the switch K should be placed

on the position BF while the steel point of the catwhisker is placed on the red part of the crystal; at the same time move the potentiometer P slowly. In the head receivers will be heard the usual whistling of low frequency oscillations produced in the circuit C-2 and L-2. Search the crystal for a more sensitive point if the first tried fails to produce this whistling, and when this spot is found place the switch K in the position PO or GO according to whether the upper or lower wave length range possible is required; PO for short waves, GO for longer ones. Turn the variometer L-1 to bring in the station desired.

At this moment, the continued oscillations are tuned in by the circuit L-1 and C-1 and the set is operating like the ordinary autodyne (European term). Contin-

uous wave stations are now heard in whistling notes, damped waves on a sort of blowing note. By means of the potentiometer P, the maximum intensity can be found in just the same manner as one works with regeneration in ordinary tube sets.

(No effort has been made to describe the construction of a complete set as there is no precedent on which to determine the amount of interest in this subject among American broadcast listeners. If the response indicates sufficient interest among Radio Digest readers, the technical department will be glad to secure more articles and do more research work with the Zincite crystals.—Editor's Note.)

### A. B. C. RADIO COURSE

(Continued from page 17)

quite large, and the energy transferred in the plate circuit quite considerable, yet the energy required to charge the grid to the desired potential is extremely small, on account of the small capacity between the grid and the filament.

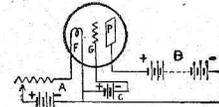


Figure 86

The operation of the three-electrode vacuum tube may be explained as follows: The tube will operate like a two-electrode tube provided there is no potential difference established between the grid and the filament. Now if the grid is given a negative potential with respect to the filament, for example by connecting a battery, C, with its plus terminal to the filament and its negative terminal to the grid, as shown in figure 86, the space charge effect of the tube will be

(Continued on page 21)

# Another Ad That We Did Not Write



Aurora, Ill.  
May 25, 1924.

All-American Radio Corp.,  
Chicago, Illinois.

Are you the firm that makes the All-American transformers? If so, you sure got the right dope, as I have been helping make different radio outfits and when we used it we always found it right there with the goods. I have tried R-21, R-13, R-12, and all I have to say about it there is none better. R-13 is a bird, and when I told one of the boys to get one, this is what he says about it, "No use testing that one out—she's there." And when a bug says that it is enough.

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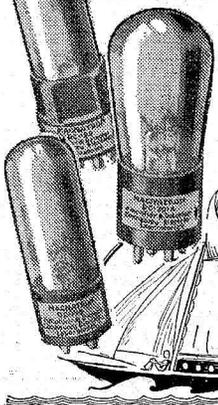
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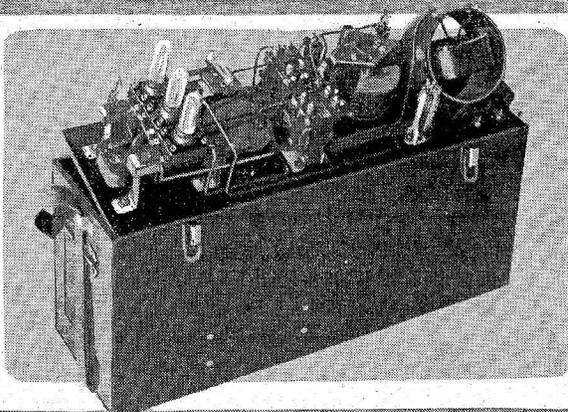


A GLASS, a base and some hunks of wire—Kipling would have said about vacuum tubes. And so they are. But what a difference the method of assembly and manufacture makes!

MAGNATRONS are built with the precision of a fine watch, and tested just as carefully before they leave the factory. You can always count on MAGNATRONS to get the most and the best out of your set.

Your dealer sells Magnatrons in the type 201-A, 199, and 199 large base.

CONNWEY ELECTRIC LABORATORIES  
Magnatron Building Hoboken, N. J.



Back of panel view of the department's trouble-shooting receiver.

**INDUCTIVE TROUBLES**

(Continued from page 18)

dealing with interference from commutator motors.

Internal combustion engine ignition systems may cause Radio interference, but this is usually of a very local nature. This, however, may be considerably reduced by making the leads from the magneto or spark coil to the engine as short as possible and running them in a grounded shield such as metal conduit or lead covered cable. The frame of the engine, magneto, and all shields, should be thoroughly grounded.

Rotary converters sometimes cause Radio inductive interference by producing

for bleaching purposes in flour mills sometimes cause Radio inductive interference by producing a surge which travels along primary lines supplying the ozonator. This interference may easily be eliminated by connecting two choke coils of the cylindrical type previously described one in each of the low voltage lines placed as near as possible to the ozonator.

**Portable Detection Receiver**  
Two illustrations are reproduced with this article showing the set used by the department for locating Radio inductive interference. This set was also readily discernible in the rear of the truck shown with the first article. The diagram used for connecting the various units is given here as figure 4, and the reader living in the United States will probably at once be struck with the fact that tube filaments are connected in series while most of the American circuits use the filaments in parallel. This is due to the fact that Northern Electric tubes of the "pea-

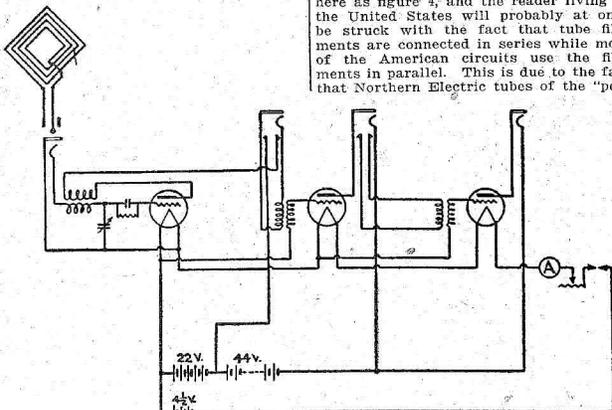


Figure 4

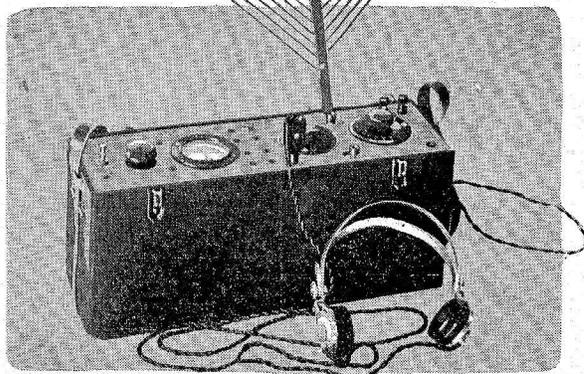
a surge which travels out both on the alternating and direct current lines. In some such cases it may be necessary to introduce choke coils into the alternating current lines and put condensers across the lines between the choke coils and the converter. Before putting these choke coils in the alternating current lines, it is recommended to try the effect of condensers across the brushes as described previously for the case of commutator motors.

Electric ozonators which are used for purifying the air in large buildings and

"nut" type were used, which require a filament voltage of but 1.2. The power source usually consists of a 1.5-volt dry cell so it is logical to light three of these tubes in series from a 4.5-volt battery. The reader can readily change the filament connections to suit the tubes used, however.

The specifications for this set are as follows: The loop is to be pancake wound, outside turn 22 inches square and consisting of 14 turns, spaced 3/8 inch. Plate coil consists of 50 turns of number 26 dcc.

(Continued on page 22)



Filament ammeter is not essential to success if expense is prohibitive.

**The NEW Radio Book**



**How to understand radio, assemble circuits, improve reception, operate sets,**

**EVERY** phase of Radio reception gathered into one book at last! Explanation of elementary principles, directions for constructing parts, detailed how-to-build articles for the assembly of sets, operating directions on popular manufactured outfits.

Haven't you often wondered what all the spirals, wriggly lines and zig-zag lines were about on diagrams? A big chart shows you a picture of the part as you see it and, beside the picture, the symbol used in diagrams. Other articles show clearly just what happens within the mysterious little vacuum tubes that glow hour after hour within your set, apparently without change, yet pass every note of a jazz orchestra or soprano.

Antennas, for whose erection there are seemingly no rules, are covered fully; the reason for a long wire in some locations and a short one in others, is readily grasped by anyone. Crystal sets, one tube reflexes, three tube regenerative and reflex outfits, four tube R. F. and neutrodyne, five tube assemblies—all types are presented up to the nine tube "super," king of the air.

**For the Man That Bought His Set**

For the non-technically inclined there is a two-color broadcast map of the country, operating schedules of all the leading stations, call letters and power rating of every station on the air, suggestions for the care of batteries and tubes.

No matter what type of receiver you own, there are dozens of valuable suggestions on tuning, trouble shooting and operating. Your head receivers, loud speaker, antenna and certain parts within the set, require frequent cleaning, adjusting and care. Interference and its remedies are factors you should understand even though you care nothing about "what makes it go."

Compiled by the technical staff of Radio Digest, it represents the high lights of the past twelve months in the Radio field. All this data is indexed for ready reference and logically arranged. Only a few thousand have been printed and this offer will stand for a limited time. The only book of its kind and is FREE with one year's subscription to Radio Digest. This offer good only on subscriptions sent directly to this office, not through agents or agencies.

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# Pipe Fittings Make Antenna Masts

## Strong Aerial Supports Not Hard to Construct

A simple and neat pair of antenna masts can be made by anyone if the following directions are employed. Use 1-inch iron pipe and fittings. Decide how high above the ridge you want

### WORKSHOP KINKS EARN A DOLLAR—

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

the aerial and add one-half the height to allow the pipes to fasten to the building. Thus, if it is decided that the aerial should be 5 feet above ridge, the pipe would be cut 7½ feet long. Thread one end of each pipe. Into the other end, drive a wooden plug and screw in a large screw. Screw an elbow on the other end. Measure the distance that the cornice projects from the side of the building and cut a short pipe or nipple. Screw this into the elbow and on the other end screw a flange. With a strap fastened near the peak and the flange screwed to the side of the building, these aerial supports are held firmly, and the expense of this neat construction is small.—H. A. Thompson, Utica, N. Y.

## A. B. C. RADIO COURSE

(Continued from page 19)  
 increased. That is, the negative charge of the grid will repel the electrons emitted

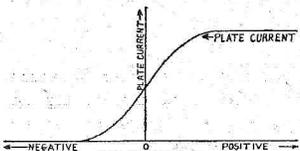


Figure 87

by the filament back toward the filament, which will result in a decrease in value

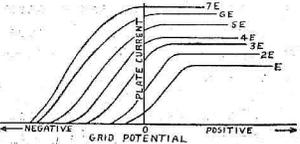
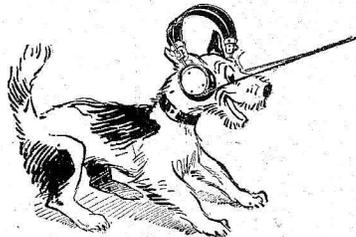


Figure 88

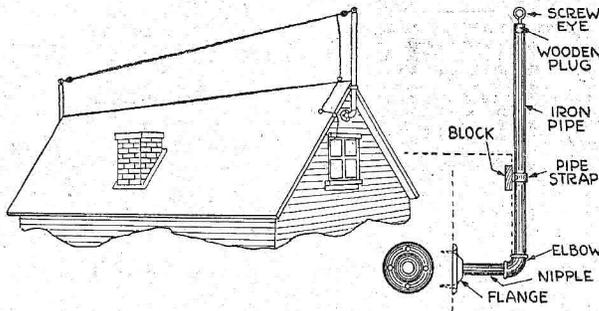
as the negative potential of the grid with respect to the filament is increased and



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 POWEL CROSLY, Jr., President

## DETAILS FOR ASSEMBLY OF MASTS



finally the grid may be made sufficiently negative to entirely stop the flow of electrons from the filament to the plate.

If the grid be charged positively, the negative space charge within the tube will be partly neutralized and the plate current as a result will be increased, assuming the filament temperature and the voltage between the plate and the filament to be constant. That is, the

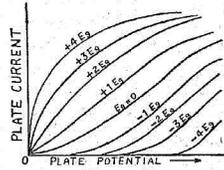


Figure 89

positive grid assists the plate in attracting the electrons emitted by the filament. The plate current will increase in value as the positive potential of the grid with respect to the filament is increased until the saturation current corresponding to the existing filament temperature is reached.

### Characteristic Curves

The variation in the plate current of a tube, due to a variation in the potential of the grid for a fixed filament current and plate voltage, is shown in figure 87. A curve of this kind is called a static characteristic curve of the tube, and there is such a characteristic curve for each combination of filament temperature and plate potential. For example, assuming the filament temperature is constant, then a number of curves such as the ones shown in figure 88, may be obtained for various plate potentials. The higher the plate potential, the more the curve is shifted to the left.

Another way of showing, graphically, the relation between the plate current and the plate potential for various grid potentials is by means of a family of curves similar to those given in figure 89.

Whenever the grid is made positive, a few of the electrons emitted by the filament will pass to the grid rather than the plate which will result in a current in the grid circuit. Under the usual operating conditions this grid current is very small in comparison to the plate current, and it decreases in value as the potential of the plate is increased.

### Amplification Factor

The voltage amplification factor of a three-electrode vacuum tube is defined as being the relation between the plate and grid potential variations which will produce the same variation in plate current, the temperature of the filament being constant. For example, if a certain change in grid potential produces a certain change in plate current, and the plate potential must be changed in value eight times as much as the grid potential was changed to produce the same change in plate current, then the voltage amplification factor of the tube is eight.

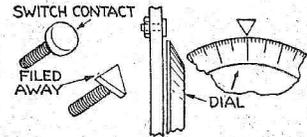
The voltage amplification factor depends upon the construction of the tube, as explained in the following paragraph. Assuming the grid of a tube is connected to the negative terminal of the filament which will be considered the reference point for the various potentials, then the potential of the grid is zero. The electrons emitted by the filament, under the above conditions, are attracted to the plate by that part of the electrostatic field of the plate which is not screened by the grid, due to the arrangement and spacing of the grid wires. This so called "stray

field" of the plate is dependent upon the positions and shapes of the electrodes in the tube, and varies directly as the plate potential. The amplification factor of a tube varies inversely as the spacing between the grid wires, because the stray field due to the plate will be smaller as the mesh of the grid is decreased.

The amplification factor also varies directly as the ratio of the distance between the plate and filament and the distance between the grid and filament. The closer the grid is placed to the filament, the smaller the grid potential required to set up a field around the filament equivalent to the stray field of the plate. In general, in order that the tube may have a large amplification factor a fine mesh grid should be used, the grid should surround the filament as completely as possible, and the distance between the grid and filament should be small in comparison to the distance between the plate and filament. The amplification factor for a tube is not constant but varies somewhat with the grid and plate potentials. (Next week Professor Moreton will explain such terms as plate impedance, plate circuit resistance and mutual conductance, and point out how they are important in tube operation.—Editor's Note.)

### Dial Marker from Switch Point

A very good dial marker can be made from an old switch point by filing the head of it to a triangular shape. If the

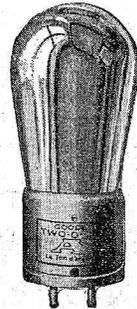


point is too long and interferes with the condenser plates it may easily be filed down until it just goes through the panel far enough to allow a nut to be put on.—Ralph Crosley, Sand Springs, Okla.

Don't expect sloppy or poorly insulated connections to give good results.

## The "Goode" Two-o-One

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# Questions and Answers

### Selectivity vs. Range

(14102) DEL, Big Horn, Mont.  
 Q.—I have a five tube Radio set. I do not have very good luck in being able to separate one station from another in a range of 5 degrees. Stations KGO, WCB, WLS, and WDAF are all strong stations and when they are all on the air about the same time, unless the air is very clear, will give me quite a good deal of trouble to separate.

I use an antenna of 7-strand plain No. 22 gauge phosphor bronze wire 100 feet long, stretched taut at a height of 23 to 32 feet high and a lead-in wire of 36 feet, insulated. I have it stretched in a northeast direction from the set. Does it make any difference as to the direction the antenna is stretched from the receiving set? Would I have better receiving if I used another kind of antenna? I do not have any of the described city noises to trouble me as I live 10 miles from the nearest electrical appliance. How can you tell whether the ground wire is well grounded or not with this set? If you haven't a battery voltmeter to test B batteries how can I tell when they are almost run down? Is there any disadvantages in using four 22½-volt B batteries rather than two 45-volt B batteries?

Are any of the static eliminators advertised in the Radio Digest of big enough success to pay me to add one to my set? If so, which one would you recommend me buying or can you give me some arrangement I may add to my set to help eliminate some of this summer static. As the Radio Digest does not receive compensation for answering questions, will make up for it by trying to get circulation enlarged among my neighbors this coming fall and winter.

A.—Relative to your difficulty with selectivity, or the lack of it, we wish to advise that on this receiver, or any other of similar type, you cannot have a coast to coast range or a Chicago to San Francisco range in summer and still have selectivity. Part of the tremendous range which you have is the result of your use of a 100-ft. antenna wire and in the writer's opinion it will be impossible to have good selectivity with such a comparatively long aerial. If you will cut down the length of the straightaway wire to about 60 feet, which will give you an over all length of 96 feet, including lead-in, the selectivity should be considerably helped. There is no way of testing for a good ground other than putting in the very best that you can with well soldered connections or putting in three or four to different points such as the cold water system, the radiator and anything else you can think of, and use them all at once. There is no way of testing B batteries without the use of a meter. There is no difference in efficiency between the use of four 22½-volt B batteries as against two 45-volt B batteries.

Although the static eliminators advertised in Radio Digest will work in some locations and eliminate about 25 to 40 percent of the static, none of them will work in all locations nor will they eliminate more than about 40 per cent of the static without a noticeable decrease in volume. The writer neglected to mention above that shortening the aerial from 100 to 60 feet will slightly decrease the volume and may make reception of a few very distant stations impossible in summer.

**ATTENTION please.** Is it worth 25c and an hour's work to you to improve your tuning? If so 25c will bring you complete data of a device that you should not be without. St. Paul Radio Improvement Co., P. O. Box 3193-H, St. Paul, Minn.

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mer time but the selectivity on those that you can still hear with loud speaker volume will be much improved and next fall and winter you will again be able to have a coast to coast range.

### Ground and Aerial with Super-het

(14114) CN, Evansville, Ind.  
 In your May 3, 10, 17 and 24, 1924 issues of the Radio Digest you described an eight tube super-heterodyne receiver made to work on a loop and I want to know how I can adapt this receiver to work on a regular outside aerial and ground. Also in your June 27, 1925 issue you described an eight tube super-heterodyne receiver made to work on a loop and I want to know how I can adapt this receiver to work on a regular outside aerial and ground.

A.—We wish to advise that any super-heterodyne designed to work on a loop aerial can be used with an outside antenna by connecting the two terminals intended for the loop leads to the secondary terminals of an antenna coupler. Such a coupler should have about 42 turns on a 3-inch tube or 56 turns on a 2½-inch tube as a secondary while the primary should have from 6 to 15 turns. The coupling between primary and secondary should preferably be very loose and the primary should be on a rotor. In case the super-heterodyne is designed for a center tap loop, the center point of the secondary coil should be determined and the three terminals from the receiver connected to the two ends and the center point exactly as though it were a loop aerial. For diagrams and some definite information we refer you to our issue of March 7 in which we started a series on the Four Filter Super-heterodyne and the first article showed the connections whereby the super may be connected to a loop by plugging in two jacks or connected to an antenna coupler automatically by withdrawing the loop jacks.

### To Catch Lower Waves

(14004) FB, Scales Mound, Ill.  
 I have a homemade neutrodyne which works fairly good except that I cannot get stations much below 275 meters. KYW comes in at about 84 on my dials. I am using Cardwell 17-plate condensers and homemade neutroformers having 6 turns of primary wound on 2½-inch tube (outside measure) and spaced about ¼-inch apart, 60 turns of secondary with a tap at the fifteenth turn and wound on 3-inch tubing (outside measure). I used 24-gauge silk covered wire. I would like to know what changes should be made in the neutroformers so that I could get down to about 200 meters.

A.—First of all tune in KYW, which you say comes in at about 84. Then disconnect the secondary of your second neutroformer from the grid of the second tube and take off about five turns. Do not touch the settings of the variable condensers while doing this. Then con-

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nect the secondary to the grid and turn the second dial until KYW is again heard. Continue this process, leaving the first and third dials at their settings until KYW comes in at about 92 on your center dial. Do the same with the other two neutroformers and you will find that with KYW at 92 you can go much farther down on the wave length range and probably can hear stations at 220 meters. The set will have to be reneutralized, however, to allow for these changes.

### Using Wrong Tubes?

(14105) PCH, Erie, Pa.

I have a Brantson Super-het, all the parts, and it is a nice looking outfit in the wiring and assembling. I have built it as specified in booklet that I got with the parts. The set has short radio frequency, three stages of intermediate radio frequency and two stages of audio frequency. The whistles and noises in the set caused by oscillation are something awful. It is the same with the loop on or off. In order to bring in a station I must turn the rheostats on full and the whistles and noises ruin all reception. I have been using condensers in all places in the set but the whistles and howls are the same. For grid voltage I have been using 3 to 9 volts; for plate voltage, 90 to 135 volts; and for detector voltage, 45 volts. Grid leaks have been tried in all capacities. It is a Brantson reflexed super-het using 7, 201A tubes, Kit No. R-199, cabinet size 7x21x9¼ inches.

A.—We wish to advise that the probable cause of your trouble is that you are using the Brantson Kit designed for 199 tubes with tubes of the 201A class. The reflexed super-heterodynes will all work well with 199 tubes but they do not work well with the 201A tubes. You might write to the manufacturers of this kit and see what they can suggest.

### Underground Aerial Cuts Static

(14058) LFW, Conway Springs, Kan.  
 Which gives more volume, UV-199 tubes or UV-201? Has there been any kind of instrument devised which will reduce static a little at least?

A.—We wish to advise first of all that the 201A tube will give more volume than the UV-199. The energy that will be delivered by a tube may be measured by the amount of filament energy consumed and this may be figured by multiplying the volts times the amperes. Since 5 times .25 is greater than 3 times .06, the 201A gives the greater volume. There has been no device or instrument developed that will reduce static dependably and under all conditions. An underground antenna, such as was recently described by Mr. E. T. Jones in Radio Digest, will work in the majority of cases and will reduce about 90 per cent of the static.

### INDUCTIVE TROUBLES

(Continued from page 20)

wire wound on a 3½-inch tube. The grid coil is composed of 40 turns of number 26 dec. wire wound on a 3-inch tube. Tuning condenser is of .0005 mfd. maximum capacity and variable. For the tubes used, the rheostat has a resistance of 10 ohms, and the ammeter a range of 0 to .5 ampere. Grid condenser is fixed with a capacity of .00015 mfd. while the grid leak has a resistance of 2 megohms.

It will be noted that jack number 1 is not wired in the usual way to permit of reception on the detector alone but is connected in such a manner as to provide audio amplification when it is desired to use auxiliary apparatus in connection with current variations audio frequency only.

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